



HERE'S THE CATCH:

HOW TO RESTORE
ABUNDANCE TO CANADA'S
OCEANS

OCEANA Protecting the
World's Oceans

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2016

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For more detail, see the full report: Baum, J.K. and S.D. Fuller. 2016. *Canada's Marine Fisheries: Status, Recovery Potential and Pathways to Success*. Oceana Canada, Toronto.

**HOW
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MANAGED?**

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WE IN THE
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A photograph of a fishing boat deck at sea. In the foreground, a large pile of fish, likely salmon, is scattered on the deck. In the background, the ocean and a clear sky are visible. A large blue circular graphic is overlaid on the top left, and a dark red circular graphic is overlaid on the middle right. A white circular graphic is overlaid on the bottom right.

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HERE'S THE CATCH:
HOW TO RESTORE ABUNDANCE TO CANADA'S OCEANS



TAKING CARE OF OUR OCEANS



**“WHEN I LOOK BENEATH
THE WAVES, I SEE A WORLD
WE ALL DEPEND ON.”**

– Alexandra Cousteau, Senior Advisor, Oceana

ALEXANDRA COUSTEAU

Environmentalist, documentary filmmaker and granddaughter of marine explorer Jacques-Yves Cousteau

As a senior advisor to Oceana, I'm proud to be a part of the largest international organization focused solely on ocean conservation.

I've been exploring the world's oceans since I was a child. I've seen what's at stake: corals, crustaceans, marine mammals and fish of every kind imaginable. I've also seen the damage we're creating. Many of the fish that entranced me as an eight-year-old are disappearing. Ecosystems that used to be productive are now dead zones.

As a species, we can't afford to let this continue. Our oceans are incredibly rich, providing a home to most of the life on the planet. They sustain livelihoods for tens of millions of people and provide protein for more than a billion. They shape our cultures and feed our imaginations in many ways we are aware of, and others that we are not.

Simply put, our oceans take care of us — now it's our turn to take care of them.

We know how to do this. Although our oceans are at risk, I've seen first-hand that they can recover. We can end overfishing, halt the damage and stop irreplaceable species from disappearing.

Years ago, I was fortunate enough to sail around Canada — from the stormy Atlantic, through the famed Northwest Passage, and down the rugged Pacific coast. I know that Canada is the steward of a wondrous bounty. I'm inspired by Oceana Canada's vision to make Canada's oceans as rich, healthy and abundant as they once were.

I hope this report can serve as both a platform for discussion and a catalyst for change. I hope all Canadians will join Oceana Canada in protecting your beautiful coastlines and diverse marine ecosystems, for the benefit of Canadians and the world.

WE'RE TAKING STOCK



“CANADA’S OCEANS DESERVE MORE. WE CAN HAVE A WORLD-CLASS RESOURCE THAT SUSTAINS OUR COMMUNITIES, OUR CULTURE AND OUR ECONOMY.”

– Josh Laughren, Executive Director, Oceana Canada

Since 1970, the biomass of Canadian marine stocks has declined by **55%.**

Only **24%** of Canada's marine fish and invertebrate stocks can confidently be considered healthy.

JOSH LAUGHREN

Executive Director, Oceana Canada

The depletion of Canada's fisheries is a recent phenomenon, the bulk of which has occurred within the span of a single lifetime. It began with a vast increase in the number and technological killing power of our fishing vessels after WWII and reached an all-time low with the infamous cod collapse of the early 1990s.

It's a story of too many boats chasing too few fish, of destructive gear and enormous waste, with science too often falling by the wayside. It's not just cod numbers that plummeted. We've seen a drop in abundance of all kinds of species.

It's easy to say that we've learned from the mistakes that led to the collapse of Atlantic groundfish and other species. But have we?

To find out, Oceana Canada commissioned scientists to assess the state of Canada's fisheries. The resulting report — *Canada's Marine Fisheries: Status, Recovery Potential and Pathways to Success* by Drs. Julia Baum and Susanna

Fuller — represents the most comprehensive and up-to-date public analysis of Canada's fish stocks. Several troubling findings stand out.

First, according to the report, less than 25 per cent of Canada's fish stocks can be confidently considered healthy. The status of a whopping 45 per cent of stocks couldn't be determined due to an absence of basic or up-to-date information.


Second, although most shellfish populations are in good shape, the state of many fish populations remains grim. The situation is particularly dire for finfish: species like cod, haddock, mackerel and redfish.

In the wake of the groundfish collapse, rather than rebuilding these stocks, we have relied on a handful of shellfish species to prop up the industry: lobster, crab, shrimp and scallops. It's a classic case of putting all our eggs in one basket. If that basket tips over, the results won't be pretty.

The challenges the researchers faced in gathering this data were also disturbing. Coherent fisheries information should be publicly and freely available and understandable.



In the 1950s,
Canada was the
**7th largest
producer**
of wild fish. Today we
have dropped to **21st**
place.¹



**The great
abundance of
Canada's fisheries
can be rebuilt within
our lifetime.**

In the United States and the European Union, for example, a few clicks online allow any interested citizen to understand the state of fish and fisheries, including what's working and what's not.

This is not the case in Canada. The report authors spent months tracking down basic data from Fisheries and Oceans Canada (DFO), often from individual scientists. Far too frequently, that information wasn't available: in a few instances because some scientists would not share information.

Without this data, Canada cannot manage fish stocks properly or assess the health of our oceans. Nor can we judge the effectiveness of management and rebuilding efforts.

Encouragingly, the new federal government has committed to more openness and better access to science information. We must ensure they see this commitment through.

In the past, fisheries have shaped Canada's economy and culture. They could continue to be one of our most valuable renewable resources in the future. In a growing and hungry world, oceans provide a sustainable source of protein.

If we manage them right, Canada's marine resources could supply a critical food source for the world. In the process, we can reverse the long, slow decline of our fishing communities.

This isn't a pipe dream. There are many examples around the world and here in Canada of how stocks can rebound, often incredibly quickly, if we create the right conditions. But it's not going to happen by accident. We must take action now, or our oceans will continue to decline and our coastal communities will suffer further economic and cultural losses.

The good news is that the foundations are in place. The federal government is reinvesting in science. We have an institutional and legal framework to build on, and we have a wealth of fisheries expertise.

Now, we need a clear, honest assessment of our fish populations and a transparent approach to making fisheries decisions. We need to catch up to other developed nations by strengthening Canada's laws and regulations to prevent overfishing and mandate rebuilding depleted stocks. Most of all, we need the political will to implement the policies and rules already on the books.



HOW WE ASSESSED CANADA'S PERFORMANCE

To produce their report, Dr. Julia Baum and Dr. Susanna Fuller identified the most important commercially harvested fish and seafood stocks in Canada and those of greatest conservation concern. Altogether, they came up with a list of 165.

In a number of cases, however, either no recent data was available or the information that was available was unreliable. The report focuses on 125 stocks where assessments have been done within the past five years, representing 28 species on the Atlantic and Arctic coasts and 18 on the Pacific coast. Salmon stocks are not included because their life cycle is not exclusively marine-based.

