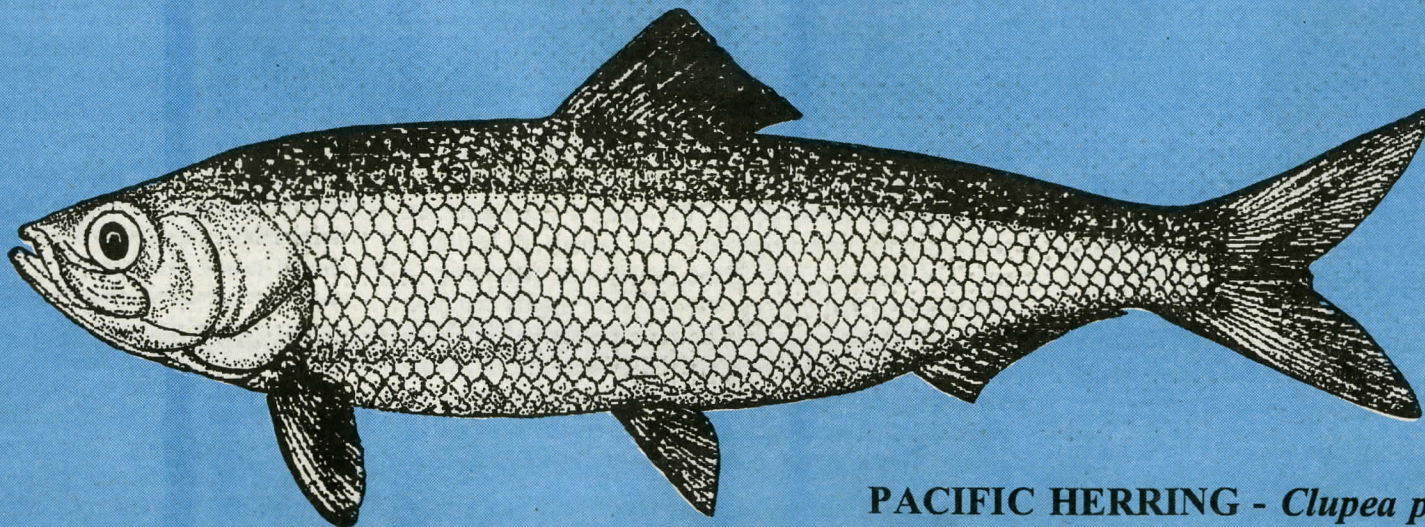


FREELY  
DISTRIBUTED

# B.C.'S HERRING

must be given the chance  
to recover from eighty years  
of industrial overfishing



PACIFIC HERRING - *Clupea pallasii*



# FOUR-YEAR COAST-WIDE MORATORIUM ON COMMERCIAL ROE AND BAIT HERRING FISHERIES

**NEEDED TO REBUILD HERRING STOCKS, THE BIOMASS "BACKBONE" OF OUR PACIFIC OCEAN ECOSYSTEM.**

**More herring and herring roe food for Coho and Chinook salmon, Pacific halibut, Pacific cod, Humpback and Grey whales, Harlequin ducks and other seabirds, will enable them to thrive!**

## HERRING - A KEYSTONE SPECIES IN THE COASTAL MARINE FOOD WEB

Pacific herring are central in B.C.'s marine food web. They are a key "prey" fish, constituting 30 to 70 percent of the summer diets of Chinook salmon, Pacific cod, lingcod, and harbour seals in southern B.C. waters. Herring eggs (roe) are an important part of the diets of migrating seabirds and gray whales. Many invertebrate species such as crabs and starfish also thrive on the roe.

Researchers are amassing conclusive evidence that many species of birds, such as the threatened Harlequin ducks, need large volumes of the highly nutritious herring roe to ensure reproductive success when they migrate into the cold interior to nest in spring.

