(Orcinus orca)

by Christianne Wilhelmson

For thousands of years they've been a totem animal on our coast: a symbol of power, long life, unspoiled nature, freedom and strength. Today, you can find their picture gracing the logos of credit unions and many other businesses and organizations (including, of course, GSA). They even appear on the jerseys of our NHL hockey team!

But there is a lot more we need to know about killer whales—including how close we are to losing them.

Understanding marine animals is difficult, as they move so quickly and spend much of their time below the surface, out of our sight.

While many whales are difficult to distinguish in the water, the killer whale is easy. Just look for that distinctive black and white pattern working its way through the waves. And the one you spot today might very well still be swimming our shores 30 or 40 years from now. These large mammals, ranging from 9m for males to 7m for females, can live from between 40 (males) and 60 years (females).

There are three different groups of killer whales: offshores, transients and residents. Each is distinctive in how they look, behave and what they eat.

We know little about offshore whales because they spend most of their lives along the continental shelf (Ford and Ellis 1999). They make their home around the Queen Charlottes but can also be seen along the northeast and southwest shores of Vancouver Island. We think they mainly eat fish but there is some evidence that sharks may be a part of their diet too.

Transients stick to the coastlines, moving from Southeast Alaska to California and living in small isolated groups rather than large pods. Because they feed on marine mammals and require stealth to hunt, they travel in silence. Their diet includes seals, sea lions, porpoises, dolphins, as well as other whales, and there is some evidence they also eat deer, bear and moose, along with the occasional seabird. A 1999 survey estimated there were 216 transients (Ford and Ellis 1999).

Resident whales are the ones we know best. There are two separate populations in our region: the northern and southern residents. The northern residents live in the area from central Vancouver Island to southern Alaska, and number about 200 whales. The southern residents range from northern Washington to southern British Columbia.

Though their home ranges overlap, these two communities have not been seen in the same area at the same time in over 30 years and have never been known to communicate or interact with each other.

Unlike transients, resident whales are fish eaters, feeding mostly on Chinook salmon because of its high fat content, but also eating coho, sockeye, pink, chum and steelhead.

Resident killer whales are very social, living within pods or groups led by a matriarch. The matriarchs travel flanked by their children, including their sons, who stay with their mothers for their entire lives. The pods can contain between 4–12 individuals and include as many as 4 generations.

Besides their importance in the marine ecosystem, the southern residents are a great source of enjoyment for humans. But we're in imminent danger of losing them.

Their population has declined by 20% over the last six years, and now numbers only 79 individuals (Ford 2002). In Canada, they are listed as endangered COSEWIC, November 2001).

The southern residents are at risk for many reasons. They are a very small group that grows slowly and does not breed with other whale groups, not even the northern residents, despite their biological and cultural likeness. They reach sexual maturity

between 12-15 years of age and only have offspring on average every 5 years. This means that the loss of any one individual is devastating, and it magnifies the impacts of any threat to their population.

The largest source of stress is human activity, because the southern Strait of Georgia has the greatest amount of human activity anywhere along the BC coast (Taylor 2001).

Being at the top of the food chain is a major disadvantage for these whales because of the amount of persistent organic pollutants that are finding their way into Georgia Strait. These toxins come from a wide variety of sources including pulp effluent, mining wastes, sewage and urban runoff. They accumulate in the fish that the whales eat, then build up in the whales' blubber. In fact, whales that have washed up on our shores recently are so filled with chemicals such as PCBs that the bodies are considered toxic waste.

The precise impacts of these toxins are still uncertain. After all, unlike smaller creatures, we can't isolate them in a lab to determine direct cause and effect. But, like studies on rats that help us to determine health impacts on humans, we can extrapolate a lot from research done on other mammals. We know that the levels of toxins in killer whales are enough to cause negative health impacts on other species such as the harbour seal. Toxins at these levels can compromise the immune and endocrine systems, which regulate everything from growth to sexual function.

A major oil spill in our region could spell disaster for the whales. Two years ago, scientists studying the decline of the southern resident population used computer modelling to conclude that there is at least an 81% chance of extinction for these whales within the next 300 years—and that if there is just one major oil spill every 100 years, the risk of extinction rises to 94%.

Another threat is the growing vessel traffic, including the potential impact of so many people who love to watch whales. Boats, especially motorized vessels, that approach too often and too close can interrupt communication between animals. Killer whales are utterly dependent on their sense of sound: they use a rapid series of clicks as

echolocation and a sonar signal to help them navigate and identify what is around them. Any disruption in their ability to hear and communicate can undermine their ability to find food or avoid accidents with objects of any size, including ships.

Luckily, there is a growing desire to help protect both the whales and the $100 million dollar/year whale watching industry that depends on them. The whale watch industry in the southern Strait, Fisheries and Oceans Canada and conservation groups have developed voluntary whale watching guidelines, and Fisheries and Oceans is working to develop a recovery plan for the southern resident killer whales, as mandated under Canada's Species at Risk Act.

WHAT CAN YOU DO?

- **Be whale wise!** Be cautious when approaching areas you suspect whales might be and never get any closer to a whale than 100 metres. Check out appropriate whale watching guidelines
- **Be ToxicSmart!** Reduce the use of toxic chemicals in your home. Make your home ToxicSmart and your garden Pesticide Free, to help reduce toxins in the marine food chain.
- **Encourage change!** If your municipality is not already treating all of its sewage and storm water to at least secondary level, let them know you want them to install secondary treatment. Untreated sewage and storm water is one way PCBs and other pollutants find their way into the marine food chain. Secondary treatment can remove up to 99% of the PCBs in our sewage.