

Rising Tide



SATELLITE PHOTOS REVEAL BOTTOM TRAWLING DEVASTATION

When Duke University researcher Kyle Van Houtan discovered a satellite photo of the mouth of the Yangtze River, he wasn't sure what he was looking at. Although the action was taking place on water, it looked more like an intensive farming operation on the prairies. Dr. Daniel Pauly of the UBC Fisheries Science Centre informed Van Houtan that it was in fact the Chinese shrimp trawl fleet hard at work. The uniform trails stretching out behind the trawlers are plumes of mud churned up as the nets drag the seafloor.

Bottom trawling is a method of fishing often compared to clear cutting because weighted nets are dragged along the seabed, scraping it bare as they scoop up everything in their path. Every year, high seas bottom trawlers lay waste to a combined area of seabed the size of the U.S. Any unintended species of fish brought to the surface are called "bycatch" and are thrown overboard, dead or dying.

British Columbia has approximately 70 active groundfish bottom trawlers operating along the continental shelf at depths of up to 1,500 metres. They fish for numerous commercial species such as rockfish, lingcod, arrowtooth flounder (turbot), sole, sablefish, Pacific cod, skate and pollock. Hundreds of non-commercial species are also brought on board as bycatch and are thrown back.

Between 1996 and 2002, the B.C. bottom trawl fleet discarded 68 million kilos of by-catch, the amount it would take to fill a convoy of pickup trucks, lined up bumper to bumper, between

Vancouver and Prince George. Bycatch includes fish, invertebrates such as deep water corals and sponges, some mammals, and the occasional bird. The most recent data available to Living Oceans is from 2002, when 2.4 million kilograms of turbot were discarded by the B.C. trawl fleet.

The photo of Chinese trawlers shows over 50 boats fishing one area simultaneously. While B.C.'s fleet is by no means as industrial as China's, these photos graphically illustrate the destructive nature of bottom trawling, and serve as a reminder that this activity, which largely happens out of sight, should no longer be out of mind. It is time for the Canadian government to acknowledge the destructive nature of bottom trawling, and take greater measures to protect deep sea habitat and all species indiscriminately wasted in this fishery.

Living Oceans Society is working to convince the Canadian Government to:

- *immediately close 12 areas on the B.C. coast to bottom trawling that have the highest occurrences of coral and sponge bycatch*
- *freeze the footprint on bottom trawling*
- *establish a network of Marine Protected Areas in perpetuity*

Letter from the Executive Director



Being green has never been so popular. The last time Canadians felt the environment was a high priority was back in the 1980s when holes in the ozone made many people nervous. By 1992 there was sufficient concern about the planet's health for the United Nations to convene the Earth Summit in Rio de Janeiro where governments and NGOs from around the world designed a strategy to stop the degradation of the world's environment. Unfortunately, the strategy was not fully implemented and the environment is, in most cases, in worst condition today. So what went wrong?

The Earth Summit came about when public opinion led nations to develop progressive action to protect the ocean, land and air. Canadians saw that government was responding to their concern about the environment and other issues captured the nation's attention. Our leaders' resolve wavered.

Today climate change has caught Canadians' attention and the environment is again our primary concern. According to recent polls by McAllister Opinion Research, Angus Reid Strategies and the Strategic Counsel, the environment is of greater concern to Canadians than the economy and healthcare. The Canadian and B.C. governments have responded with green budgets and green energy plans. These are promising first steps—and Prime Minister Harper and Premier Campbell ought to be congratulated for taking them—but they are small ones and Canadians should be concerned that we are falling behind as other countries take our place at the leadership table.

Both the Canadian and B.C. government have a poor record on ocean policy. The Prime Minister recently chose not to fund the second phase of Canada's Oceans Action Plan (OAP). Full implementation of the OAP could have made Canada a world leader in ocean conservation. It would also have let coastal

people build a new vision for the ocean based on principles of sustainability and adaptive management.

In B.C., Premier Campbell continues to push for an end to the moratorium on offshore oil and gas development despite his new found commitment to clean energy. Meanwhile, his government continues to approve new fish farms despite the ever growing body of literature showing they cause the spread of sea lice which kill juvenile wild salmon.

