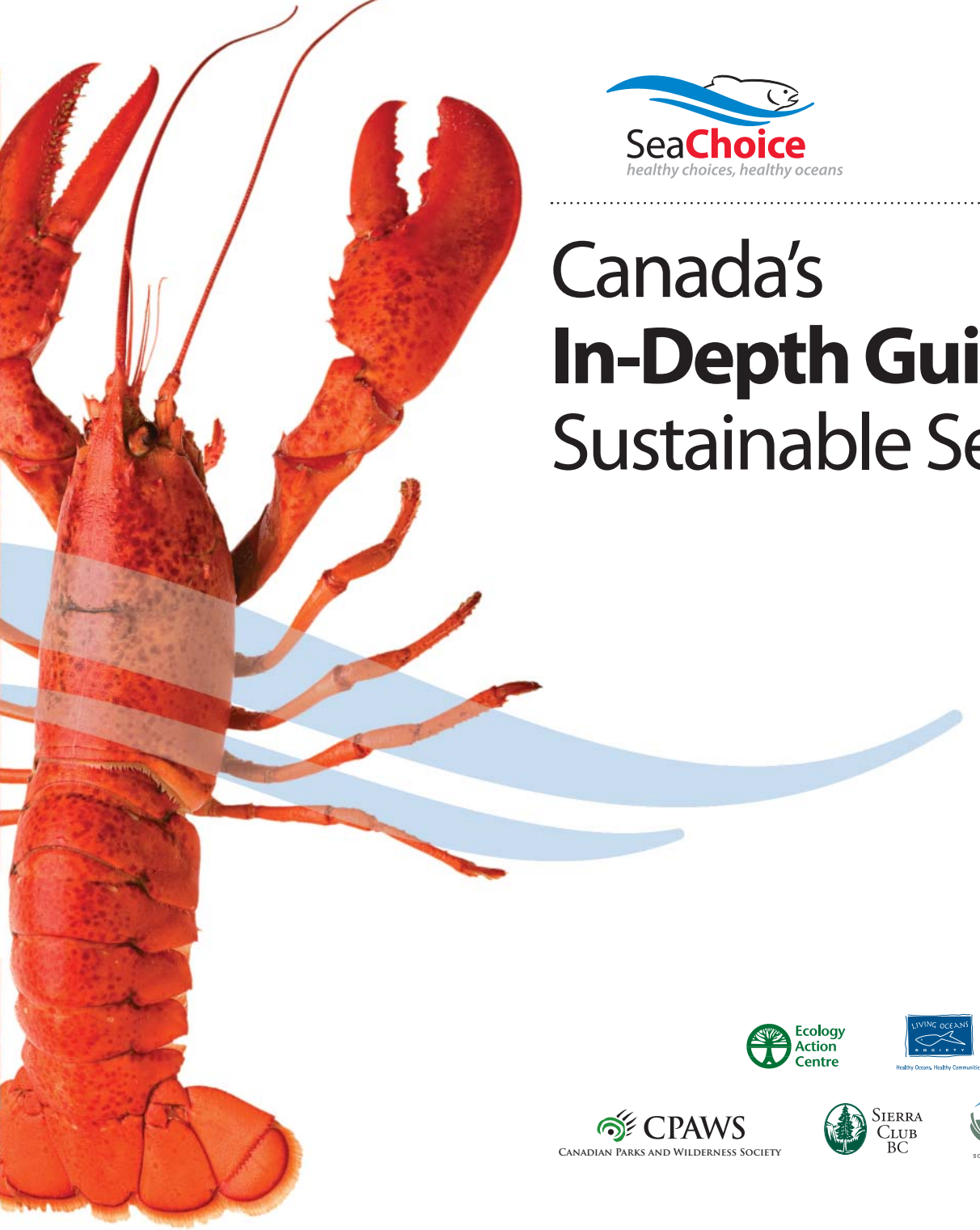


SeaChoice
healthy choices, healthy oceans

Canada's **In-Depth Guide** to Sustainable Seafood

Ecology Action Centre

Living Oceans Society
Healthy Oceans, Healthy Communities

CPAWS
Canadian Parks and Wilderness Society

Sierra Club BC

David Suzuki Foundation
Solutions are in our nature

www.SeaChoice.org

SeaChoice is a national program that helps Canadian businesses and consumers make the most ocean-friendly seafood choices to support the long-term health of marine ecosystems and coastal communities.