The authors then reviewed stock assessments and DFO research documents. They compiled key data, assessments from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) — an independent scientific advisory body — and listings under the *Species at Risk Act* (SARA). They combed through integrated fisheries management plans and rebuilding strategies. They compiled stock biomass figures, exploitation rates and measures of abundance and compared them to DFO targets and scientific measures of sustainability.

Drs. Baum and Fuller also examined Canada's laws and policies, in the context of best practices around the world. They assessed factors preventing fisheries recovery and looked at best practices for rebuilding stocks, drawing on national and international examples.

Finally, based on their findings, they developed a number of recommendations to put Canada firmly on the path to healthy, sustainable fisheries.

As we approach the 25th anniversary of the cod collapse, we have a rare chance to rewrite history. The great abundance of Canada's oceans was lost in one lifetime. It can also be rebuilt within a lifetime. The choice is ours.

I'd like to thank Julia Baum and Susanna Fuller for the months of painstaking work that went into their report. I'd also like to acknowledge Jeff Hutchings and Alan Sinclair, who provided thoughtful reviews, and the foundational work of the Royal Society of Canada's 2012 Expert Panel report on sustaining Canada's marine biodiversity. Most of all, I thank Oceana Canada supporters, whose generosity makes our work possible.

Now, armed with this information, we need to act. Healthy oceans provide livelihoods for millions and protein for billions, and they feed the imaginations of us all. Oceana Canada calls on government, stakeholders and all Canadians to protect and rebuild our nation's fisheries and the oceans that support them.

¹DFO. 2016. Average Landings 2005-2014, Fish Stat J, Release: 2.11.4.



ISSUE
1

SUSTAINABILITY

WHY DO WE NEED HEALTHY FISHERIES?

IN 2015, CANADA'S ATLANTIC, ARCTIC AND PACIFIC FISHERIES WERE WORTH \$6 BILLION.² AT LEAST 46,000 CANADIANS ARE DIRECTLY EMPLOYED IN WILD FISHERIES, WHILE THE SEAFOOD PROCESSING AND PACKAGING SECTOR CREATES AN ADDITIONAL 33,000 JOBS. ALL THAT DEPENDS ON HEALTHY, DIVERSE FISH STOCKS. THIS NUMBER IS LIKELY MUCH HIGHER, DUE TO SMALL-SCALE FISHING, PROCESSING AND RETAIL JOBS OFTEN BEING UNDERREPORTED.

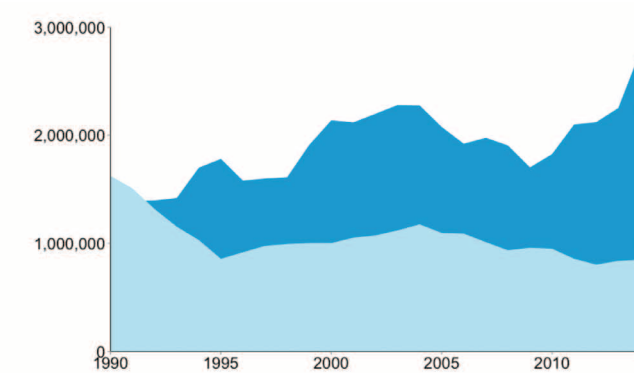
For millennia, Indigenous people in Canada drew sustenance from the sea. When Europeans set sail for Canada five hundred years ago, they were lured by waters heaving with cod. In the centuries that followed, fisheries continued to drive Canada's economy and shape our culture and communities. In 2015, fish and seafood exports were worth \$6 billion.

Behind those figures is a story of serial depletion. In the 1980s, Canada harvested cod to the point of collapse, putting thousands of Canadians out of work and bumping us from our position as the world's leading seafood exporter. The fishing industry responded by shifting its focus to shellfish, which exploded in abundance — in part due to the collapse of groundfish stocks.

While today's numbers look good on the surface — thanks to the high value that lobster and other shellfish command — they hide a troubling truth. Currently, our seafood industry is concentrated on just a few key species, including lobster, crab, shrimp and scallops. The total volume of Canadian seafood continues to decline while the overall landed value has gone up. This lack of diversity makes communities and economies vulnerable. A lobster fishery collapse, for example, would be significantly more socially and economically devastating than the cod collapse because the value of shellfish is so high and because of the lack of other options fishers can turn to.

If we don't act now, another major fisheries collapse is a very real possibility. The lobster population in Southern New England, for example, peaked during the late 1990s and then declined steadily through the early 2000s, largely due to disease and environmental conditions. Maine's social and economic resilience is low due to how much is tied to the lobster industry.³

If Canada wants to ensure a sustainable economy and resilient coastal communities, we need to ensure healthy and diversified fisheries.



Landed value and total volume of Canadian seafood between 1990-2015
Dollar value in \$000s in dark blue and volume in metric tonnes in light blue.⁴

² FAO. 2016. Facts on Canadian Fisheries. Retrieved from <http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/species-especes-eng.htm>.

³ Steneck et al. 2011. Creation of a Gilded Trap by the High Economic Value of the Maine Lobster Fishery. Retrieved from http://www.fmap.ca/ramweb/papers-total/Steneck_et_al_2011_Conservation%20Biology.pdf.

⁴ DFO. 2015. Consumption. Retrieved from <http://www.dfo-mpo.gc.ca/stats/commercial/consumption-eng.htm>.

⁵ DFO. 2016. Facts on Canadian Fisheries. Retrieved from <http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/species-especes-eng.htm>.



CANADA EXPORTED \$6 BILLION OF FISH AND SEAFOOD PRODUCTS IN 2015.