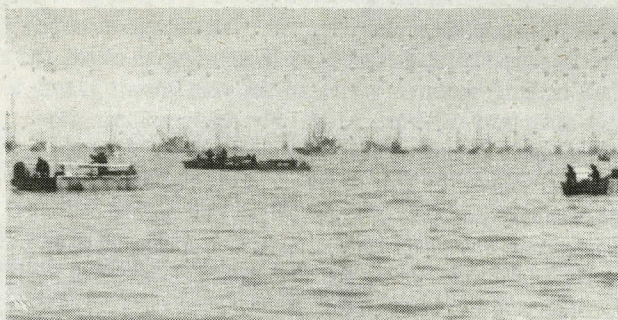
## CANADA MUST ADOPT AND IMPLEMENT A "FORAGE FISH" POLICY

In Washington State a "forage fish" policy has recently been legislated. It ensures that a portion of the herring stock is first and foremost "allocated to nature", recognizing herring as an important source of food for other fish species, birds and marine mammals. After wildlife that depends on herring gets the share it needs, commercial and recreational fisheries get their allocations.

A "forage fish" policy is not in place in Canada at this time, although many Department of Fisheries and Oceans (DFO) studies have documented the "loss" of herring roe to birds and predators.

## FIVE B.C. HERRING FISHERIES

Currently there are five herring fisheries in B.C.: the roe, winter food and bait, "live" sports bait, roe on kelp and the aboriginal herring fisheries.



**Gillnetters fishing for herring in Georgia Strait  
Photo taken in 1988 by Bob Cain**

### 1) THE ROE HERRING FISHERY

The roe herring fishery is currently the most controversial. It is a massive corporate fishery that occurs on the spawning grounds in March. Only the roe (herring eggs) are sold to the Japanese. The herring fillets are reduced into animal feed. On average only 10 percent of the fish biomass caught is used for human consumption.

Herring roe, called kazunoko, is a traditional Japanese delicacy and sells for \$120 to \$150 per kilogram in Japan. George Weston Ltd (B.C. Packers) and Jimmy Pattison (the Canadian Fishing Company) reap large profits from this fishery. However, in recent years, the income of the fishers who work aboard the large corporate-owned seiners or lease gillnet licenses with loans from the corporations, has dropped to very low levels as the fishers become increasingly financially dependent on the corporations and have no option but to sell their fish to them at whatever low price they set.

Some scientists now believe that the roe fishery's "serial overfishing" (the fleet fishing to depletion the herring in

each bay or inlet one after another--see Glossary page 3) has over time decimated most of the resident and migratory herring stocks on the B.C. coast. Although Native people, sportfishers, and local residents throughout the coast continue to complain bitterly to Fisheries Minister David Anderson about the obvious and tragic effects of overfishing herring, high quotas are still set every year, particularly in the Gwaii Haanas Park in Haida Gwaii, in Barkley Sound on the West Coast of Vancouver Island and the Strait of Georgia.

In all but one area of the Georgia Strait, herring stocks have been driven to very low levels by the roe fishery. However, remnant populations of herring remain and they could be rebuilt to their former greatness if herring fisheries were closed for four or more years.

### 2) THE WINTER FOOD AND BAIT FISHERY

The winter food and bait fishery targets adult herring feeding in Georgia Strait. It markets the fish for human and aquarium food, for frozen herring bait, and for use by some charities in fundraising sales to the public.

This fishery is controversial because scientists admit that they do not know if the fish caught represent genetically distinct "resident" spawning stocks or are a non-migrating component of the major migratory herring stocks. Thus this fishery is not being managed sustainably under the "precautionary principle" now dictated by two recent international agreements for fisheries (*Straddling Fish Stocks and Highly Migratory Fish Stocks Agreement*, and the Food and Agriculture Organization's *Code of Conduct for Responsible Fisheries*).

### 3) THE "LIVE" SPORTS BAIT FISHERY

The "live" sports bait fishery, which occurs mostly in

*continued on page 2*



# FLAWED "INDUSTRIAL" SCIENCE USED IN JUSTIFYING CURRENT MANAGEMENT OF HERRING FISHERIES

Federal Department of Fisheries and Oceans (DFO) scientists continue to base Pacific herring management decisions on the same faulty principles of "industrial biology" that led to the collapse of the east coast cod. For example, recent correspondence from the DFO contains the statement that "it is well known that herring abundance is primarily determined by environmental factors rather than fishing." This type of unfounded "scientific" assertion shifts the blame from the industrial fishery to "mother nature", and unfortunately helps provide the rationale for continued overfishing.