We cannot make the same mistake we made in 1992 when we turned our attention away from the environment, lulled by governments' green speeches. Sustained, vocal public concern is the only thing that will reverse outdated, destructive policies. Governments will only give our spectacular coastal environments the respect they deserve if we continue telling them that a healthy Canada includes healthy oceans.

Now, more than ever, we must insist that our leaders honour their words if we are to reap any benefit from the green image that they are trying so hard to cultivate.

Jennifer Lash
EXECUTIVE DIRECTOR

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Healthy Oceans. Healthy Communities.

Mandate

Living Oceans Society is a non-profit research and public education organization committed to conserving marine biological diversity to ensure a healthy ocean and healthy coastal communities.

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Healthy Oceans.
Healthy Communities.

Go to www.livingoceans.org and click **Take Action** to add your voice to the chorus of concern about the health of the ocean.

Predator nets take heavy toll on marine mammals

Open net cage salmon farms continue to take a lethal toll on marine mammals. At a Creative Salmon Company farm in Clayoquot Sound 110 sea lions have drowned so far this year in predator nets, 51 in April alone. Similar incidents may be occurring wherever open net cages exist. For example, within a two week period this spring a Pacific white-sided dolphin, a harbour porpoise and a Steller sea lion were entangled and drowned in the predator nets at Mainstream Canada's Wehllis Bay farm in the Broughton Archipelago.

The Wehllis Bay farm was stocked with salmon smolts in mid March. Mainstream removed the smolts from the site near the end of March but left the empty net pens and the predator nets in place, apparently unattended.

On March 22, divers contracted by Mainstream to work on the predator nets confirmed finding a dead Pacific white-sided dolphin, and on March 25 reported a drowned harbour porpoise. Harbour porpoises and Steller sea lions are listed as species of special concern by COSEWIC and are protected under Canada's Species at Risk Act.

A drowned Stellar sea lion tangled in the predator net was recorded by filmmaker Twyla Roscovich on underwater video on April 2. The sea lion was not mentioned in the dive reports. When questioned by Living Oceans about the dead sea lion, Mainstream's Environmental Manager, Randy Mercer replied on April 13 that they had "investigated this allegation and it turned out to be a rumour (sic). So there was no sea lion."

Mainstream's response demonstrates that B.C.'s aquaculture reporting requirements are inadequate. Fish farms are only required to report mammals they shoot, not those that become entangled and drown in their predator nets. The lack of effective monitoring and reporting—and the unreliability of any information that is provided—mean that neither the federal nor provincial government has comprehensive data on the scope of mammal drownings on B.C. salmon farms coast-wide. If the Wehllis Bay incidents are any indication, the scale could be of significant concern.

Living Oceans Society is concerned that the problem of marine mammal deaths in the region could increase if Mainstream Canada's application for another new salmon farm at Providence Point across Wells Passage from Wehllis Bay is approved.

Mainstream's new application is a carbon copy of their open net cage farm at Wehllis Bay and will present all the same problems of predator entanglement, waste accumulation from uneaten fish feed and fish feces, and the negative interactions between farmed and wild salmon such as the sea lice infestations of juvenile wild fish. Living Oceans is working to convince the B.C. salmon farming industry and both levels of government to make the transition from open net-cage to closed containment, a system that would eliminate the problem of predator/farm interactions.

Independent filmmaker Twyla Roscovich is accompanying biologist Alexandra Morton this spring, filming her research in the field on the impacts of industrial fish farms on the Broughton Archipelago. Stay informed and in touch with Alex as the season unfolds by watching the weekly video web casts on www.livingoceans.org.



Photo Twyla Roscovich

TAKE ACTION

to protect marine mammals at FarmedAndDangerous.org

New information regarding mass marine mammal deaths at open net-cage salmon farms in British Columbia is causing public outrage and concern.

Voluntary reports and video footage shed light on the magnitude of marine mammal deaths caused by entanglements in salmon farm predator nets. The deaths outlined below are from just a small fraction of the over 85 active salmon farms in British Columbia.

Death Toll

April, 12 2007: 51 California sea lions were found dead at one of Creative Salmon's open net-cage cage fish pens in Clayoquot Sound.

April 2007: Within a two week period a harbour porpoise and a Steller sea lion (both listed as species of special concern under Canada's Species at Risk Act) and a Pacific white-sided dolphin were drowned in the predator nets at Mainstream's Wehllis Bay farm in the Broughton Archipelago.