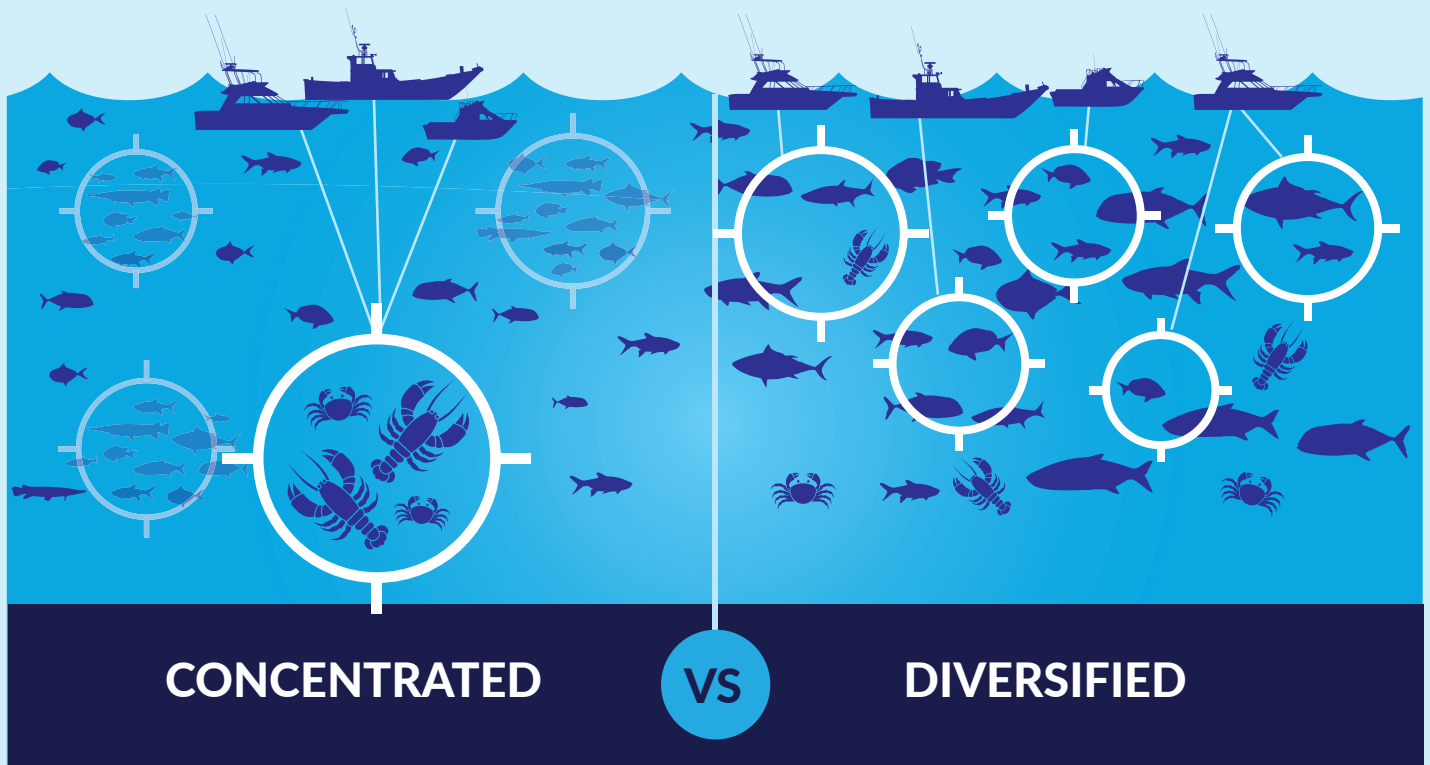
SEAFOOD IS ONE OF THE TOP 3 EXPORTS IN ALL ATLANTIC PROVINCES AND ONE OF THE TOP 7 IN BRITISH COLUMBIA.⁵

EYEING THE ARCTIC



Arctic fisheries have long been a crucial source of food for Inuit communities. In the 1980s, subsistence fisheries were joined by commercial interests, as southern fleets facing the collapse of Atlantic groundfish looked north to Greenland halibut (turbot) and shrimp in Arctic waters — a trend set to continue as climate change extends species ranges and fisheries north of 60.

We need healthy fisheries



WE'RE MAKING MORE MONEY FROM OUR SEAFOOD INDUSTRY THAN EVER, BUT ALL THE VALUE IS CONCENTRATED IN JUST A FEW SPECIES. THIS LACK OF DIVERSIFICATION IS NOT SUSTAINABLE.

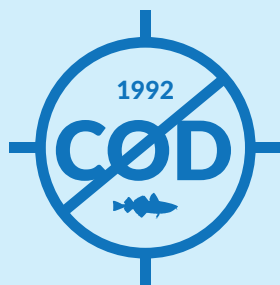
\$6 billion

Canada exported \$6 billion in fish and seafood in 2015.

77%

of Canada's seafood value now comes from shellfish in the Atlantic.

Shellfish are vulnerable to depletion from fishing pressure.



In 1992, a moratorium was placed on northern cod in the hope of rebuilding severely depleted cod stocks. The closure ended almost 500 years of fishing activity in Newfoundland and Labrador. It put about 30,000 people out of work, and hundreds of coastal communities that had depended on the fishery for generations watched their economic and cultural mainstay disappear overnight. We can and must do more to ensure the diversification of fishing communities to prepare for future shocks.



ISSUE

2

TRANSPARENCY

WHY ARE WE IN THE DARK ABOUT OUR OWN OCEANS?

84%

84% OF CANADIANS BELIEVE THE GOVERNMENT SHOULD SHARE KEY DATA ON THE HEALTH OF OUR FISH POPULATIONS.⁶

⁶Abacus Data, 2015

DESPITE THE IMPORTANCE OF FISHERIES IN CANADA, KEY DATA IS HARD TO COME BY. THE REPORT AUTHORS SPENT MONTHS SCOURING GOVERNMENT WEBSITES AND REPORTS AND TRACKING DOWN INDIVIDUAL GOVERNMENT SCIENTISTS TO BUILD A PICTURE OF STOCK HEALTH. STILL, THE PICTURE IS INCOMPLETE.

Partly because of a lack of transparency and partly because of the failure of government to conduct regular assessments, we don't have a clear picture of the health of Canada's fish populations. This stands in stark contrast to the situation in the United States and the European Union, where stock data and management plans are centrally compiled, publicly available and reported on annually.

The lack of transparency in Canada's fisheries is a long-standing problem, exacerbated by the previous federal government's cuts to Canada's once world-class fisheries science capacity and by the rigorously enforced policy of discouraging scientists from speaking about their work. This lack of transparency – and therefore public scrutiny – and absence of up-to-date information creates an environment in which it is all too easy for officials to ignore scientific advice and avoid the tough decisions required to rebuild vulnerable stocks.

Canadians must be able to assess how our government is doing and hold them accountable for management decisions.

THE EXPERTS SAY...

"Fisheries data is often unavailable, even though much of what is required is collected, and there is no central location where Canadians can easily understand the state of our fisheries and the reasons behind management decisions."

– Dr. Susanna Fuller, co-author,
*Canada's Marine Fisheries: Status,
Recovery Potential and Pathways to
Success*

WHAT CAN BE DONE?

To make sure our government is stewarding this public resource effectively, Canada needs:

- ▶ **A publicly available**, comprehensive list of Canadian fisheries or fished stocks
- ▶ **A central database** from which fisheries data can be easily obtained online
- ▶ **A single source of information** for each of Canada's fish stocks, including assessments and research documents
- ▶ **A vigorous peer-review process** reinstated for all stock assessments
- ▶ **A publicly available record** of DFO management decisions
- ▶ **A department-wide culture of transparency**

STRIKING DISCREPANCIES

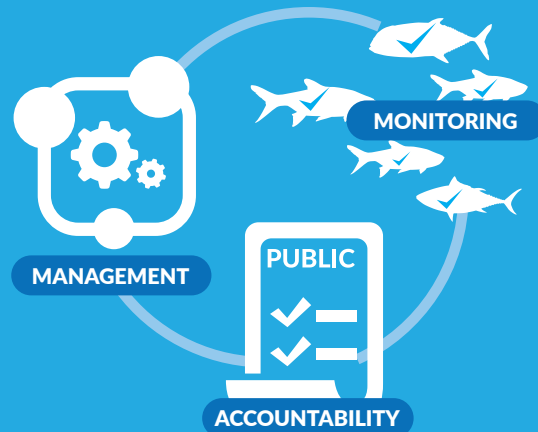
In 2016, Environment and Climate Change Canada (ECCC) published a report that rated 48% of Canada's fish stocks as healthy. Although Oceana Canada's report drew on the same source of data – DFO – we arrived at far less optimistic conclusions. Because ECCC does not disclose how they arrived at those ratings, we can't explain the striking discrepancies.