The DFO also chooses to define a herring "stock" in a manner that protects the corporate fishery, but which is contrary to basic conservation principles. DFO documents are remarkably open about this and state "in practise, a stock is a compromise between biological and fisheries management considerations." This continued compromise between conservation and the needs of the high volume industrial fisheries is contrary to Federal Fisheries Minister David Anderson's recent public statements and laudable actions to protect coho salmon, despite the high short-term costs to industry.

DFO scientists also bias their data to protect the corporate fishery in more subtle ways. An example of this is that, in recent years, DFO has discontinued its assessments of the small remnant herring spawns. In effect, these stocks are being "written off". By no longer maintaining an inclusive and accurate database of all stocks, DFO is shirking its management responsibilities and jeopardizing the long-term sustainability and health of the entire fishery.

This follows the example that now exists in the salmon fishery where the DFO has stopped assessing many remnant salmon populations. The "catch 22" result has been the withdrawal of DFO support to rebuild these decimated stocks because their continued decline is no longer documented. De facto, the government has



**Pit lamps (lights to attract fish) used in nighttime herring reduction fishery that almost drove the herring stocks to extinction.**

**Archival Photo courtesy of the Vancouver Maritime Museum**

Without the DFO data showing that some herring stocks are now at very low levels, the "science" that describes the remaining stocks is actually used to defend the continuation of a massive corporate roe herring fishery. This industrially-motivated pseudo-science exacerbates the conservation problems.

DFO also has now deliberately re-written history in a way that under-estimates the serious damage done to most herring stocks by the 1940 to 1968 herring "reduction" fishery (reducing herring to fishmeal for fertilizer) and ignores the stupidity of opening a massive herring roe fishery in 1971. Many herring stocks were driven to very low levels by the "reduction" fishery. Catches declined precipitously and the herring fishery was closed in 1968. Yet in 1971--only 4 years after the closure--government opened a new fishery for herring roe. The Japanese herring roe fishery was collapsing. Corporations had learned that immense profits could be made. DFO scientists then developed data to "prove" that the stocks had rebuilt enough to sustain this fishery, instead of developing conservation-based programs to ensure that all of the diverse herring stocks were fully rebuilt. This cover-up continues as stocks decline.

Today, DFO scientists continue to use only recent data that ignore the extremely high abundance and huge catches of the past. Their data therefore allow them to conclude that "herring abundance is currently near

This gross distortion of the real facts is an insult to the knowledge and wisdom of the elders of the coast, who know first-hand that we only have a fraction of the past abundance of herring. Not one Native tribe in the Strait of Georgia today can still access "herring-roe-on-branches" for food. Sportfishers report that herring schools are now rarely if ever located. Anguish, anger, and frustration are building throughout the coast, as the large corporate fishery continues.

DFO correspondence obtained through "access to information" notes that some DFO scientists of integrity are concerned about the decline of the herring stocks, particularly in the Strait of Georgia. An internal memo of August 28, 1995 includes a long list of traditional spawning areas that are no longer used. The author notes that recent spawning trends for this area have shown steady declines.

*continued from page 1*

the summer months in the Strait of Georgia, targets mostly small, immature herring for use as live bait for salmon sportfishing. This fishery has recently been criticized by environmentalists, whose concerns are verified by DFO reports that note that the fishery targets declining "resident" herring. DFO also admits that this fishery is poorly regulated. The fishermen often make sales directly to the public with no mandatory



# A BRIEF ACCOUNT OF THE SHORT LIFE CYCLE OF THE PACIFIC HERRING

A small, silver-coloured fish, Pacific herring are the most abundant fish species in Canada's Pacific coastal waters. These fish are plankton feeders and near the bottom of the food chain. Past records reveal that the once massive and numerous herring spawns were one of nature's most exciting spectacles on the B.C. coast. At one time 50,000 to 100,000 seabirds and thousands of sea and land mammals congregated to feast on the roe (eggs). Large schools of predatory fish, such as chinook salmon, dogfish, rockfish and sole, also once moved in to feast. Many kilometres of the B.C. coastline once turned milky-white every spring as a result of the male herring's release of countless billions of sperm around the roe deposited by the females on coastal seaweeds.