SeaChoice brings together broad national expertise from five Canadian conservation organizations: the Canadian Parks and Wilderness Society, David Suzuki Foundation, Ecology Action Centre, Living Oceans Society, and Sierra Club BC.

What is sustainable seafood?

Sustainable seafood is fish or shellfish caught or farmed in a manner that can be sustained over the long-term without compromising the health of marine ecosystems.

Unfortunately, the effects of unsustainable fishing and aquaculture practices are already obvious worldwide, including right here in Canada. But, it's not too late. Everyone can make a difference by learning about sustainable seafood and making more ocean-friendly choices.

Determining seafood sustainability

SeaChoice works with the Monterey Bay Aquarium to provide science-based sustainability rankings for the majority of seafood sold in Canada, both farmed and wild. As practices and products change, SeaChoice adds new listings and updates. Seafood options found on the SeaChoice "**Best Choice**", or green list, are the most sustainable based on ecological impacts (social equity and climate change are not considered at this time). Seafood on the yellow "**Some Concerns**" list should be eaten less often. Options ranked "**Avoid**" on the red list have serious conservation concerns, and should always be avoided.

Sustainability considerations for wild-caught seafood

For wild-caught seafood products, the most important sustainability factors to consider are maintaining healthy populations of the wild species being harvested, making sure harvesting techniques are not causing problems for other ecosystem components, and ensuring effective management is in place. Specifically SeaChoice looks at

1. **Inherent vulnerability of the harvested fish or seafood to fishing pressure**, including lifespan, number of offspring, and age of sexual maturity. Long living fish with low numbers of offspring are more vulnerable to fishing pressure.
2. **Abundance of the population (or stock status) of harvested fish and seafood,** making sure removal rates are not higher than the population is capable of replacing. If they are, overfishing is occurring.
3. **Nature and extent of bycatch.** Many types of fishing gear are not very selective, meaning fish, birds, sharks, turtles, and marine mammals that are not intended to be harvested can be caught and discarded. This non-target catch is referred to as bycatch. SeaChoice assesses what proportion of a catch is bycatch and looks at the conservation status of each bycatch species.
4. **Habitat impact.** Fishing gears and removal of large amounts of fish has an impact on habitat and the ecosystem as a whole. SeaChoice looks at how much damage fishing gears cause to the ocean environment and if the removal of the harvested fish or seafood is causing problems for the marine life that feed on them. Gear types, such as trap or hook and line methods, are less damaging to the ocean floor and conservative catch rates keep fish in the sea for other marine life.
5. **Effectiveness of management.** Management systems that use independent scientific assessments to monitor stock status and incorporate scientific advice into fisheries policy, as well as monitor and enforce all applicable laws, are needed to ensure the long term productivity of ocean resources. Sustainable management means long-term health takes precedence over short term economic benefit.

Common fishing methods

How seafood is caught is an extremely important factor when assessing the nature of bycatch as well as habitat and ecosystem impacts of a fishery. The following is a list of fishing gears most commonly assessed by SeaChoice, ranked by the risk they pose to the marine environment.†

High-risk gears

These gears often damage the seafloor and are highly unselective, catching anything in their path.

