

THE Blackfish Sounder

NEWSLETTER OF THE BRITISH COLUMBIA WILD KILLER WHALE ADOPTION PROGRAM

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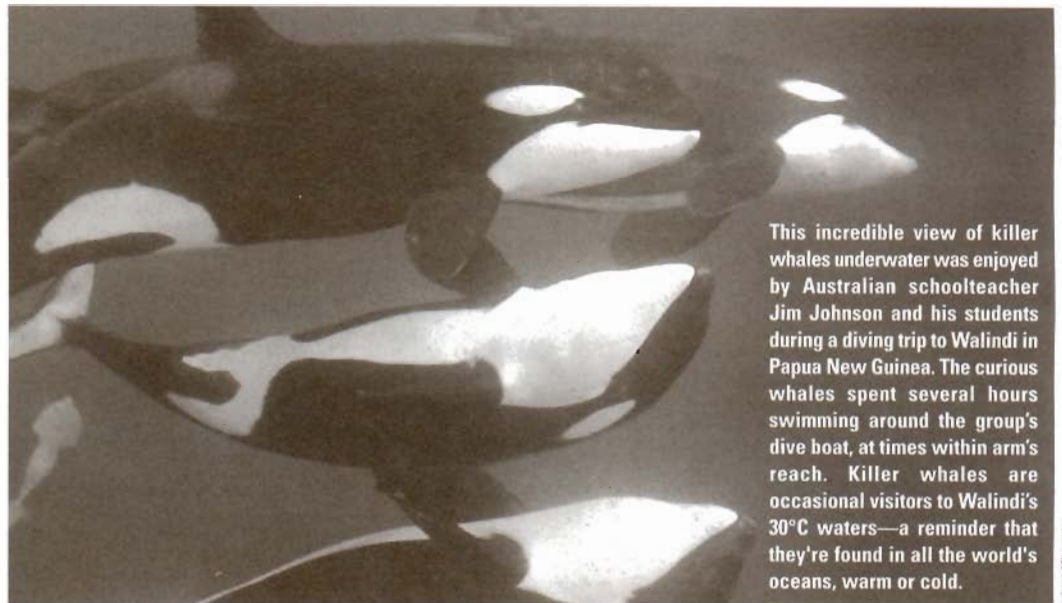
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Kid's Page

The B.C. Wild Killer Whale Adoption Program, hosted by the Vancouver Aquarium Marine Science Centre, is an ongoing research and conservation effort for the protection of wild killer whales and their habitat.



VANCOUVER AQUARIUM
MARINE SCIENCE CENTRE



This incredible view of killer whales underwater was enjoyed by Australian schoolteacher Jim Johnson and his students during a diving trip to Walindi in Papua New Guinea. The curious whales spent several hours swimming around the group's dive boat, at times within arm's reach. Killer whales are occasional visitors to Walindi's 30°C waters—a reminder that they're found in all the world's oceans, warm or cold.

ILLUSTRATION BY

PCBs: A Growing Concern

Welcome to the eighth edition of *The Blackfish Sounder* and our new look. We hope you like it.

It's been a somewhat unsettling year on the killer whale front. Many resident whales weren't seen in the expected places, and some showed up in the most unexpected places (see Field Notes and Population Update). While these surprises have forced us to rethink the range of these animals, they've also heightened our concerns about food availability. As salmon stocks decline, are the whales having to travel further afield to find the food they need?

Equally troubling was the death this spring of J18, a 22-year-old male killer whale from the southern resident community. He washed up on a Vancouver-area beach and tests revealed he died of a massive bacterial infection. His very visible death has galvanized public concern about the many stresses we're placing on these whales—especially the pollutants that may be making them more vulnerable to disease. On this page, continuing on pages 4-5, we focus on PCBs and the shocking finding that B.C.'s killer whales are the most contaminated marine mammals in the world.

Both issues add a sense of urgency to our research. We still have many questions related to the ecology of

B.C.'s killer whales. What is their year-round range and diet? Where are they picking up PCBs and other contaminants? Your continued support will help us find some answers.

Head of Marine Mammal Research
Vancouver Aquarium Marine Science Centre

B.C. killer whales carry "worrisome" toxic load

BC.'s killer whales are the most contaminated marine mammals in the world, a recently published study has confirmed.

The study, which focuses on manmade chemicals known as PCBs, finds that the whales are, in general, carrying toxin loads above levels known to cause health problems in other wildlife species.