The great spawns formerly extended from February to April, but "serial overfishing" (see glossary page 3) in recent decades has reduced the early and late spawners to remnant levels. This has had devastating effects on chinook and coho salmon, Pacific cod, lingcod, and dozens of bird and mammals species.

Pacific herring generally begin spawning at age three. Survival and abundance of a herring "year-class" (herring born in the same year) vary considerably from year to year due to the effects of storms, which can dislodge many of the eggs from the seaweeds on which they were deposited, allowing the waves to wash them ashore where they die and rot.

The larval stage lasts from when herring eggs hatch (12 to 20 days after spawning) to the time when they can be recognized as small herring, in 6 to 10 weeks. The larvae float near the surface and are carried about by ocean currents and winds. The weather and winds are key to the successful survival and dispersal of the vulnerable larvae. Survival varies year to year 100 fold.

For example, if favourable winds do not disperse the larvae from the Hornby Island area (where the major herring spawn is now concentrated) to settle and grow on the east side of Georgia Strait, rockfish, sole and

other fish species will not have the necessary food supply in that area, and will move away or not reproduce efficiently. All of the herring spawning areas on the east side of Strait have been reduced to remnant levels by "serial overfishing".

At the juvenile stage the young herring appear in large schools near shore. But after the first summer of life the small herring become "young of the year" herring, and most disappear offshore. Most only reappear near shore at age three, their first year of spawning. Herring can return to spawn for four years or more, but this rarely occurs today and few of these larger fish are encountered anywhere on the coast due to the massive roe herring quotas set by the Federal Department of Fisheries and Oceans (DFO).

It takes three years (to the first year of spawning) for a successful year-class spawn to produce an increase in the "spawning biomass". However, in areas such as the Strait of Georgia, massive industrial overfishing in recent years has removed almost all of the large herring over three years old. In 1998 this meant that the gillnet fishers worked for days as thousands of smaller fish went through their nets, some of them over and over again, many suffering scale damage.

Formerly, large predatory fish such as lingcod and chinook salmon depended heavily on large (five and six year old) herring as an efficient, high yield source of food. But in recent years large lingcod and chinook salmon have not been able to find sufficient large herring in Georgia Strait, and today are rarely found in the Strait. This has contributed, along with overfishing, to the total collapse of the formerly large commercial and sport fisheries for chinook and lingcod in the Strait.

However, herring stocks can recover! Herring fishery closures of four years and more elsewhere in the world, such as were imposed in Norway, clearly show that the herring stocks can rebuild in a remarkably short time.

B.C. fisheries. This fishery, even at a reduced level, does great damage to endangered "resident" herring stocks and to the hundreds of fish, bird, and mammal species that need "resident" herring in the winter months when the migratory herring stocks are absent from Georgia Strait. Coho and chinook salmon and ling cod have also been decimated by the effects of this fishery.

## 4) THE ROE-ON-KELP FISHERY

The small-scale roe-on-kelp fishery induces adult fish to leave their eggs or spawn on kelp hung on strings. Some of the herring are impounded, and the roe-on-kelp from the seaweed hung both in the impoundments and on nearby floats is harvested after the fish are released. Most of it is sent to Japan where it is a special delicacy and commands a high price. This is a community-based fishery employing many Native people.

## 5) THE ABORIGINAL HERRING FISHERY

The aboriginal herring fishery harvests wild seaweeds with herring spawn attached or "herring-spawn-on-branches" --hemlock or cedar boughs placed on the herring spawning grounds. The herring eggs are dried, frozen or salted for later use as traditional food.

However, due to the decimation of most B.C. herring stocks by the roe herring fishery, few Native bands can today harvest the herring eggs they need. This has led to law suits and even confrontations on the fishing grounds, as Native people seek to protect a declining resource of particularly high cultural value to them.