Bottom trawl: This is an unselective gear type dragged along the bottom, worldwide, in shallow and deep-seas. Fish, marine mammals, corals, sponges and other bottom dwelling creatures are regularly caught as bycatch, and seafloor damage is considered high relative to other gears. 5 4 13

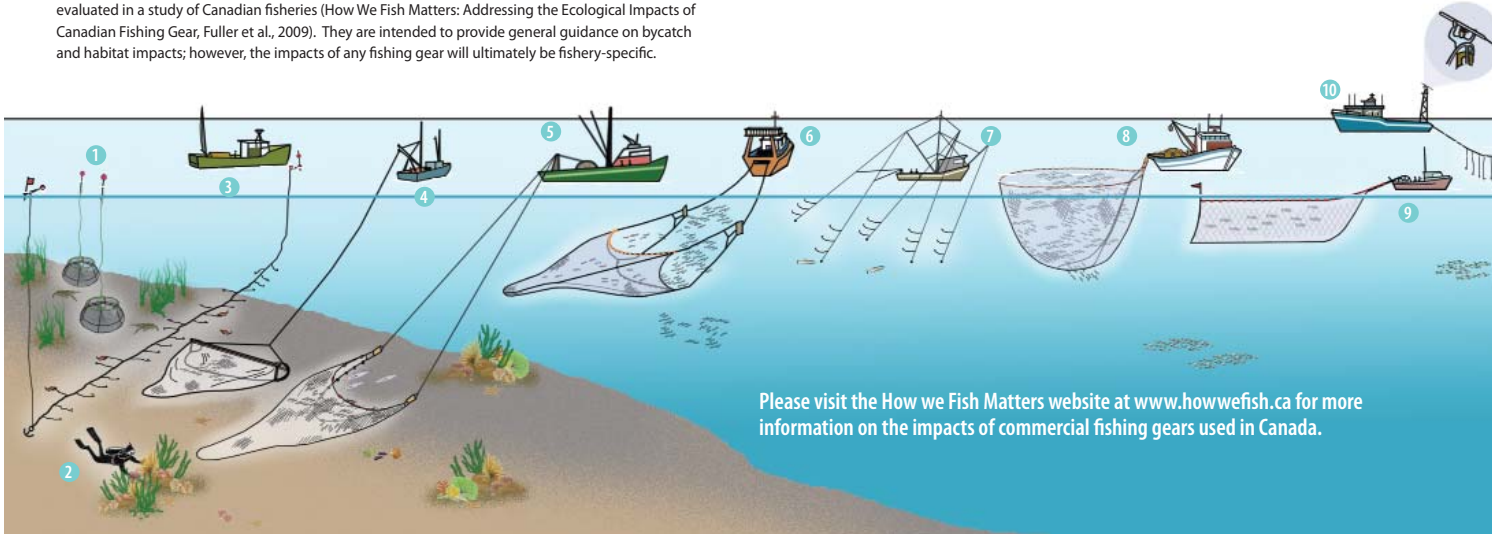
Used for: dogfish, Atlantic and Pacific cod, rockfish, lingcod, Atlantic halibut, flounder, sole, haddock, shrimp, monkfish, squid, Chilean seabass, orange roughy.

Bottom gillnet: Medium to high impact on accidentally caught groundfish, marine mammals, corals, sponges and other bottom dwelling creatures. Total area of bottom contact is smaller than for trawls and dredges. 17

Used for: Greenland halibut, Atlantic cod, monkfish, white hake, dogfish, walleye Pollock.

Dredge: Scallop dredges are dragged along the seafloor and pick up everything in their path. Hydraulic dredges inject high-pressure water into the seafloor

†The relative risks of fishing gears presented in this document are based on ecological impacts evaluated in a study of Canadian fisheries (How We Fish Matters: Addressing the Ecological Impacts of Canadian Fishing Gear, Fuller et al., 2009). They are intended to provide general guidance on bycatch and habitat impacts; however, the impacts of any fishing gear will ultimately be fishery-specific.



to liquefy the bottom and expose buried clams. Both dredges have a high impact on the seafloor and can accidentally catch bottom-dwelling marine life because of their unselective nature. 15 14

Used for: clams, scallops, cockles, sea cucumbers, mussels.

Medium-risk gears

these gears either have a significant impact on the seafloor, significant bycatch, or a moderate impact on both.