In the dark about our own oceans

THERE IS A LACK OF EFFECTIVE MANAGEMENT, MONITORING AND PUBLIC ACCOUNTABILITY FOR OUR MARINE RESOURCES.

The Canadian government should be conducting and releasing comprehensive reviews of our fish populations and setting targets to rebuild our depleted fisheries.



HOW MUCH DO WE KNOW ABOUT OUR OCEANS?

?

VERY LITTLE



Only ¼ of the species reviewed in *Canada's Marine Fisheries: Status, Recovery Potential and Pathways to Success* had an estimate of fishing mortality or exploitation rate.

2 OF 165

Of the 165 fisheries in Canada, only 125 have had the status of the population assessed within the past five years and only two have been assessed for three consecutive years.

45%

45% of Canadian fisheries are dependent on species whose health is listed as unknown.

THE GOVERNMENT CAN PUT CANADA ON THE PATH TO HEALTHIER OCEANS BY:

1

LIMITING OVERFISHING

2

IMPROVING TRANSPARENCY

3

IMPROVING THE LEGAL AND POLICY FRAMEWORK



ISSUE
3

POLICY

HOW WELL ARE CANADA'S FISHERIES MANAGED?

TO DATE, NO RECOVERY STRATEGIES HAVE BEEN DEVELOPED FOR MARINE FISH SPECIES LISTED UNDER THE SPECIES AT RISK ACT.

CANADA HAS A GOOD POLICY FRAMEWORK IN PLACE TO MANAGE OUR FISHERIES AND RESTORE DEPLETED STOCKS. THE PROBLEM? WE'RE NOT USING IT. WE DON'T IMPLEMENT MANY OF THE LEGAL AND POLICY INSTRUMENTS WE HAVE, AND WE AREN'T LIVING UP TO OUR INTERNATIONAL COMMITMENTS.

Canadian fisheries are managed under the *Fisheries Act* (the Act), one of the oldest pieces of legislation in Canada, enacted in 1868. The Act has been amended almost 20 times, in some cases to strengthen it, such as introducing habitat protection in 1977, and in some instances to weaken it, such as successive omnibus bills in 2012 that reduced habitat protection measures.

Under the Act, the federal government can set quotas that conserve Canada's fisheries and enact closures to rebuild fish stocks or protect ecosystems. However, in some critical areas the Act has not kept up with modern fisheries management.

In particular, the Act does not require that action be taken when overfishing occurs and does not require rebuilding plans once stocks are depleted. Nor does it require quotas to be based on scientific advice. Moreover, the Act gives the Minister of Fisheries, Oceans and the Canadian Coast Guard enormous discretion in decisions about setting quotas, determining how quotas are divided up and implementing fisheries management policies.

Ministerial discretion also extends to endangered fish species. Even when the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) judges that a marine fish species is in danger, it's still up to the Minister whether or not to list the species under the *Species at Risk Act* (SARA).

To keep up with modern practices, we need to make simple but fundamental changes to the *Fisheries Act*, adding clear directions and requirements to stop overfishing and to rebuild depleted stocks.



**IN THE U.S.,
THE MAGNUSON-
STEVENS ACT
REQUIRES THE
GOVERNMENT
TO REBUILD
OVERFISHED
STOCKS.**

WHAT ELSE SHOULD WE DO?

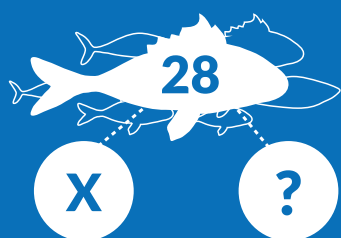
- ▶ **Update the *Fisheries Act*** to make it compatible with current UN agreements and guidelines.
- ▶ **Make all integrated fisheries management plans** publicly available and update them annually.
- ▶ **Use marine protected areas** and other spatial protection measures to safeguard essential habitat for fish stocks at risk and help them rebuild.
- ▶ **Develop a work plan for achieving the 2020 targets** set out in the United Nations' Convention on Biological Diversity: managing and harvesting all fish and invertebrate stocks sustainably and legally and applying ecosystem-based approaches to avoid overfishing and promote rebuilding.

THE EXPERTS SAY...

“Canada has fallen well short of the progress made by most developed nations in fulfilling national and international commitments to sustain marine biodiversity. The slow pace of statutory and policy implementation, and absolute discretion by the Minister, has meant that many obligations to conserve and sustainably use biodiversity have not been met.”

– Dr. Jeffrey A. Hutchings, Chair, Royal Society of Canada Expert Panel on Sustaining Canada's Marine Biodiversity

DENIED OR LEFT IN LIMBO



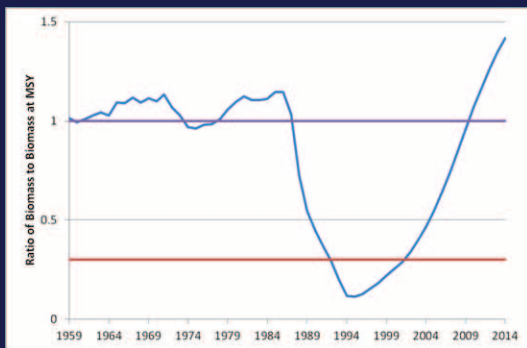
Twenty-eight marine fish species that COSEWIC has assessed as endangered, threatened or of special concern have either been denied listing under SARA or have been waiting as long as 14 years for a decision. If they were listed under SARA, the government would be legally required to develop a recovery strategy and action plan.

CASE STUDY 1:

A TALE OF TWO JURISDICTIONS

ACADIAN AND DEEPWATER REDFISH ARE FOUND IN THE DEEP WATERS OF THE NORTHWEST ATLANTIC. THESE LONG-LIVED GROUND FISH ARE PARTICULARLY SENSITIVE TO OVERFISHING BECAUSE OF THEIR SLOW GROWTH RATES AND THE LENGTH OF TIME IT TAKES THEM TO REACH A REPRODUCTIVE AGE.

A spike in redfish catches off the east coast of Newfoundland in the late 1980s drove dramatic stock declines. By 1994/95, the stock biomass had fallen to just 12 per cent of sustainable levels. In 1998, the Northwest Atlantic Fisheries Organization imposed a moratorium that closed the Grand Banks fishery that straddles Canadian and international waters. That closure was successful in rebuilding stocks. By 2010, the stock rebounded to levels that could support a sustainable harvest, and the fishery was reopened.