2006 and 2007: A total of 110 sea lions have drowned in Creative Salmon's nets in Clayoquot Sound so far this year. The company claimed that 46 sea lions died in their nets in 2006.

1989-2000: According to the Department of Fisheries and Oceans B.C. salmon farmers reported killing 6,243 seals and California and Steller sea lions.

Salmon farm companies are only required to report mammals they shoot, not those that become entangled and drown in their predator nets.

You can help prevent these unnecessary deaths.

Go to www.farmedanddangerous.org to send a fax to B.C. Premier Gordon Campbell and Loyola Hearn, the Minister of Fisheries and Oceans to let them know that you want them to mandate an industry-wide transition to closed containment technology.

FarmedAndDangerous.org

Coastal Seismic Blasting Axed



Proposed seismic blasting area

A campaign by Living Oceans Society and partner environmental organizations has helped to quash the Batholiths Project, a study that would have threatened whales, other marine mammals and fish in North and Central Coast waters. In March, Canada's National Science and Engineering Research Council (NSERC) withdrew their funding for the three week-long project that proposed firing 36 high-pressure air guns into coastal waters every 20-60 seconds, 24 hours a day. The sound waves from these guns are strong enough to penetrate 50 km into the earth after traveling through the water, and are loud enough to disrupt, injure or possibly lead to the death of fish and marine mammals.

NSERC based their decision on the high level of public concern, scientific opinion and the degree of uncertainty about the safety of seismic blasting to marine creatures. Much of the blasting would have occurred in narrow coastal inlets which increases the potential for harm because whales and other animals trying to avoid the noise may have had difficulty escaping.

Humpback whales feed along the North and Central Coast in the fall, when the tests were to take place, before migrating to Hawaii where they give birth. Living Oceans Society and partner groups, the David Suzuki Foundation, Georgia Strait Alliance, Sierra Legal, Raincoast Conservation Society and the North Coast Cetacean Society were concerned that the seismic testing would disrupt the humpbacks' feeding and could reduce their ability to have healthy offspring.

The Batholiths Project is the brainchild of U.S. and Canadian researchers who aim to learn more about the formation of the Coast Mountains. The researchers hired a consulting company that prepared a draft Environmental Assessment report stating that there would be no significant environmental impact from the seismic guns. With the help of West Coast Environmental Law, Living Oceans Society contracted an independent scientific review of the assessment by internationally

recognized seismic testing experts Dr. Robert McCauley and Dr. Chandra Salgado Kent, who found that this conclusion was not supported by science.

Marine mammals living in the underwater darkness rely on sound to navigate, communicate, find and capture their prey and avoid predators. Drs. McCauley and Salgado Kent noted that scientists are just beginning to understand how increased noise affects mammals' ability to carry out these functions, but that we do know their responses to intense sounds include: habitat avoidance and/or abandonment, changes in vocal behaviour, longer dive times, shorter surface intervals with increased blow rates, masking of communication signals, aggression, pup/calf abandonment, annoyance, hearing loss (temporary and/or permanent) and tissue rupture.

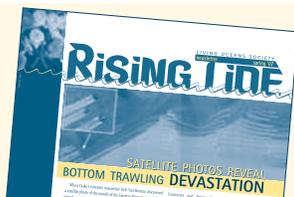
The inlets of the North Coast are nursery grounds for many juvenile fish species including rockfish, lingcod and sablefish. Salmon, particularly coho, chum, pink salmon and late run sockeye, will be migrating through the study area at the time of the proposed tests. McCauley and Salgado Kent found that high pressure sound can generate bubbles in the blood and fat tissue of fish, causing a fatal embolism to occur. Other negative effects may include destruction of eggs and larvae, and damage to fish with swim bladders, such as rockfish.

Ron Clowes, University of B.C. professor and one of the Batholiths principle researchers, argued that they planned to move whales out of the way of the blasting. That, however, would have required a permit from Fisheries and Oceans Canada (DFO) allowing the Batholiths researchers to harass humpback and fin whales and orcas, all listed as threatened under Canada's Species at Risk Act. DFO has indicated that they are unlikely to issue the permits anytime soon, if ever.

This significant victory for B.C.'s marine life sends a strong message to industry and government that seismic testing is too risky in B.C.'s coastal waters.