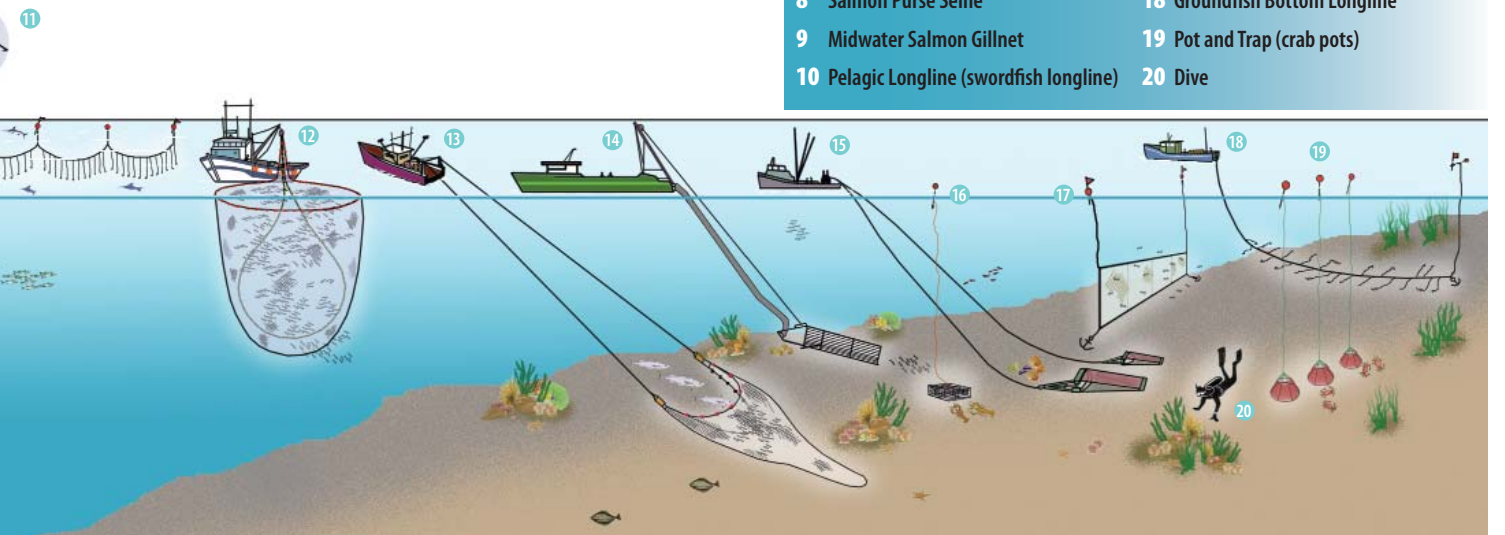
Bottom longline: Bottom longlines consist of a single mainline that can extend up to 150 km with several thousand baited hooks attached. Anchors on the longline secure the gear to the ocean floor. This gear can have medium to high bycatch rates for groundfish, sharks, and seabirds. Habitat damage depends on the speed, technique and weather when gear is hauled in. 18 3

Used for: Atlantic and Pacific cod, rockfish, lingcod, Atlantic and Pacific halibut, sablefish, flounder, sole, haddock, dogfish, skate, Chilean seabass.

Common fishing gears used in Canada

(gear and vessels not drawn to scale)

1 Prawn Trap
2 Dive
3 Groundfish Bottom Longline
4 Shrimp Beam Trawl
5 Groundfish Otter Trawl
6 Midwater Trawl
7 Hook and Line
8 Salmon Purse Seine
9 Midwater Salmon Gillnet
10 Pelagic Longline (swordfish longline)
11 Harpoon (swordfish harpoon)
12 Purse Seine (herring seine)
13 Groundfish Otter Trawl
14 Offshore Hydraulic Clam Dredge
15 Dredge (scallop dredge)
16 Pot and Trap (lobster trap)
17 Bottom Gillnet (groundfish gillnet)
18 Groundfish Bottom Longline
19 Pot and Trap (crab pots)
20 Dive



Midwater trawl: Thought to have a low incidence of bycatch, but information is lacking. When used as intended it does not come in contact with the bottom. [6]

Used for: Atlantic herring, Pacific hake, rockfish, walleye Pollock.