Redfish catch and TACs in Division 3LN. Figure from NAFO 2014.⁷

**98% DECLINE
IN ABUNDANCE
SINCE 1978**

Within Canadian-controlled waters, it's a different picture. There is no rebuilding plan for redfish, nor has the government ever imposed closures to protect their habitat. In 2010, COSEWIC assessed the northern population of deepwater redfish as threatened following a 98 per cent decline in abundance since 1978. The Canadian population of Acadian redfish received the same assessment, having declined by 99 per cent over the same time period.⁸



⁷ Avila de Melo AM, Brites N, Alpoim R, Troncoso DG. 2014. An ASPIC Based Assessment of Redfish (*S. mentella* and *S. fasciatus*) in NAFO Divisions 3LN (assuming that the highest apparently sustained historical average level of catch is a sound proxy to MSY). NAFO SCR Doc. 14/022. <http://archive.nafo.int/open/sc/2014/scr14-022.pdf>.

⁸ COSEWIC. 2010. COSEWIC assessment and status report on the Deepwater Redfish/Acadian Redfish complex *Sebastes mentella* and *Sebastes fasciatus*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. X + 88 p. http://sararegistry.gc.ca/document/default_e.cfm?documentID=2045.



ISSUE
4

ACCOUNTABILITY

HOW HEALTHY ARE OUR FISH POPULATIONS?

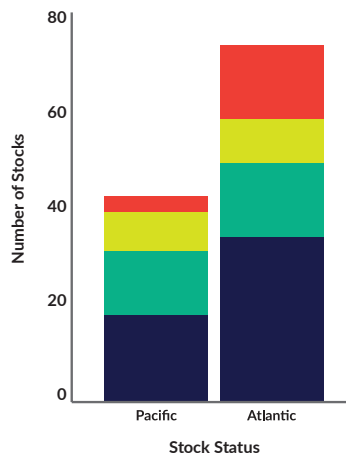
94%
CRITICAL

94% OF ALL STOCKS ASSESSED AS CRITICAL ARE FINFISH, AS OPPOSED TO SHELLFISH.

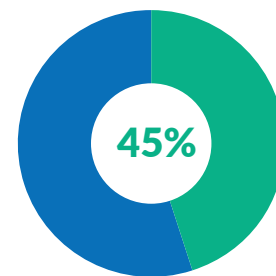
ON CANADA'S THREE COASTS, THE SITUATION IS MORE PRECARIOUS AND UNCERTAIN THAN WE REALIZED. EIGHTEEN STOCKS ARE IN CRITICAL CONDITION, AND THAT COULD BE AN UNDERESTIMATE GIVEN THAT WE DON'T HAVE DATA FOR ALMOST HALF OUR STOCKS.

Finfish are in the most danger, accounting for 17 of the 18 stocks in critical condition. On the Atlantic and Arctic coasts, witch flounder, American plaice, mackerel, Atlantic cod and white hake all have populations that have been assessed as critical under DFO's precautionary approach framework. On the Pacific coast, they're joined by bocaccio and yellow-eye rockfish.

Based on current assessments, only 24 per cent of stocks can be confidently considered healthy. Because we don't know the status of a large proportion of stocks, the actual percentage could be even more worrying. Another 17 stocks – 15 per cent of the total – fall into DFO's cautious category.



Stock status designations by DFO for 115 stocks as compiled by Baum and Fuller (2016)
Stocks are designated as being critical (red), cautious (yellow) or healthy (green), or are undeclared in cases where the status is unknown (blue).



WE DON'T KNOW THE HEALTH STATUS OF 45% – ALMOST HALF – OF CANADA'S FISH STOCKS.

The dearth of data doesn't end there. In the case of many species, stocks are not assessed regularly and important information is missing. For more than a third of stocks, DFO assessments don't provide the reference points needed to manage them wisely – benchmarks like the lowest population biomass that can still support fishing. Nor do they provide an estimate of fishing mortality or exploitation rate for nearly three-quarters of our fish stocks, a factor considered critically important in managing and recovering wild fish populations.

Currently, 45 seafood stocks lack an integrated fisheries management plan. Of the depleted stocks, we don't know which, if any, have recovery plans that have been implemented.

THE EXPERTS SAY...

“As Canadians, we perceive ourselves as good stewards of the environment. But when it comes to our oceans, we have failed to live up to that ideal. We need to get serious about ocean conservation in Canada. Sound management and recovery of our fisheries must become a political priority.”

– Dr. Julia K. Baum, University of Victoria

RENEWED COMMITMENT TO SCIENCE

In 2016, DFO announced the largest single recruitment of marine scientists in nearly 40 years: 135 new hires to significantly boost its science capacity. This is good news for our oceans if it translates to more frequent and thorough stock assessments and data-driven decision-making.



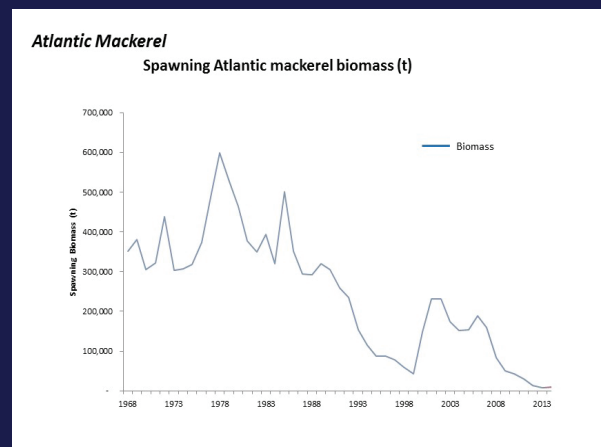
MACKEREL PLAYS AN IMPORTANT ROLE IN CANADA'S FISHERIES. IT IS FISHED COMMERCIALY AND RECREATIONALLY AND AS BAIT FOR THE LOBSTER FISHERY. IT ALSO PLAYS AN IMPORTANT ROLE IN MARINE ECOSYSTEMS, PROVIDING A SIGNIFICANT SOURCE OF FOOD FOR FISH, SEABIRDS AND MARINE MAMMALS HIGHER UP THE FOOD CHAIN.

According to DFO, Atlantic mackerel falls in the critical zone. The department's scientists have called for a total allowable catch of just 800 tonnes in 2014/15. Yet DFO has set a quota 10 times that figure: a whopping 8,000 tonnes. This quota doesn't include mackerel in the bait fishery or the recreational fishery, which is unmeasured but thought to be significant.

Part of the problem is that Atlantic mackerel is managed across Atlantic Canada's four DFO regions, making it difficult to reduce the current quota without complicated – and politically charged – regionally based allocations.

That's compounded by inadequate data and a lack of transparency that prevents outside experts from scrutinizing the assessments and models. Part of the problem is uncertain information and lack of confidence in the accuracy of the science models, which government scientists believe significantly underestimate the amount of fish in the water. What is clear is that mackerel populations have declined precipitously in recent years, with little evidence to suggest a halt to, let alone a reversal of, that downward trend.