Continued on page 4

B.C killer whales *are* what they eat



Transient male Pender (T14) surfacing with a harbour porpoise in his mouth

ARON HALL/PHOTO

“What’s interesting is that in places where there may be many thousands of sockeye salmon, the only scales we tend to find are chinook,” says Ford. He admits that the greater visibility of chinook chases and the size of their scales may skew the results, but it makes sense that whales would prefer chinooks. “They’re big fish, so the whale is more motivated than it would be for a 3-4 kilo sockeye.”

In total, 22 species of fish and one type of squid were identified in the diet of resident killer whales. The stomach of one dead stranded whale contained 13 species, including salmon, lingcod, greenling, sablefish and five types of flatfish. “There were staghorn sculpins and other spiny little fish that you’d think a killer whale wouldn’t bother with,” says Ford. “It makes us wonder how much they feed at depth where we don’t see them, and is this typical?”

On nine occasions, resident killer whales were seen harassing marine mammals. But eight of these incidents involved one family group and in each case no kill was observed. “All of our evidence suggests that residents are fish specialists,” Ford says.

Transient killer whales were never seen eating fish, nor was there any trace of fish in three beached whales believed to be transients. Of 130 documented kills involving transients, 94 per cent were mammals and six per cent were seabirds. More than half of the mammals were harbour seals, followed by harbour and Dall’s porpoises, and Steller and California sea lions.

These results confirm the “striking” difference in the diets of the two forms of killer whale, says Ford. “We can’t discount the possibility that transients take fish from time to time, and that residents eat an occasional marine mammal, but such events must be quite uncommon.”

The study was funded in part by the adoption program. TB

PODPOURRI

Maybe the in-laws didn’t get along...

DNA evidence suggests residents and transient killer whales have not interbred for thousands of years. That’s an eyeblink in evolutionary time, which probably explains why they look so similar. But it’s long enough that we’re unlikely to see the two types consorting anytime in the near future.

For years, we’ve safely assumed that B.C.’s killer whales are defined by what they eat. Now, hard science is backing that up.

A recently published study confirms that salmon tops the menu for residents, while warm-blooded prey such as harbour seals are the food of choice for transients.

B.C. resident and transient killer whales live in the same waters but don’t mix and differ markedly in seasonal distribution, social structure and behaviour. These differences were long ago attributed to diet, but until this study, no comparative analysis had been done.

“This is the first comprehensive description of the feeding habits of resident and transient killer whales over a wide portion of their range,” says the study’s lead researcher, Dr. John Ford, head of marine mammal research at the Vancouver Aquarium Marine Science Centre.

The study uses data from 354 predation events witnessed in the field over a 20-year period by the authors and other trained observers. To confirm the identity of a prey species after a kill, researchers typically swept the water with a net, looking for “leftovers” such as fish scales or bits of flesh and blubber. Additional data came from the carcasses of 12 killer whales found on B.C. beaches between 1975 and 1998.

Of the 135 confirmed kills by resident killer whales, all were fish. More than 90 per cent of these were salmon, and by far the most common were chinook—the largest of the Pacific salmon at up to 20 kilos.

Seabirds—playthings or between-seal snacks?

It’s not unusual to see transient killer whales chasing seabirds. In most cases, the whales don’t seem interested in eating the birds. Instead, they usually let the bird escape or they abandon it after it’s been injured or killed.

Seabird harassment appears to be a favourite pastime of young transients.

They’ll sometimes swim upside down or on their sides, looking for birds paddling at the surface above. Once a

victim is spotted, they’ll try to slap it with their tail flukes, jump on it, or grab it in their mouth. This play may continue for several minutes before the bird is eaten or left behind for dead.

We know of at least 10 types of seabird that have become casualties of transients, including black brant ducks, common loons, surf scoters, cormorants, western grebes and rhinoceros auklets. Frequent victims are common murrelets, which are flightless for several weeks during the summer, making them “sitting ducks” for mischievous whales.

Years ago, Bill and Donna Mackay, owners of Mackay

See Seabirds...continued on page 5



A young transient chasing a rhinoceros auklet

BRUCE PATTERSON PHOTO

Kiwi killer whales

New Zealand's well-known whale scientist, Ingrid Visser, reveals her close relationship with killer whales



She's lived and breathed killer whales for the last eight years, travelled up and down the length of her homeland to study them, and even pets one that often approaches her boat.

Meet Ingrid Visser, New Zealand's pioneer killer whale scientist. Before she began her PhD research through the University of Auckland in 1992, very little was known about killer whales (or orca, as she prefers to call them) along the country's rugged coastline. No one knew how many there were, where they travelled, how they behaved and what they ate.

Visser has changed all that—and made a few surprising discoveries along the way. “New Zealand orca are different from any other population in the world,” she says. “They hunt differently, they eat different prey. They're unique.”