## CREDITS

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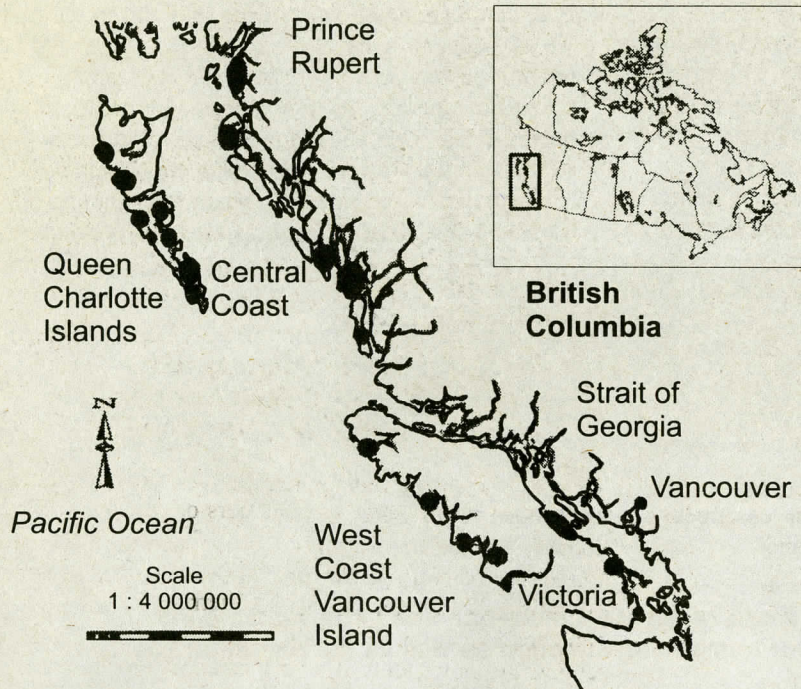
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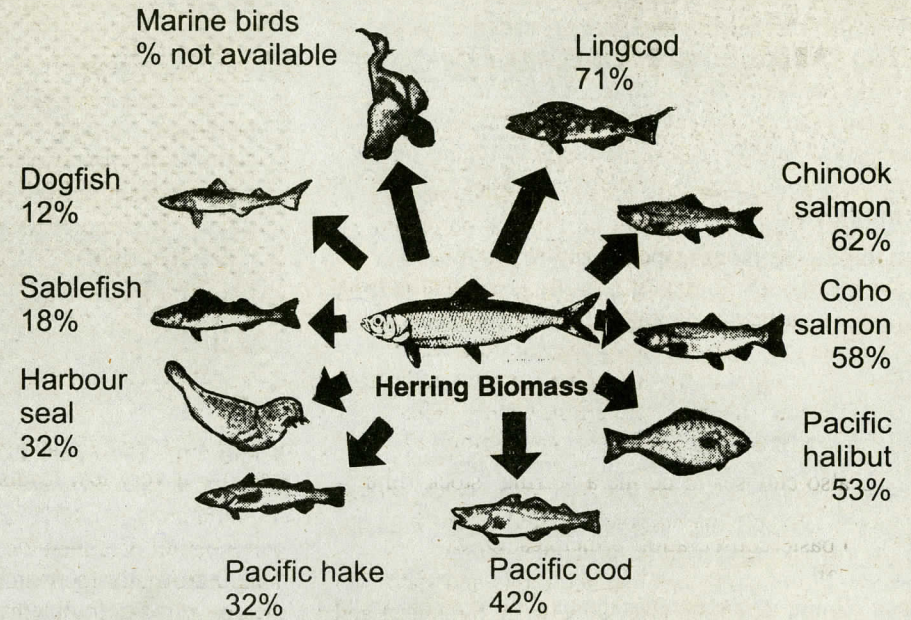


### Major spawning areas of Pacific herring stocks in British Columbia



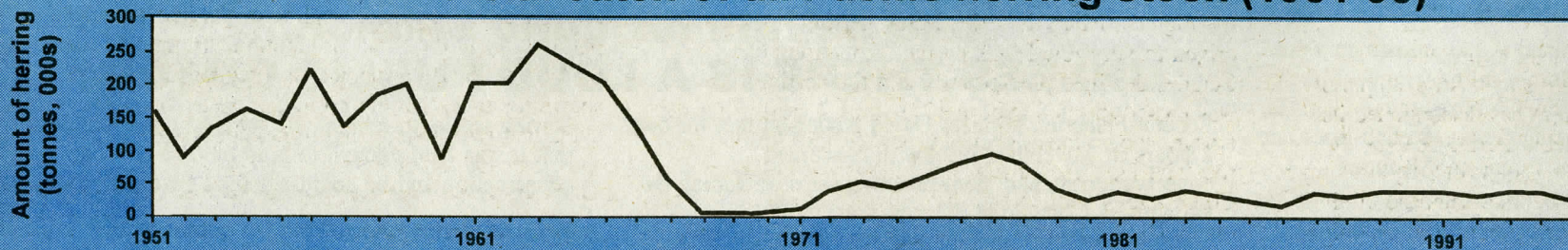
Source: Fisheries and Oceans Canada, Nanaimo, B.C.