Canada urgently needs to set quotas that reflect accurate scientific advice. It needs to establish stock reference points and monitor the bait and recreational fisheries so that data can be integrated into the stock assessment. Finally, it needs an update to the 2007 integrated fisheries management plan for mackerel, to take into account the amount of mackerel that needs to be left in the ocean to feed other creatures, among other things.



Atlantic Mackerel stocks for the Northwest Atlantic (subareas 3 and 4) from DFO 2013.⁹



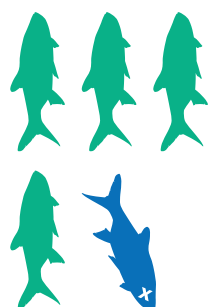
⁹ DFO. 2014. Assessment of the Atlantic Mackerel stocks for the Northwest Atlantic (subareas 3 and 4) in 2013. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2014/030. Retrieved from: http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2014/2014_030-eng.pdf.



ISSUE
5

OVERFISHING

WHAT IS DRIVING FISHERY DECLINES?



FOR EVERY FIVE FISH CAUGHT IN THE PACIFIC GROUND FISH TRAWL FISHERY, ONE IS DISCARDED AS BYCATCH.

WHILE ECOSYSTEMS ARE COMPLICATED, THE MATH IS SIMPLE. WHEN YOU TAKE MORE FISH OUT OF THE OCEAN THAN THE OCEAN CAN NATURALLY REPLENISH, THE NUMBER OF FISH DROPS. KEEP THAT UP YEAR AFTER YEAR AND YOU'RE LAYING THE GROUNDWORK FOR A MAJOR CRISIS.

Although the concept is simple, overfishing takes many forms. One is bycatch: the fish and other marine creatures that wind up in nets and lines set for other species or the fish that are too young to be legally caught. The culprit behind this is often non-selective fishing gear.

In a number of cases, alternatives exist that can help reduce the bycatch of juvenile fish and non-target species. However, Canada has been slow to mandate low-impact gear in the majority of its fisheries. Moreover, although DFO has established a bycatch policy, it has not been fully implemented in a single fishery.

Another key factor is setting the total allowable catch too high, often because of a failure to take into account the amount of fish caught as bycatch in other fisheries or because of significant conflict as to how a reduced quota should be allocated. In Canada, a lack of transparency creates situations where short-term commercial interests can take priority over long-term, science-based recovery planning.

Rounding out the list of factors is illegal, unreported and unregulated fishing and climate change, all putting further pressure on Canada's fish stocks.



70+ SPECIES ARE CAUGHT IN THE ATLANTIC HALIBUT FISHERY AS BYCATCH, INCLUDING COSEWIC-LISTED WHITE HAKE, ATLANTIC COD AND CUSK.

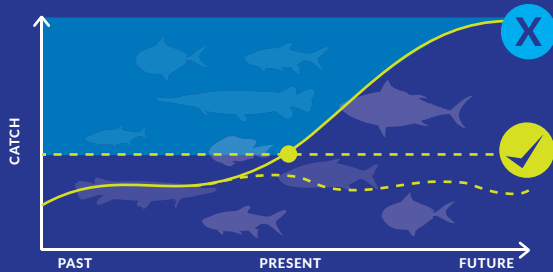
HOW DO WE TACKLE THESE ISSUES?

- ▶ **Set and enforce science-based catch limits** using precautionary harvest control rules.
- ▶ **Identify and protect** essential fish habitat.
- ▶ **Eliminate unregulated fisheries** by putting quotas or effort controls in place for all commercial and recreational fisheries and ensuring they all have up-to-date integrated fishery management plans.
- ▶ **Provide incentives** to encourage the use of lower-impact gear.
- ▶ **Create a consistent national approach** to identifying areas where bottom trawling and other harmful fishing methods can and cannot occur.
- ▶ **Incorporate vulnerability to climate change** into fisheries recovery plans and rebuilding initiatives as part of a broad ecosystem-based approach.



The drivers of overfishing

1 UNSUSTAINABLE FISHING

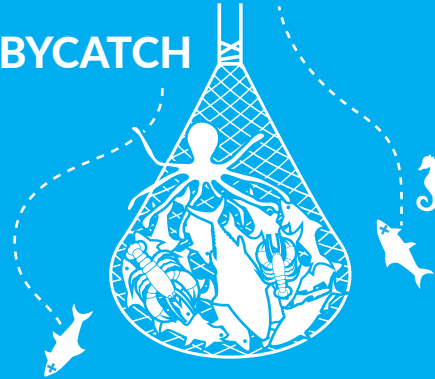


Unsustainable fishing means catching more fish than the amount needed to maintain a productive fish population and support the ocean ecosystem.

FACT

- ▶ There is no legal requirement in Canada that quotas be set at levels recommended by science to ensure the long-term sustainability of our fish stocks.

2 BYCATCH

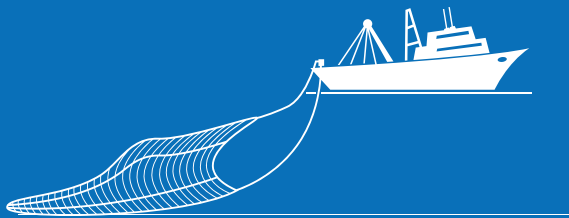


Bycatch results from fisheries capturing unintended species. This wildlife is treated as waste, thrown overboard either dead or dying. Some fisheries discard more fish at sea than they bring to port.

FACT

- ▶ There is no requirement to report on how many Canadian non-commercial species are killed through bycatch, so the amount of waste is ignored.

3 HARMFUL FISHING GEAR

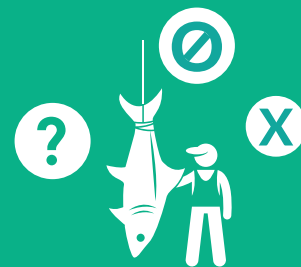


Harmful fishing gear such as bottom trawls, gillnets and dredges can affect seafloor habitats and increase bycatch.

FACT

- ▶ There is no national policy on using less impactful fishing gear to minimize habitat damage and reduce the bycatch of juvenile fish and non-target species.

4 ILLEGAL, UNREPORTED AND UNREGULATED (IUU) FISHING



Illegal, unreported and unregulated fishing is conducted in violation of national laws or internationally agreed conservation and management measures in effect in oceans around the world.

FACT

- ▶ Canada has sophisticated monitoring, control and surveillance systems. As a result, the amount of illegal fishing is likely low.



ISSUE
6

MANAGEMENT

CAN WE RECOVER CANADIAN FISHERIES?

IN A WORD, YES. AND NOT ONLY IS RECOVERY POSSIBLE, IT CAN OFTEN HAPPEN QUICKLY. CANADA AND THE REST OF THE WORLD COULD INCREASE THE NUMBER OF FISH IN THE OCEANS BY 40 PER CENT – AND DO IT SUSTAINABLY.¹⁰ THE KEY IS EFFECTIVE MANAGEMENT.