Based in Whangarei on the North Island, Visser depends on boaters and fishermen to call her when a pod is spotted. “Every time the phone rings I get a rush of excitement,” she says. “I may be going out to meet new animals or see some I know really well. It's like a lottery; I never know what to expect.”

Once out on the water, Visser takes ID photos of dorsal fins, tail markings and even eye patches. So far, she's identified 117 individual whales, but estimates that as many as 200 killer whales may patrol the New Zealand coast. She believes there are three sub-populations; two that travel in the same regions but never mingle, and a third that wanders all over the place.

Visser is quick to discourage any comparisons to B.C. killer whales. “We don't have resident or transient-type whales here. Our whales don't live in big groups, they eat fish and marine mammals, they travel all over the place, and can't be found in the same area for more than three days. They're New Zealand types,” she grins.

Certainly their diet is distinctive. It includes penguins, blue sharks and—a favourite delicacy—stingrays (see sidebar). Visser suspects that the whales travel thousands of miles a year, visiting specific feeding sites at regular intervals.



Digit, a female orca, on one of her visits to Visser's boat

Our orca hunt differently, and eat different prey. They're unique.

To pursue these nomads, Visser has at times become one herself. Although New Zealand may seem small to Canadians, its narrow islands stretch more than 1,500 km from north to south. Documenting killer whale movements over such vast distances can be challenging, but ultimately rewarding. On one trip to Kaikoura on the South Island, Visser photographed a pod she'd seen two months earlier in Whangarei—600 km away. Five months later, the same whales were back in Whangarei.

Visser has come to know many individual whales by sight, giving them nicknames such as Rocky, Bent Tip and Ben. And there's Digit, a female that routinely comes over to Visser's boat to visit. “She lies next to the boat and blows bubbles and watches me,” says Visser. The whale even lets Visser touch her tongue and teeth. “She's named after [primate researcher] Dian Fossey's favourite gorilla who came over to reach out and touch Dian,” says Visser. “Digit the orca does the same thing.” TBS

Stingray frisbee

B.C. killer whales are notorious for playing with their food, whether it's a wriggling salmon or a struggling sea lion. But killer whales off the northern shores of New Zealand have invented their own bizarre food game—stingray frisbee.

Researcher Ingrid Visser couldn't figure out what was going on when she first saw a group of killer whales doing headstands in shallow water. At times, the whales would surface with mud stuck on their heads as far back as their blowholes and, every now and then, they would race off at high speed in erratic directions.

“Watching an adult male doing about 15 knots in two metres of water is pretty impressive,” says Visser, who finally realized what was happening. The whales were flushing out and chasing stingrays—some up to two metres wide—that had been hiding in the mud. When successful, a whale surfaces with the ray still alive, flapping in its mouth, and often flicks it into the air before tossing it around like a frisbee with at least one other whale.

“It's quite incredible to watch,” says Visser. “Sometimes they'll toss the ray 10 metres from one animal to another.” The ray is eventually torn apart and shared by the group.

Tossing may be a way of repositioning the ray to avoid being stung by its barbed tail as it's eaten. It might also be a method of teaching calves how to handle dangerous prey—one young whale was found dead with stingray barbs stuck in its throat, jaw and vertebrae. Whatever the reason, it seems to be a popular sport. Visser once watched two whales eat 18 rays in a six-hour binge.

“I think rays to our orca are a bit like chocolate,” says Visser. “They'll go to any extreme to get them.”



Killer whale carrying a stingray in its mouth

INGRID VISSER PHOTO

PODPOURRI

Killer whales online

The world's first killer whale radio station is now online at www.whalelink.org. You can listen to the whines, whistles and clicks of your adopted whale(s) from anywhere in the world! Since mid-August 1999, station CJKW, or ORCA FM, has been broadcasting live on the Internet the underwater sounds of Robson Bight (Michael Bigg) Ecological Reserve, in Johnstone Strait off northeastern Vancouver Island. The station can be picked up at 88.5 on the FM dial within a 10-kilometre radius of Robson Bight. The signal is also relayed to our lab at the Vancouver Aquarium Marine Science Centre.

There have been other new and exciting additions to our Web site in the past year. Have a look at the page on whale-watching, featuring information on killer whale behaviours and whale-watching guidelines. You can also find mailing and Web addresses for places such as the Department of Fisheries and Oceans and BC Parks. Also, check out the fascinating video featuring northern resident killer whales at the rubbing beaches in Johnstone Strait.

Look for new changes and additions to the Web site in the coming year.