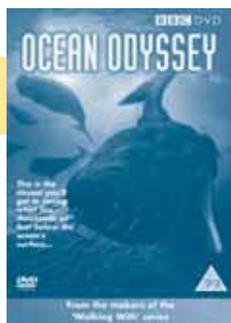
sign up!

for your own copy of *Rising Tide* and to receive the quarterly e-newsletter *Oceans Update* at www.livingoceans.org



thank you

Living Oceans Society would like to thank the following volunteers for their help and support: Eveline de Koning, Iris Field, Wendy Davis, Ivana McDougall, Shane Field, Helen Anderson and Gretchen Arthur.



Wave Reviews

Ocean Odyssey (DVD)

Hey kids, ask your parents to rent “Ocean Odyssey”. Tell them it’s an educational BBC documentary and that you’ll learn about the world’s oceans and marine biology, climate change and geology. They don’t need to know about all the cool stuff in the film like a battle to

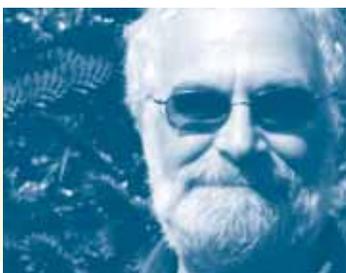
the death between a 50 metre long colossal squid and a 45 ton sperm whale (the squid even has rotating hooks on its tentacles). Amazing computer generated imagery (CGI) takes you more than two km below the surface of the ocean where you’ll see some of the most bizarre creatures you could imagine.

“Ocean Odyssey” follows the life journey of an 80 year old bull sperm whale as he traverses the world’s oceans from Atlantic to Pacific to Antarctic. The film seamlessly blends real life surface action with CGI that brings light to a world of eternal darkness—the ocean below 400 metres. We see this alien world on earth through the eyes of the world’s largest predator as he hunts through the highest mountain ranges and deepest canyons on the planet, illuminated by the most powerful sonar in the natural world.

Below the depth of two km only about five percent of the creatures are known to us. Until very recently, much of what we knew about life on the ocean’s bottom was provided by clues gleaned from the contents of sperm whales’ stomachs. Their adaptive niche, and preferred prey, is far below the surface. The whales dive to depths of two km and can stay submerged for 90 minutes to hunt for their favourite meal: giant squids.

Throughout “Ocean Odyssey” our protagonist comes into contact with man, from a crew working on a transatlantic telegraph cable in 1929 to run-ins with whalers and modern day brushes with a nuclear submarine, container ships and bottom trawlers. Beyond these immediate experiences the whale feels humans’ impact on his habitat through our voracious use of fossil fuels. There is now more CO₂ in our atmosphere than any time over the last 20 million years which is heating the oceans, altering currents and the distribution of fish stocks, resulting in starving whales too hungry to breed.

Serious stuff, to be sure. But don’t kid yourself. “Ocean Odyssey” is a deep water thrill ride that will have everyone in the family perched on the edge of their seats.



LOS Welcomes New Staff

Living Oceans Society has grown into the largest marine conservation organization in Canada with the addition of several staff. Meet three of our newest Sointulian staffers.

Will Soltau, Local Campaigner, lives in Sointula, B.C., and is actively involved in local wild salmon enhancement projects around northern Vancouver Island. Will worked as a commercial fisherman for more than 30 years all over the coast of B.C. and Southeast Alaska. While most of that time he trolled for salmon, he also fished tuna, herring, halibut, shrimp and cod.

He has been involved in local politics and many government-led processes on salmon farming and fishing, and has represented commercial trollers at various fisheries management tables.

“As a fisherman, I have always thought that it is important to give something back to the fishery resource that my livelihood depended on,” Will says. “When I retired from fishing, I was eager to join the Living Oceans team. I see this as an opportunity to help our oceans stay healthy for our children and grandchildren.”



Finn Canadensis is the assistant to Executive Director Jennifer Lash. Finn takes-on the completion or organization of tasks which support Jennifer’s leading role at Living Oceans Society. He has his Honours BFA in Visual Arts from the University of Victoria and is completing a PhD in Architecture from the University of Melbourne.

Finn has lived, studied and worked in several provinces across Canada, as well as Japan and Australia before inadvertently migrating with the grey whales to Malcolm Island in 2005. Finn is an avid sportsperson and has been a competitive rower, triathlete and coach on two continents.