### Importance of adult Pacific herring in predators' diets— West Coast Vancouver Island



Source: Fisheries and Oceans Canada, Nanaimo, B.C.

### Commercial catch of all Pacific herring stock (1951-95)



Based on charts and graphs in Environment Canada and Fisheries and Oceans Canada's *State of the Environment (SOE) Bulletin No. 98-2 - Winter 1998*

## GLOSSARY OF TERMS RELATED TO HERRING

**ROE HERRING FISHERY:** A controversial fishery for the Japanese market, in which only the roe (fish eggs) from the females (about 10% of the herring biomass harvested) is used for human consumption. It is by far the largest herring fishery in B.C. today. This

**THE HISTORIC "REDUCTION" FISHERY:** The era (1940-68) during which destructive overfishing of herring occurred. Night lights (pit lamps) were used to take massive volumes of herring. During this period, herring were caught and processed or "reduced" into

**SEINE FISHERY:** In this method the fish are caught or "pursed" in nets that can take up to 1000 tons at once. Roughly one-half of the B.C. roe herring catch is taken by this method. This fishery is not selective and often takes many small herring. This fishery utilizes



spawning grounds, enough herring to fill a football field to the height of over 24 feet. The total landed value of the roe herring catch reached a high in 1979 of about \$150 million, but has declined since then.

**WINTER FOOD AND BAIT FISHERY:** A small but ecologically dangerous fishery for human and aquarium fish food and frozen salmon bait that takes place in Georgia Strait. This controversial fishery targets the declining "resident" herring stocks of Georgia Strait, so important to the birds, mammals and fishes such as coho, chinook salmon and lingcod that are attempting to rear in the Strait during the entire year.

**"LIVE" SPORTS BAIT FISHERY:** A small but ecologically dangerous fishery for live salmon bait that takes place in Georgia Strait. This fishery, which also targets the declining "resident" stocks, has been and continues to be poorly regulated by the DFO.

**ROE-ON-KELP FISHERY:** A fishery in which the adult herring are not intentionally killed, but the fish are encouraged to spawn on kelp which is then harvested, dried or salted and shipped to Japan where it sells as a delicacy for a very high price. A community-based fishery with a high involvement by Native people.

of herring, up to a high of 250,000 tonnes in one year, extracting much of the biomass needed to sustain the stocks. By 1965, most of the older spawning herring had been removed by overfishing. This commercial fishery could not be sustained, collapsed completely and was closed in 1968. "Temperature change" was given as one of the reasons for the collapse. Earlier pleas by concerned scientists and fishers were ignored.

**"SERIAL OVERFISHING":** The gradual "domino" elimination of regional herring stocks by allowing massive seine and gillnet fisheries to deplete the herring stocks in a single bay or inlet and then allowing the fleet to move on to another bay or inlet the following year and deplete stocks there.

**GILLNET FISHERY:** In this method the fish are caught in shallow water close to the spawning grounds in nets that snag the fish's gills. This fishery can select for larger herring by adjusting the size of the net meshes. Roughly one-half of the B.C. roe herring catch is taken by this method. Traditionally a small operator fishery, it now is corporate-controlled due to gillnet fishers borrowing from the corporations to pay for license lease costs.

through vessels mortgages held by, a few large corporations.

**FORAGE FISH POLICY:** A policy plan recently legislated in Washington State that mandates the management of herring stocks as "forage fish" to ensure the provision of herring as food for other fish species, birds and marine mammals. Both commercial and recreational fisheries can still exist for herring, however only after enough fish are first reserved for forage.

**RESIDENT HERRING STOCKS:** Herring stocks that spawn quite close to the areas in which they live in the summer months. These stocks do not migrate to offshore waters to feed. In the Strait of Georgia and other areas, these stocks are critical for many populations of birds, mammals and fishes such as coho, chinook salmon, and lingcod.