Continued from page 1

"worrisome" toxic load

"PCBs tend to be very problematic chemicals in the food chain all over the world," says lead researcher Dr. Peter Ross, a wildlife toxicologist at the Institute of Ocean Sciences near Victoria, B.C. "But the extent to which these whales are contaminated is surprising—and very worrisome."

The study analyzed tiny blubber samples from 47 B.C. killer whales—26 northern residents, 15 transients, and six southern residents. Samples came from whales of both sexes and various age groups.

The results are both intriguing and alarming. Northern residents have the lowest levels of PCBs. On average, southern residents are four to six times more contaminated. And transients top the scale at up to eight times the levels found in northern residents—and about 250 times higher than in most humans.

PCB concentrations recorded in most of the whales sampled easily surpass levels known to cause adverse effects in harbour seals, suggesting that the majority of B.C. killer whales are "at risk for toxic effects," says Ross.

"We should all be very worried about these results," he says. "These animals are acting as sentinels for the state of our global environment. They're telling us that there's something very wrong about the quality of our food chain."

What are PCBs?

Polychlorinated biphenyls, or PCBs, are thick oils that were produced mainly for use in electrical transformers and as industrial lubricants.

Because they're oily, PCB molecules work their way up food chains seeking something fatty to bind to. First they attach to small particles in the water column or muddy sea bottoms. These particles are then eaten by zooplankton, which in turn are consumed by small fish, then larger fish, and so on, up the line to predators such as seals and killer whales.

Through this process—known as bioaccumulation—animals at the top of the food chain collect the highest concentration of PCBs in their fatty tissues. Long-lived animals such as killer whales are particularly vulnerable.

Although they were banned in the 1970s by many countries, including Canada, more than 200 kinds of PCBs are still present in our soil, streams, rivers and oceans—and will be for decades to come.

And PCBs are still used in other parts of the world, particularly in industrialized areas of Asia. From there, they find their way into the atmosphere, where they're transported thousands of kilometres across the Pacific, eventually falling as rain or snow and entering the ocean directly or by runoff from land into coastal waters.

What is the source of PCBs in killer whales?

It's all in what they eat.

For resident killer whales the obvious suspect is salmon, which makes up the bulk of their diet. Since salmon spend most of their lives feeding and growing offshore,



The body of J18 is examined on a beach near Vancouver.

the open ocean is probably the main site of contamination.

"What each fish accumulates out there may not be very high levels, but when a killer whale consumes up to 150 kg of salmon per day, it's obviously ingesting large quantities of contaminants," says Peter Ross.

The fact that southern residents are much more contaminated than northern residents points to an added source of pollutants for that group, says Ross. The most probable explanation is that they're eating small amounts of very contaminated fish near the industrialized areas of southwest B.C. and northwest Washington.

As for transients—by far the most contaminated killer whales on the B.C. coast—the source is clearly the blubber-rich marine mammals they eat. An adult male seal in the Strait of Georgia, for example, may contain about 50 ppm of PCBs. "Transients are exposed to much higher levels of pollutants than residents," says Ross, "so they're at a much greater risk for harmful effects."

How do PCBs harm killer whales?

That's a very difficult question to answer. It was asked repeatedly last fall and again this spring when two southern resident killer whales washed up dead near populated areas on the B.C. coast.

L51, a 26-year-old female with a six-month old calf, most likely died of an infection following post-birth complications (the calf later disappeared). And J18, a 22-year old male, also died of a severe bacterial infection, likely initiated by an external wound.

The PCB level in L51's tissues was 16 ppm. The results aren't in yet for J18, but he was one of the whales biopsied for Peter Ross's study. In 1996, his PCB count was 63 ppm.

While scientists can't directly blame these kinds of deaths on PCB levels, the link can't be ruled out either. "Contamination is rarely going to kill an animal outright," says Ross. "These chemicals are far more insidious and long-lasting than that."

When a whale ingests PCB-laden fat—in the form of a salmon or a seal, for example—its body burns off the fat to produce energy, but can't break down or excrete the PCBs. So the chemicals get stored in the whale's blubber. This is why PCB levels increase with age, with older males carrying the highest load.

Female PCB concentrations also climb with age, but drop off dramatically at reproductive age as they pass the deadly load on to their calves, mostly through their high-fat milk. Once a female stops bearing calves, her PCB levels start to rise again.

Studies in other species have shown that PCBs can quietly wreak havoc on a wide range of body processes. They can disrupt hormonal activities, impair reproduction, cause developmental and skeletal abnormalities, and weaken the immune system—making the animal more vulnerable to the type of infections that killed L51 and J18.