Pots and traps: Bycatch often consists of undersized individuals of the target species. Habitat damage varies, but traps do make contact with the seafloor causing disturbance, especially during hauling when they may be dragged. [1][19][16]

Used for: Crab, lobster, sablefish, shrimp, prawn, cod, Chilean seabass.

Pelagic longline: Bycatch is the major concern with some of the highest bycatch rates in Canada for this gear type. The most common bycatch species include endangered turtles and threatened sharks. This gear is not used on the bottom. [10]

Used for: Atlantic albacore, bluefin, bigeye and yellowfin tuna, swordfish, shark, and mahi mahi.

Low risk gears

Low-risk gears have the lowest rates of accidental catch and seafloor damage relative to the other gears presented.

Midwater gillnet: Can have a high impact on birds if no avoidance devices are used. Generally low bycatch and rarely contact the bottom. [9]

Used for: salmon, herring, sardines, mackerel.

Purse seine: Low bycatch rates and rarely contact the bottom. [12][8]

Used for: salmon, herring, capelin, mackerel.

Hook and line (handline, jig, troll): Have much fewer hooks per line than longlines. Minimal seafloor damage and low bycatch rates. [7]

Used for: salmon, albacore tuna, lingcod, Pacific cod, rockfish, skate, sole, flounder, dogfish, mackerel, mahi mahi, squid, sturgeon (caviar), octopus.

Dive: No known bycatch and minimal seafloor damage. [2][20]

Used for: Scallop, sea cucumber, sea urchin, octopus, geoduck clam.

Harpoon: No known bycatch or seafloor damage [11]

Used for: Swordfish.

Sustainability considerations for farmed seafood

Important factors for sustainable farmed seafood, or aquaculture, are using production methods that do not harm wild fish or damage ecosystems, choosing species that are low on the food chain so they add more seafood to the food supply than they use, and ensuring management and regulations are effective. The criteria SeaChoice looks at are:

1. **Marine resources used in fish feed.** Sustainable use of marine resources means we want to be adding more fish and seafood to the global food supply through aquaculture than we're using in aquaculture feeds. Farming fish like salmon and tuna uses up more wild fish in their feeds than farmed fish produced. For example, farmed tuna can use up to 20 kilograms of wild fish per kilogram produced. Shellfish and fish raised on plant-based diets are better choices.
2. **Risk of escapes.** Fish farming systems need to be able to keep their stocks under control. Net pen systems directly in oceans or lakes are vulnerable to incidents where farmed fish escape; once in the wild they can inter-breed with wild stocks or compete for food, spawning habitat, and other resources.
3. **Disease and parasite transfer to wild stocks.** Net pens and other systems that discharge untreated waste cannot prevent the transfer of diseases and parasites to wild stocks. Lethal impacts on wild fish are well documented and this is of particular concern when the health of affected wild fish is already poor.
4. **Risk of pollution and other habitat effects.** Net pens and other systems that discharge untreated waste can pollute the surrounding ecosystem, harming marine and freshwater habitats. Siting aquaculture operations away from sensitive or ecologically important habitats is also important.
5. **Effectiveness of management.** Many types of aquaculture are relatively new, especially on the current scale of production. Ensuring the regulations and management structures necessary to effectively control risks to ecosystems and wild species is essential for addressing sustainability concerns.

Aquaculture

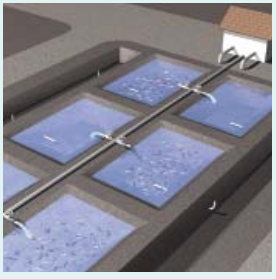
Farmed seafood can be found on the SeaChoice "Best Choice", "Some Concerns" and "Avoid" lists. Some seafood can be farmed sustainably by minimizing environmental impacts and resource use. Other farmed seafood comes at a cost to the environment. The risk of environmental damage from aquaculture is largely dependent on the farming methods used and the amount of marine resources needed for feed.