There are many examples where recovery has happened after extensive overexploitation, from apex predators like Northwest Atlantic swordfish to groundfish, herring and shellfish. In Canada, for example, Atlantic halibut stocks have rebounded after the establishment of a total allowable catch, minimum size restrictions and the cod moratorium, which reduced juvenile halibut bycatch.

Atlantic cod – the global icon for fisheries mismanagement – is now showing early signs of a comeback. Even slow-growing redfish on the Grand Banks are recovering, thanks to a 12-year moratorium that was lifted in 2010. As a result, redfish catches in 2013 were the highest recorded in decades.

¹⁰ Bren School of Environmental Science & Management, Environmental Defense Fund, University of Washington: The Potential for Global Fish Recovery: How Effective Fisheries Management Can Increase Abundance, Yield and Value. <https://www.edf.org/sites/default/files/content/upside-model-report-summary.pdf>.

ELEMENTS THAT CONTRIBUTE TO RECOVERY

In total, Drs. Baum and Fuller analyzed eight success stories within Canadian waters and further afield, looking for common factors. They identified a number of critical elements that contribute to recovery:

- ▶ **Accurate estimates of stock** status or abundance
- ▶ **Reference points** (or appropriate proxies) and effort controls in line with scientific advice
- ▶ **Implementation of harvest** control rules
- ▶ **Reduced fishing mortality**, either by enacting moratoriums or significantly reducing the total allowable catch and bycatch
- ▶ **A rebuilding or recovery plan**
- ▶ **Minimum size limits** to protect young fish
- ▶ **Closures to protect spawning** or critical habitat
- ▶ **Catch monitoring**, including observer programs, vessel monitoring systems and dockside monitoring

For too long, Canadian fisheries have followed a boom-and-bust trajectory. It's time to focus on building healthy, resilient marine ecosystems that support sustainable fisheries. By rebuilding abundance in our oceans, we can create the conditions for long-term economic and social prosperity, decade after decade.

THE EXPERTS SAY...

"What fishery scientists have taught us is that declining fish populations have great recovery potential when we take quick and decisive management action. The benefits of producing more seafood to feed our planet and diversifying our fisheries to safeguard our coastal communities are enormous."

– Dr. Robert Rangeley, Director of Science, Oceana Canada

1,600%

ON THE EASTERN GEORGES BANK, CONSERVATION MEASURES INCREASED ADULT HADDOCK BIOMASS MORE THAN 1,600% BETWEEN 1993 AND 2009.¹¹



THE NUMBER OF ATLANTIC SCALLOPS INSIDE THE CLOSED AREAS ON GEORGES BANK IS NOW FOUR TIMES THE NUMBER IN FULLY FISHED AREAS.¹²

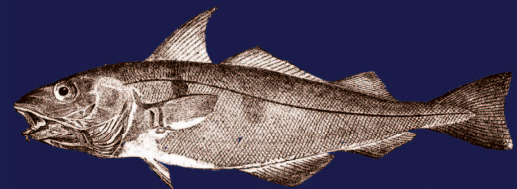
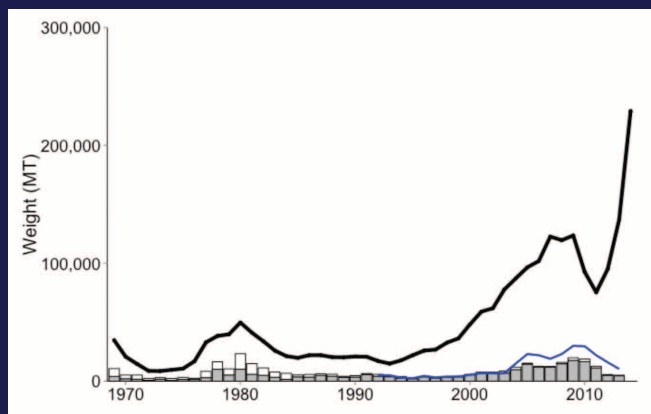
¹¹ DFO. 2015. Haddock. Retrieved from <http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/haddock-aiglefin-eng.htm>.

¹² Protect Planet Ocean. 2010. Gulf of Maine, New England, USA. Retrieved from <http://www.protectplanetocan.org/collections/successandlessons/casestudy/gulfofmain/caseStudy.html>.

COMMERCIAL FISHING FOR HADDOCK ON GEORGES BANK BEGAN IN THE 1920S AND HIT ITS PEAK IN THE 1960S. BY THE 1980S, UNSUSTAINABLE HARVEST RATES HAD TAKEN THEIR TOLL AND THE ADULT BIOMASS DECLINED ALMOST 80 PER CENT. BY 1993, THE ADULT BIOMASS HIT A HISTORIC LOW OF JUST FIVE PER CENT OF THE LEVEL REQUIRED TO SUSTAIN COMMERCIAL FISHING.

In response, Canada and the United States imposed groundfish closures and restricted the number of days that fishing boats could spend at sea. They increased the minimum trawl mesh size to prevent juveniles from getting caught. In addition, Canada introduced dockside monitoring programs to independently verify fishery catches.

Those conservation measures worked. The haddock stock grew rapidly. In 2014, the biomass hit a high of 160,300 metric tonnes and is projected to reach nearly triple that in 2016.



Total landings for 5Zjm haddock for Canada (grey bars) and the U.S.A. (white bars), total stock biomass (black line) and Total Allowable Catch (blue line).¹³

¹³ TRAC. 2014. Eastern Georges Bank Haddock [5Zjm; 51,552,561,562] Status Report 2014/02.



CONCLUSIONS AND RECOMMENDATIONS

CANADA HAS A CHOICE. WE CAN STICK WITH OUR CURRENT COURSE AND SETTLE FOR LOWER CATCHES FROM DEPLETED FISHERIES, WITH HIGH RISKS OF FUTURE COLLAPSES. OR WE CAN PUT MEASURES IN PLACE TO INCREASE ABUNDANCE AND REAP THE BENEFITS.

Although Canada's seafood industry is more profitable than ever, its success is based on the viability of just a handful of species. Less than a quarter of our fish stocks are considered healthy. Not only does that put Canada far behind other developed fishing nations, it also puts our coastal economies and the health of our oceans at risk.

But that's not our only option. The good news is that recovery *is* possible. With the right measures in place, and with the political will to implement them, Canada can rebuild the diversity and abundance of our oceans and enjoy all the economic and ecological benefits that go with them.

Recent action by the new federal government is encouraging. In 2016, the Canadian government made some positive moves. The Mandate Letters from Prime Minister Trudeau to his ministers included a renewed commitment to science-based decision-making. The 2016 federal budget committed unprecedented funds to oceans science, conservation, marine protected areas and open data initiatives. And in May 2016, DFO announced the hiring of 135 marine scientists and science support staff.