"Death is part of the natural world," says Ross, "but I think it's likely that PCBs are adversely affecting the whales' health." And

these chemicals aren't going to disappear anytime soon, he warns. "They're going to be in our killer whales for decades to come and are probably going to pose a tangible health risk in southern residents and transients for quite some time."

What can we do to help our killer whales?

We can't do anything about the PCBs already in the whales, but there are things we can do to stop further contamination—of them and us.

First of all, we need to find out exactly where the PCBs are coming from, starting with salmon. One U.S. study shows that 98 per cent of PCBs in returning coho and chinook salmon in Puget Sound (just south of Vancouver Island) came from offshore sources. Similar research on returning B.C. salmon is urgently needed.

Second, we can start cleaning up our own "back yard." More than 90 per cent of PCBs ever produced in North America still exist in storage, and the security of many of these storage facilities is questionable. These PCBs should be destroyed (by burning at high temperatures at a designated hazardous waste disposal site).

Third, we have to put pressure on other countries to ban and dispose of PCBs. The United Nations is currently negotiating a global treaty to phase out production, use and trade of the 12 most Persistent Organic Pollutants (POPs), including PCBs. The plight of our killer whales is proof that we really are part of a global village.

Finally, we have to learn from past mistakes and never again design chemicals with the same kind of characteristics as PCBs. **TBS**



Allyson Deitz/ICPWR

PODPOURRI

Food for thought.

Most Canadians carry a PCB load of about 0.7 ppm.

The field collection of killer whale blubber samples for this toxicology study was, in part, funded by the B.C. Wild Killer Whale Adoption Program.

Seabirds... from page 2

Whalewatching Ltd. in Port McNeill, watched two young whales play with a loon for 20 minutes before one of the animals apparently ate it. The pair would take turns coming up under the bird at the surface, grabbing it, dragging it down about five metres, and releasing it.

Juvenile whales playing with seabirds no doubt learn useful skills about play capture and handling that may enhance their success in hunting harbour seals, porpoises and other wily prey.

In places such as Antarctica and the Crozet Islands, killer whales are known to hunt penguins, which are larger and have more body fat—making them a far more appetizing meal!



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West coast surprise

When he's not ferrying hikers to and from the northern trailhead of Vancouver Island's West Coast Trail, Brian Gisborne loves to whalewatch. That's what the owner/operator of Juan de Fuca Express was doing last Aug. 13 when he made a startling killer whale discovery 45 miles offshore from Bamfield on the Island's west coast. He'd been photographing some humpback whales when he spotted two killer whales. Soon there were killer whales everywhere, and Gisborne, who was alone on the boat, began shooting off as much film as he could. Over the next 45 minutes he juggled helm and camera as more than 100 killer whales fed nearby, probably on salmon. "They were driving something to the surface that got the seabirds very excited," says Gisborne, who by this point was trying to decide whether they were southern residents or members of the lesser-known "offshore" community. "They kept popping their heads out. At one point I counted 20 killer whales looking at me, and I was thinking 'Boy, offshores sure are friendly!' But they weren't offshores. Gisborne later sent his film to whale researcher Graeme Ellis (Pacific Biological Station in Nanaimo) who identified them as northern residents—including most A whales, along with members of C, D, H, I and G-pods. "I only wish I'd been there, since they were many of the animals I'd spent all summer looking for," says Ellis.

Field Notes

California vacation?

Was it a freak occurrence, or a regular event that has simply never been seen before? That's what researchers are wondering after some surprise visitors showed up in Monterey Bay, California on Jan. 29 this year. Responding to a report of killer whales in the bay, researchers Nancy Black and Richard Ternullo with Monterey Bay Whale Watch raced out to the scene to find a group of about 50 whales they couldn't identify. The whales didn't behave like the transients and offshores they usually see in the area—they were breaching and spy-hopping a lot—and their saddle patches were "open" (black intruding into the white). The whales were followed most of the day as they

frolicked and then fanned out over more than two miles to feed on salmon. By dusk, they were heading northwest out of the bay. The next day, ID photos revealed that they were southern resident whales from K and L-pods—1,600 km away from their core range off southern Vancouver Island! "Everyone was amazed and couldn't believe it until they saw our ID photos posted on the Web," says Black. "Now we wonder if they will return and is it possible they may frequent our area more often in search of food?" To see the photos for yourself, go online to www.montereybaywhalewatch.com/feat0002.htm. **TBS**

Sinking supper

In past issues of this newsletter we've described how some killer whales will attack and eat large whales out at sea. But here's one question we didn't think of. . .

How do the whales stop their meal from sinking to the depths and out of reach?