Lara Renehan, Local Marine Planner, can be found at northern Vancouver Island community events, docks, and beaches listening to what people in coastal communities have to say about the issues affecting their lives, as she helps to build a sustainable vision for the place she calls home.

Lara has worked as the manager at the Whale Interpretive Centre in Telegraph Cove and coordinator of the Community Mapping Project with the University of Victoria, where she received her B.Sc. in Geography. Lara spent six months with an NGO in Uganda assessing an environmental awareness training program that facilitated the reduction of fossil fuel and pesticide use. Her hobbies include playing the piano, roasting her own coffee, and going to the beach with her daughter.

Nudibranch: Swings Both Ways

By Dorthea Hangaard

Lest you think that slugs only exist on land to slime up and eat your lettuce crop, pity the world's oceans, which have to contend with 3,000 species of these shell-less, bone-less beauties. While 'land slugs' are unpopular with gardeners, divers hold the nudibranch in very high regard for their brilliant colours and outrageous patterns, and consider the more common name, 'sea slug', a bit of an insult.

All nudibranchs are carnivores, and many are remarkably adapted to absorb the defence mechanisms of their prey for use against predators. The *Glaucus atlanticus*, for example, can eat a jellyfish's sting cells, which then make their way to the sea slug's skin. Once there, they can use the jellyfish stingers to defend themselves. Other nudibranchs can absorb the poisons of sponges without being harmed, and become more deadly than the sponge itself.

In addition to jellyfish and sponges, nudibranchs also eat hydroids, anemones, barnacles, and, in some parts of the world, corals. Little is known about who likes to eat nudibranchs, but if you would like to conduct your own research, you will find them from the low tide zone to the outer margins of the continental shelf, on corals and sponges and various seafloor substrates.

The sex life of the nudibranch is also remarkable because they are hermaphrodites—able to mate with and mutually fertilize any adult of their species that happens along. After meeting head-on, they touch tentacles for a minute, then begin the half hour process of sidling up to each other (that's the scientific term: 'sidling'). After some lunging and biting, the rest boils down to about two seconds of mating activity that, with any luck, results in fertilized eggs.

The eggs are laid out in a suitable nursery area, and the work is done. Nudibranch take no part in rearing their young.

Because of their ability to absorb the most interesting chemicals from such creatures as sponges, scientists in some parts of the world are conducting research on the nudibranch for anti-tumour, anti-viral, anti-bacterial, and anti-fungal applications, which could decrease the populations of some already-rare species, if not carefully managed. Other threats to the nudibranch include pollution (such as agricultural runoff), warming oceans, habitat loss, and coastal gardeners with a serious grudge, patrolling the beach at low tide.

About the photographer

Mo Morrogh was an avid diver on the B.C. coast for over 25 years. She completed 3,200 dives worldwide, photographing sea life and giving slide shows to share the magnificence she witnessed underwater. In 2003 she went on a dive in Papua New Guinea and never surfaced. She was 75 years old. Some of her photos are available for download at:

www.livingoceans.org/artshow/index.php

A calendar of Mo's photographs is also available from wendy@leong.com.

Hermisenda crassicomis



Photo: *Hermisenda crassicomis* from the Central Coast of B.C. by Mo Morrogh

Janie Wray and Hermann Meuter

Gil Island is nestled in the mouth of Douglas Channel on the Central Coast, where B.C. Ferries Queen of the North hit a rock and sank just over a year ago. The many orcas and humpback whales that frequent the channel drew Janie Wray and Hermann Meuter to Gil Island in 2001. That year they formed the North Coast Cetacean Society to study the area's whale populations.

"Our goal is to ensure that the whales can always depend on this habitat as a safe location for social interactions and that there will always be a food supply available for them," Janie says.

With permission of the Gitga'at Nation people of Hartley Bay, Janie and Hermann built Cetacealab, their research facility, and set up three hydrophone stations to follow the acoustic pathways of the whales.

"Transient killer whales are silent travelers, while residents are very vocal," Janie explains. "The transients are marine mammal hunters who are always looking for food so they must use silence to hear the sounds of their prey. As soon as they make a kill then they can become quite vocal. Resident orcas feed on fish, therefore they can afford to be much more vocal at any time of the day or night. For this reason each resident family of orca have evolved their own dialect."

Hermann and Janie have been listening to these whale conversations for so many years they now can determine with sound alone which family is present in the area.