Atlantic oyster farm

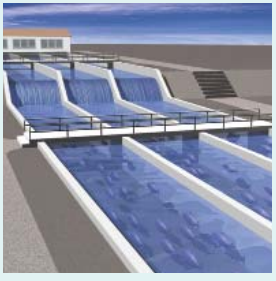
Low-risk aquaculture

***Closed-pen systems*:**

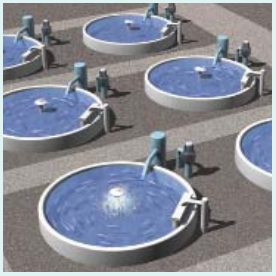
Control the exchange between farms and the natural environment. This can significantly reduce pollution, fish escapes, negative wildlife interactions, and parasite and disease transfer from farms to marine and freshwater ecosystems.



***Ponds* –**
Discharged waste must be filtered and treated to be considered a "low-risk" method. The construction of shrimp ponds in Asia and South America has destroyed mangrove forests along the coast.



***Raceways* –**
Flowing water is diverted from natural streams. To be considered a low-risk method, waste must be treated and fish escapes prevented.



Recirculation systems – Water in these systems is treated and re-circulated. This system does not mix with natural water sources so pollution, parasite transfer and fish escapes are dealt with.

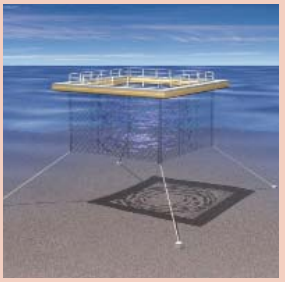
Suspended-aquaculture – Farmers grow shellfish on beaches or suspend them in water by ropes, plastic trays or mesh bags. The shellfish farmed using these methods are filter feeders and require only clean water to thrive. Oysters, mussels and clams are cultured using suspension systems.

Shellfish farming with suspended-aquaculture can be 'low risk' if the farmed species is native to the area and if the farm has sufficient flow to prevent waste accumulation.

Aquaculture drawings courtesy Monterey Bay Aquarium Foundation ©2009.

High-risk aquaculture

Open-pen systems –



Have free exchange between the farm and the surrounding environment. Open net pens allow free exchange of high concentrations of waste, chemicals, parasites and disease. They also attract predators, such as marine mammals, that can get tangled and drown in fish farm nets.

Open net cages in the Broughton Archipelago

photo: Lara Renehan/Living Oceans Society

Businesses can lead the way

By offering and labeling sustainable seafood choices, businesses are doing their part to protect our oceans. This helps shift demand away from seafood that is caught or farmed at a cost to our oceans and our future. Purchasing changes that favour sustainable seafood help ensure there will be healthy, delicious seafood for years to come—something any seafood customer can appreciate.

SeaChoice is committed to developing working partnerships with companies as they take steps to implement sustainability initiatives and shift their purchasing towards more sustainable seafood. Examples of how SeaChoice can work with your company include assessing the sustainability of your seafood products, recommending sustainable options, and assisting in the development of training or informational programs for staff and clients.

Find out more about how businesses can encourage seafood sustainability in the SeaChoice Canada's Business Guide. You can also find other valuable resources and information on the SeaChoice website. For more information, please contact:

Neil Radix
SeaChoice Corporate Relations Coordinator
corp.relations@seachoice.org

Consumer choices matter

Choosing sustainable seafood is a simple and effective action that you can take every time you eat at a restaurant or buy seafood at your local grocer. Use Canada's Seafood Guide to find out the "Best Choice" seafood options, and always ask: what fish is this, and where and how was it caught or farmed. The SeaChoice website is a great resource for learning more about sustainable seafood, and for finding out what other actions you can take as a consumer to support sustainable fisheries and healthy oceans.

Go to
www.SeaChoice.org
write to
info@seachoice.org
for more information.

Funding for this publication was provided by VanCity Credit Union and The David and Lucile Packard Foundation.