It's a question that occurred to B.C. researcher Lance Barrett-Lennard while writing up a paper on his 1998 trip to the Crozet Islands in the southern Indian Ocean to study killer whales (see *The Blackfish Sounder*, 1999). During that trip he and French researcher Christophe Guinet witnessed two attacks on large prey, and a French film crew led by Bertrand Loyer caught all the underwater action.

"Freshly killed whales of most species sink," explains Barrett-Lennard. "Since killer whales are not especially deep divers, they either have to eat very fast or hold the carcass up until they've finished."

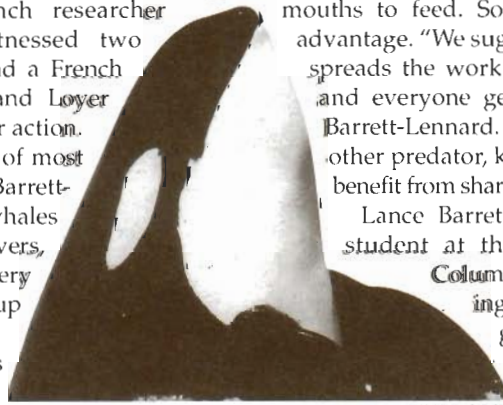
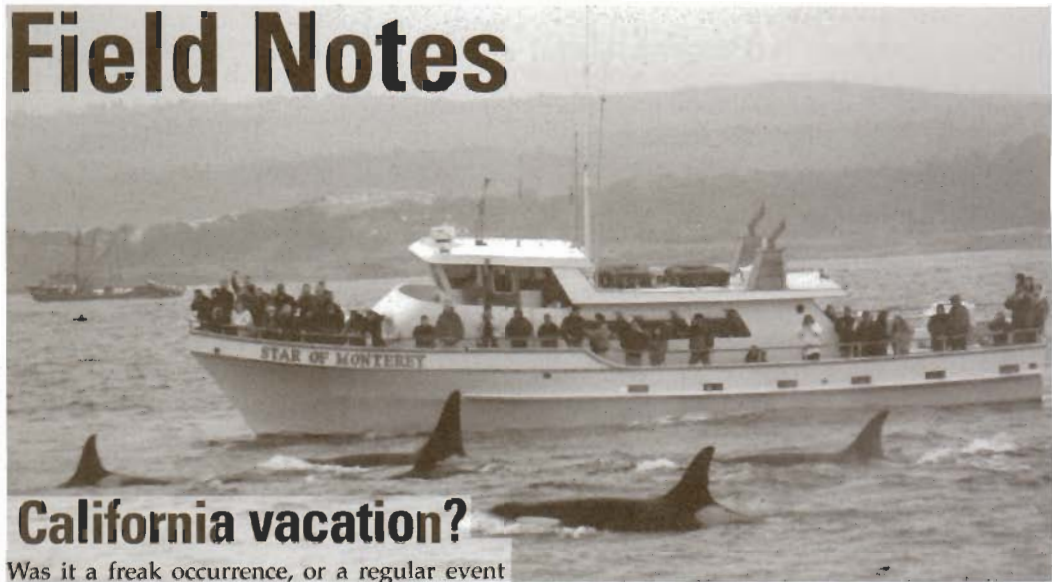
In both of the attacks they witnessed, a group

of six whales started the hunt. And both times, they were joined 10 to 15 minutes later by other groups of killer whales. The same pattern has been observed in attacks on large whales elsewhere in the world.

"The best strategy for small groups may be to attack and cripple a large whale, trapping it at the surface before signalling to other killer whale groups," says Barrett-Lennard.

Calling in reinforcements increases the chance of a successful hunt, but it also means more mouths to feed. So there must be another advantage. "We suggest that large group size spreads the work of holding the prey up, and everyone gets to feed longer," says Barrett-Lennard. "In this way, unlike every other predator, killer whales may actually benefit from sharing their prey with others."

Lance Barrett-Lennard is a graduate student at the University of British Columbia, where he's completing his thesis on killer whale genetics. His work is partly funded by the adoption program. **TBS**



DUANE CLARIDGE PHOTO

Population Update

1999 wasn't a great year for our annual killer whale census. In fact, it was probably the poorest season on record for seeing northern residents.

Although several pods were found early in the season, the typical summer concentrations in Johnstone Strait never materialized. Instead, a chance encounter in mid-August (see Field Notes) revealed many northern residents in a large group 70 km off the west coast of Vancouver Island.

The dramatic change in travel patterns was most likely related to the whales' search for salmon. Last year, salmon returns were quite low and many went down the west coast of Vancouver Island.