**MIGRATORY HERRING STOCKS:** Herring stocks that do not spawn close to the areas in which they live. Migratory herring move to offshore waters to feed except during the winter and spring migration to inshore waters to spawn.

**Unselective fishing with seine boats netting hundreds of tonnes of herring in one set like this must become a thing of the past!**





# HERRING WERE ONCE PLENTIFUL ALONG THE WHOLE COAST

## A VISION FOR THE FUTURE

Experience from such countries as Norway and Peru reveal that the herring-like species, called clupeids, rebuild much more rapidly following fishing closures than do predatory fish such as cod and salmon. This is because herring are plankton feeders and they can readily and rapidly convert millions of tonnes of the ever-present and highly available plankton biomass into herring flesh.

It is thus possible to foresee a bright future for B.C.'s herring fishermen and the hundreds of species of birds, mammals, and fish that dependent on herring---if we follow a prudent management course.

It is, in fact, very possible to rebuild all of B.C.'s herring stocks through the use of fishing closures. The closures must be long enough to ensure that the new herring population is composed of many large, mature (6 and 7 year old) fish and not mainly small, immature (3 year old) fish as is now the case.

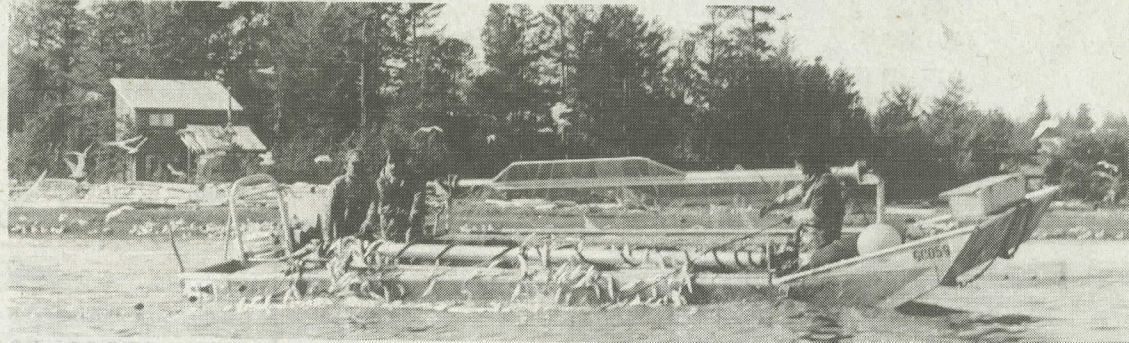
Once rebuilt, it is clear that the natural productivity of the herring stocks can, in most years, produce a surplus for human harvest. But these must be "true" surpluses, using a biological definition of herring "stocks" founded in conservation and not a compromised definition designed to ensure that the high-volume corporate fishery can continue as it is today.

Also, in these days of "minimal waste, maximum value" it is publicly unacceptable to use only 10 percent of the landed herring biomass for human consumption. This is especially important, as herring flesh is so nutritious due to a particularly high Omega 3 content. All future fisheries must utilize the flesh for human food as well as the roe. This is presently the case in the Irish roe herring fishery.

A future selective herring fishery must be by gillnets, with a total phase out of the seiners, a conservation-dictated policy change recently undertaken in the California roe herring fishery. A future selective fishery would be based on many very small quotas measured in hundreds of pounds and not thousands of metric tonnes, with a focus not on quantity but on quality.

benefits and best assure conservation objectives.

An equal winner in a future herring fishery of this kind would be the sport fishing and eco-tourism industries, that would both benefit from the greater numbers of chinook and coho salmon, lingcod, and bird and mammals. Further, the real possibility exists that humpback whales will re-colonize the Strait of Georgia if the resident herring populations were fully restored.



By using large mesh nets gillnetters can select for--catch--only the large valuable 6 to 7 year old fish which can be filleted for human consumption as well as harvested for roe.

Photo by Bob Cain

## Fisheries Minister says he will not champion herring conservation fisheries closures like he has for coho salmon... UNLESS THERE IS A LOUD PUBLIC OUTCRY

Federal Fisheries Minister David Anderson met for over 2 hours in November 1998 with concerned conservationists and environment groups, including the Wilderness Committee, Islands Trust, and representatives of communities near where the herring roe fishery took place in 1998.