The Douglas Channel area is crucial to both resident and transient killer whales, and hosts a growing population of migrating humpbacks. It is also travelled by a growing number of



Hermann Meuter and Janie Wray

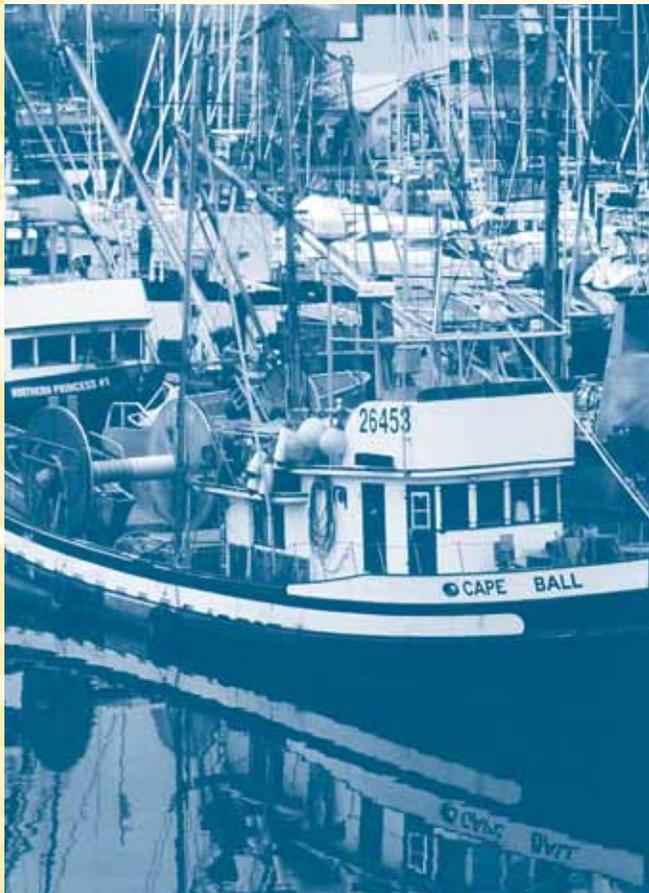
container and cruise ships bound for the Port of Kitimat or Alaska.

"There is a group of at least 15-20 humpbacks, an hours' boat ride from here that feed as a group day and night during July," Janie says. "We are terrified that one of the huge cruise ships will go through this group of whales while they're feeding. This season we want to document the whales' behaviour when the ships are passing by."

Living Oceans is working to maintain the moratorium on oil tanker traffic in the region. Oil tankers and chemical condensate shipments destined for Alberta's tar sands raise the spectre of disastrous, Exxon Valdez-type spills.

For more detailed information about the work of Cetacealab, you can visit their website: www.whaleresearch.ca

fishing impacts *Living Oceans and partners lead first Canadian study of fishing gear impacts*



Living Oceans Society's Candace Picco is coordinating the West Coast arm of a Canadian commercial fishing gear impact study entitled "How We Fish". The research project is assessing the ecological impact of gear types used in the Canadian Atlantic and Pacific. "How We Fish" will provide Canada's first comprehensive ranking of the severity of gear impacts on habitat and bycatch.

A great deal of attention is focused on whether or not the amount of commercial fish we are removing from the ocean is sustainable, but what is lost in these assessments is the impact of how we fish. The ecological impact of discards, gear interaction with threatened and endangered species, and seafloor damage are often overlooked or unknown.

Living Oceans is collaborating on "How We Fish" with the Ecology Action Centre in Halifax, the U.S.-based Marine Conservation Biology Institute (MCBI), and researchers at Newfoundland's Memorial University.

In 2003, MCBI completed a similar study on U.S. commercial fishing methods that ranked the impact of various gear types. The Canadian study will use MCBI's peer-reviewed methodology, and will consult with fishermen, scientists and government to include a broad spectrum of knowledge regarding gear impacts.

"Currently there are no published studies which compare the ecological impact amongst different gear types used in Canada," Candace says. "This study is crucial to the continued development of a sustainable Canadian fishery."

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The Oceans Fund is a special fund set up at Tides Canada Foundation to support the charitable work of Living Oceans Society. Donations of \$25 or more are eligible for a tax receipt. Please help conserve our ocean by contributing to the Oceans Fund through one of the following methods:

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