Based on the animals that were seen, here's the latest news on our adoption whales:

Strider (A6), eldest son of **Tsitika** (A30), went missing sometime after mid-August, and is presumed dead. Strider was a favourite of Johnstone Strait whalewatchers and easy to identify thanks to a jagged tear near the top of his dorsal fin.



Farewell Strider (A6)

Strider's young sister, 15-year-old **Clio** (A50), became a first-time mother in 1999 with the arrival of baby **A72**.



A72—First baby for Clio (A50)

Skagit (A35) in the A11 matriline has a new calf, **A70**, her third—a brother or sister for daughters **Kiltik** (A52) and **Racey** (A59)

Matriline **Kelsey** (A24) keeps on trying,

with the birth of her seventh known calf, **A71**, in 1999. Only two of Kelsey's other calves are still alive—adult daughter **Sutlej** (A45) and **Schooner** (A64), born in 1995.

A5 pod, including **Licka** (A8) and her family, and orphans **Nodales** (A51) and **Surge** (A61), were spotted in January 2000 off Nanaimo, halfway down the east coast of Vancouver Island. That's the furthest south northern residents have been seen on the east coast of the Island.

Two big losses in B-pod: **Hooker** (B1) and **Baronet** (B2) are both missing and presumed dead. Both bulls were in their late 40s, well past the average lifespan for male killer whales.

Koeye (C10) and her family weren't officially photographed in 1999, but a few members were seen in the August sighting mentioned above. Just before we went to press, the family

was spotted on B.C.'s north coast. Koeye's 1998 baby, **C23**, was present, so we can now name it. **Fin**, named after an island on the north coast, is now available for adoption.

A name is also waiting in the wings for the other 1998 baby, **D19**. A few members of its family group were also part of the August sighting. But we don't know whether the calf was there, and we still don't know who its mother might be. When the calf was first seen in a poor 1998 encounter, it was travelling with **Cascade** (D13), believed to be a male.

Adult brothers **Duncanby** (G6) and **Owikeno** (G26) are missing and presumed dead. Their mother **Kilbella** (G4) is the only whale left in her matriline. But she's not alone. Last summer she was seen several times travelling with other G-pod whales.

We still don't know whether matriarch **Harlequin** (G16) is okay. She wasn't seen with her family in 1998, and the group wasn't seen at all in 1999. Hopefully they'll turn up this year.

The dorsal fin of matriarch **Hanna's** (G29) eldest calf, 12-year-old **Whidbey** (G45), is growing, or "sprouting," clearly identifying him as a male. By the time Whidbey reaches sexual maturity at about age 15, his fin may be two metres tall.

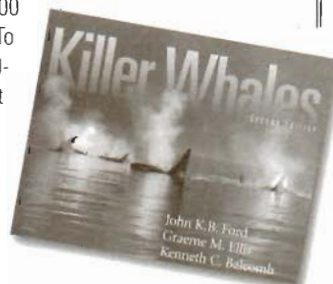
Goletas (I13) in the I11 matriline has lost her first and only calf **Whirl** (I75). The youngster, born in 1995, was not with the family in 1999 and is presumed dead.

One of the B.C. coast's most familiar transients, **Flores** (T13), is missing. Her most constant travelling companion, **Pender** (T14), who is thought to be her son, was seen alone several times in the latter half of 1999. Unlike residents, transients can show up after many years' absence, but these two whales were such faithful companions that we suspect Flores is dead. The duo was profiled in our 1999 newsletter. TBS

THE SECOND TIME AROUND

Want the latest information on B.C.'s killer whales? The second edition of the best-selling book *Killer Whales—The Natural History and Genealogy of Orcinus Orca in British Columbia and Washington State* presents the most recent information on the natural history of the resident killer whales of British Columbia and Washington. The book, by authors Dr. John Ford, Graeme Ellis, and Ken Balcomb, contains updated identification photographs of close to 300 resident killer whales. To order your copy, call 1-800-663-0562 or go online at www.clamshell.org. Price is \$22.95 CAN

Royalties from the book support ongoing killer whale field research.