At the meeting, the DFO's "industrial-biased" biologists tried to down play the herring crisis, asserting that the herring fisheries were taking only 20 percent of the available biomass, leaving plenty for spawning.

Minister Anderson appeared to be sympathetic to the conservationists' pleas, being a sports fisher who

The Strait of Georgia and all of the coastal waters of B.C. can teem again with life as they did in the past, if we as a society behave in a civilized fashion, and both restrain our commercial fishery and fully apply the scientific expertise we now possess. To get there, however, we must pause for a while to let the herring stocks rebuild. And we must apply real science and not "industrially-biased science", which was applied on Canada's east coast with such disastrous consequences.

herring stocks to rebuild. He told the conservationists that it was hard enough to hold the line on coho conservation and he could not fight two battles at once.

Without a huge outcry from the public calling for such extreme but ecologically necessary measures, it looks like Anderson is going to rubber stamp the plans of the DFO managers who are staunch advocates of the current corporate herring fisheries.

## WILDERNESS COMMITTEE PLANS EXPEDITION TO OBSERVE HERRING ROE



## GEORGIA STRAIT BY HORNBY ISLAND

It was like a crazy circus during the 1998 rush to catch the herring spawning between Hornby and Denman Islands, the last place in Georgia Strait where herring are still found spawning in great numbers. Gillnetters were making set after set, straining through tiny herring in a desperate effort to get their quota. Enough fish of catchable size just weren't there. Some boats tried to cheat, using smaller mesh than allowed.

Even many oldtimer fishers privately admitted that the fishery had gone too far. Knowing that the Federal Department of Fisheries and Oceans (DFO) is planning to allow a herring fishery this year despite the obvious crisis, the Wilderness Committee is chartering a boat to observe and document on slides and video the 1999 herring fishery. The Committee is appealing to its members and friends to support this front-line campaign tactic, estimated to cost \$5,000. All those who help out with a donation of \$100 or more will receive a copy of the video documentary of the expedition and a copy of the report the Wilderness Committee makes to the Federal Fisheries Minister.

### Write and help ensure that the federal government corrects the damage done by decades of herring overfishing

- Thank the Federal Minister of Fisheries David Anderson for putting **conservation first** and closing down fisheries to save critically-threatened, near-extinct runs of Coho salmon last year.
- Explain how important you think it is to continue to do this in 1999.
- Make your voice heard regarding him taking strong conservation measures (a four year commercial herring fishing moratorium) to help bring back the massive schools of herring--the prime food fish of Coho and Chinook (Spring) salmon--in all the inlets and channels of their traditional range.

ADDRESS: House of Commons, Ottawa, ON K1A 0A4  
TEL: 1-613-992-3474 FAX: 1-613-990-7292  
E-MAIL: anderson@dfo-mpo.ga.ca CONSTITUENCY TEL: 1-250-363-3600

### Yes! I will support your campaign to replenish B.C.'s herring stocks!

- I am contacting Federal Fisheries Minister David Anderson to let him know where I stand on imposing a four year moratorium on commercial herring fishing in B.C. to allow the herring stocks to rebuild.
- I want to help fund your campaigns to protect and enhance herring and wild salmon stocks and ban salmon fish farms. Enclosed is my tax-deductible gift of \_\_\_\_\_ \$25 \_\_\_\_\_ \$50 \_\_\_\_\_ \$100 \_\_\_\_\_ \$500 \_\_\_\_\_ other to help you succeed. WCWC's Federal Registered Charitable Tax Number is 11929 3009 RR0001

I want to  become a Member  renew my Membership. Enclosed is my \$30 annual Individual Membership fee.

I would like to be a Sustaining-Family Member. Here is \$52 (\$1 per week for wilderness preservation).

Note: call our toll free 1-800-661-9453 number to donate and become a Wilderness Committee member and save time and trees!

Name (please print) \_\_\_\_\_ Address \_\_\_\_\_  
 City \_\_\_\_\_ Province \_\_\_\_\_ Postal Code \_\_\_\_\_ Phone \_\_\_\_\_



Please clip and send to the Western Canada Wilderness Committee (WCWC), 227 Abbott Street, Vancouver, BC V6B 2K7.