To build on that promising start, the federal government needs to implement the following recommendations:

▶ IMPROVE CANADA'S LEGAL AND POLICY FRAMEWORK

- Modernize the *Fisheries Act* – among other things, to include a legal obligation to prevent overfishing and to rebuild fish stocks to scientifically based targets within clearly defined timelines.
- Apply an ecosystem-based management approach to address climate change and to take species' life histories and food chains into account.
- Make sure marine protected areas and other spatial protection measures incorporate the recovery of depleted species.
- Develop a work plan for meeting the UN target for managing and harvesting marine stocks sustainably by 2020.



▶ IMPROVE TRANSPARENCY

- Improve and enhance the public availability of data.
- Ensure transparency in management processes and decisions.
- Promote a culture of transparency — by, among other things, reinstating a vigorous peer-review process for stock assessments and fisheries advice.

▶ LIMIT OVERFISHING AND THE IMPACTS OF FISHING

- Set and enforce science-based catch limits as soon as overfishing is detected.
- Identify and protect essential fish habitat.
- Eliminate unregulated fisheries by putting quotas in place for all commercial and recreational fisheries and ensuring they all have up-to-date integrated fishery management plans.
- Provide incentives for using lower-impact gear.
- Create a consistent national approach to identifying areas where bottom trawling can and cannot occur.

- Incorporate vulnerability to climate change into fisheries recovery plans and rebuilding initiatives.

▶ PUT A PRIORITY ON THREE TAXONOMIC GROUPS

- Groundfish (e.g., cod) and skates
- Forage fish (e.g., herring and mackerel)
- Apex predators (e.g., sharks, tuna and swordfish)

By following these recommendations, the government can put Canada on the path to healthier oceans, thriving fish stocks, a more stable and sustainable global food supply and more prosperous coastal communities.

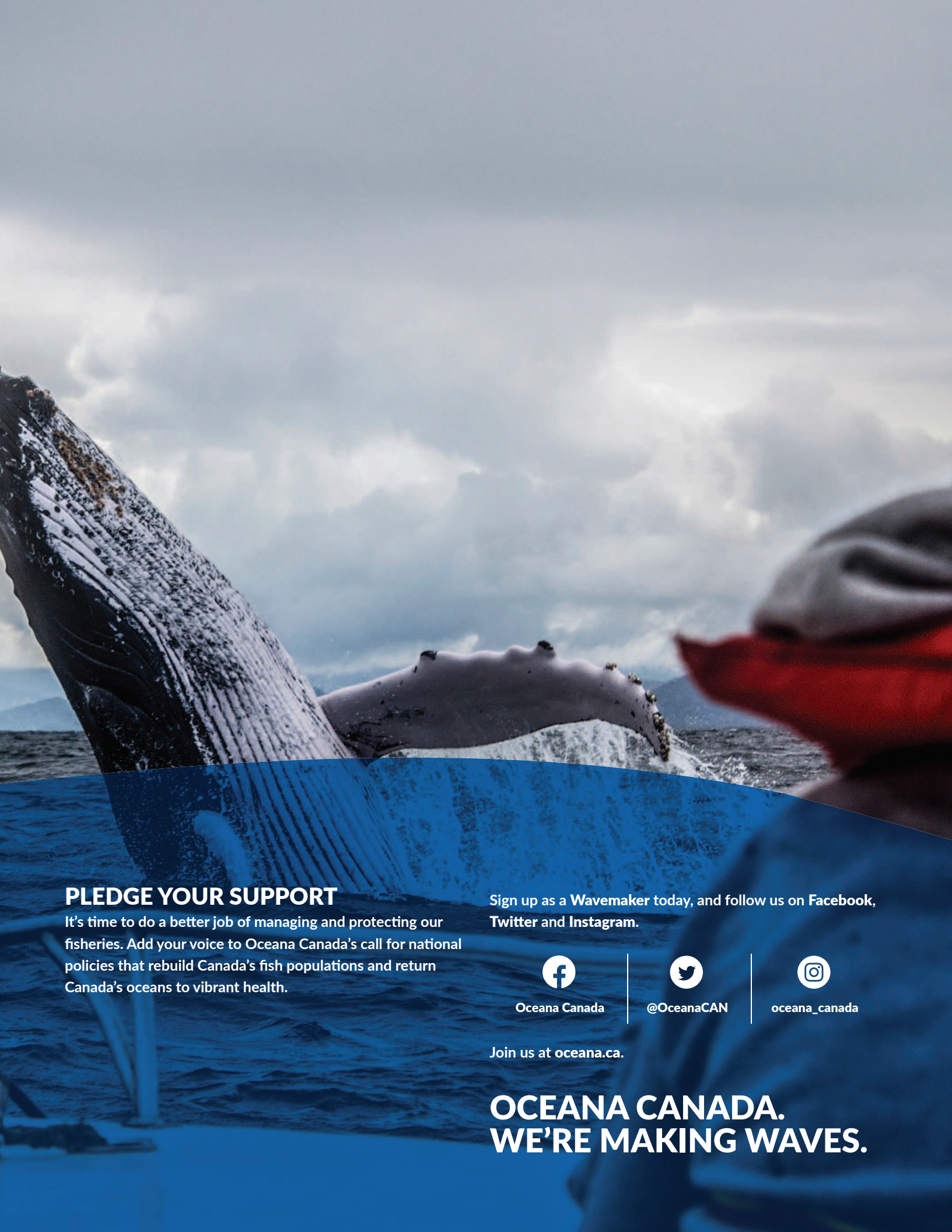


OCEANA CANADA: SAVING THE OCEANS TO FEED THE WORLD

Oceana Canada was established in 2015 as an independent charity and is part of the largest international group focused solely on ocean conservation.

Canada has the longest coastline in the world, with an ocean surface area of 7.1 million square kilometres, or 70 per cent of its land mass. Oceana Canada believes that we have an obligation to our country, and the world, to manage our natural resources responsibly and provide a sustainable source of protein for a growing world.

Oceana Canada works with civil society, academics, fishers and government to return Canada's formerly vibrant oceans to health and abundance. By restoring Canada's oceans, we can strengthen our communities, reap greater economic and nutritional benefits, and protect our future.



PLEDGE YOUR SUPPORT

It's time to do a better job of managing and protecting our fisheries. Add your voice to Oceana Canada's call for national policies that rebuild Canada's fish populations and return Canada's oceans to vibrant health.

Sign up as a Wavemaker today, and follow us on Facebook, Twitter and Instagram.



Oceana Canada



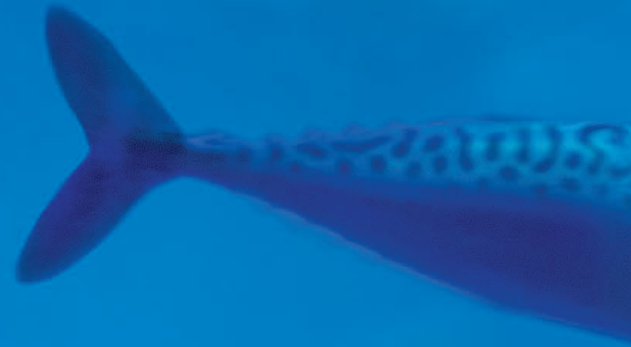
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