THANKS

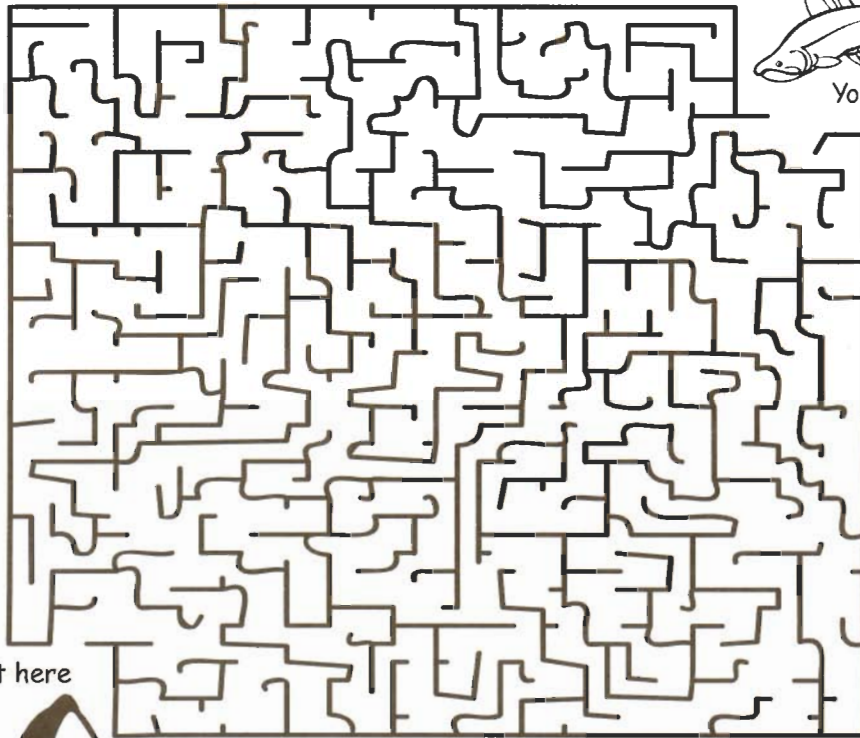
Thank you to the following people who continue to lend their time and energy to the adoption program: **Graeme Ellis**, for organizing the ID photos; **Elwood Miles**, for long hours in the dark room; **Meg Pocklington**, for her ideas and advice; the many contributors to the photo ID study that makes this program possible; and **Nicola Dedeluk**, **Carolyn Duckham**, **Lucie Laroche**, **Candace Philpitt**, and **Lisa Wende** for their volunteer contributions. A big thank you to the following research patron members who made very generous contributions to our program: **Bader, Verlags-Werbe- und Vertriebs** of Germany; **H. Aggarwal** of Ottawa; **Barry and Petra van Hull** of the Netherlands; and **Pacific Northwest Expeditions** of Nanaimo, B.C. And a very special thank you to **all whale adopters** for continuing to make this program possible.



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Kid's Page



You made it!

Start here

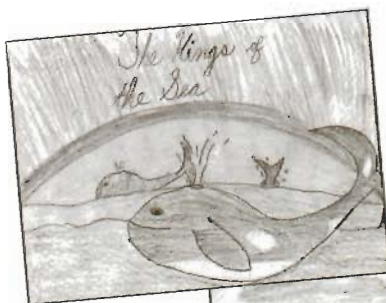


AMAZING Orcas

Help the hungry killer whale find some tasty salmon at the end of the maze.

Your Artwork

Thank you to all the students of Sacred Heart School of Ladner, B.C. who contributed some great killer whale drawings. Sorry we can't show them all, but here's a sampling... (clockwise from left) **Danielle Ernest, Erin Westlake, Robert Psutka and Kevin Parker.**



Pennies for pods

John Dryden Public School in Whitby, Ontario has come up with a solution to make use of all those pennies that always seem to be piling up in your wallet. Their idea was to raise money for something other than themselves. The students decided to support an organization that helps to protect dolphins, which is their school mascot. They did some research and came across the B.C. Wild Killer Whale Adoption Program. Since the killer whale is the largest species of dolphin, it was exactly what they were looking for. During the second week in January, the students collected as many pennies as they could. They set a goal of 2,000 pennies per class. That goal was far exceeded when the kindergarten to Grade 8 school of about 1,000 students raised over 110,000 pennies in one week! That's over \$1,100! The students and staff of John Dryden Public School are now proud adopters of four northern resident killer whale pods!



3 Cheers for BAYSONG

Ten children from British Columbia did not exactly spend their Spring Break the way they had originally intended. When the killer whale, J18, washed up dead on a beach close to their neighbourhood (see photo on page 4) in Tsawwassen, B.C., they decided they wanted to do their part to help protect B.C.'s wild killer whales. The group (ages 7-13), who call themselves BAYSONG (Bay Area Youth Saving Our Native Giants), sold lemonade, hosted a bake sale and had a bottle drive to raise money for killer whale research and conservation. They presented the B.C. Wild Killer Whale Adoption Program a cheque for \$310 and adopted a pod of whales!