

## Harbour Seal Reactions to Killer Whales

By Pam J. Stacey and Robin W. Baird

Harbour seals (*Phoca vitulina*) are the main source of food around Victoria for the transient killer whales (*Orcinus orca*), but they are not consumed by the resident killer whales, who feed mainly on salmon and other fish. The two types of whales are different races, and are found in the same waters but do not interact with each other.

Harbour seals must detect killer whales using visual or acoustic cues. Researchers have tried playing back the vocalizations of killer whales to other marine mammals to test their reactions. The sound of a killer whale exhalation, or blow, might elicit a reaction from harbour seals. The sight of a killer whale dorsal fin may also be used in detection of these predators. It seems likely, though, for several reasons, that a combination of these cues may be used, and the reactions of harbour seals to killer whales probably depend on these cues.

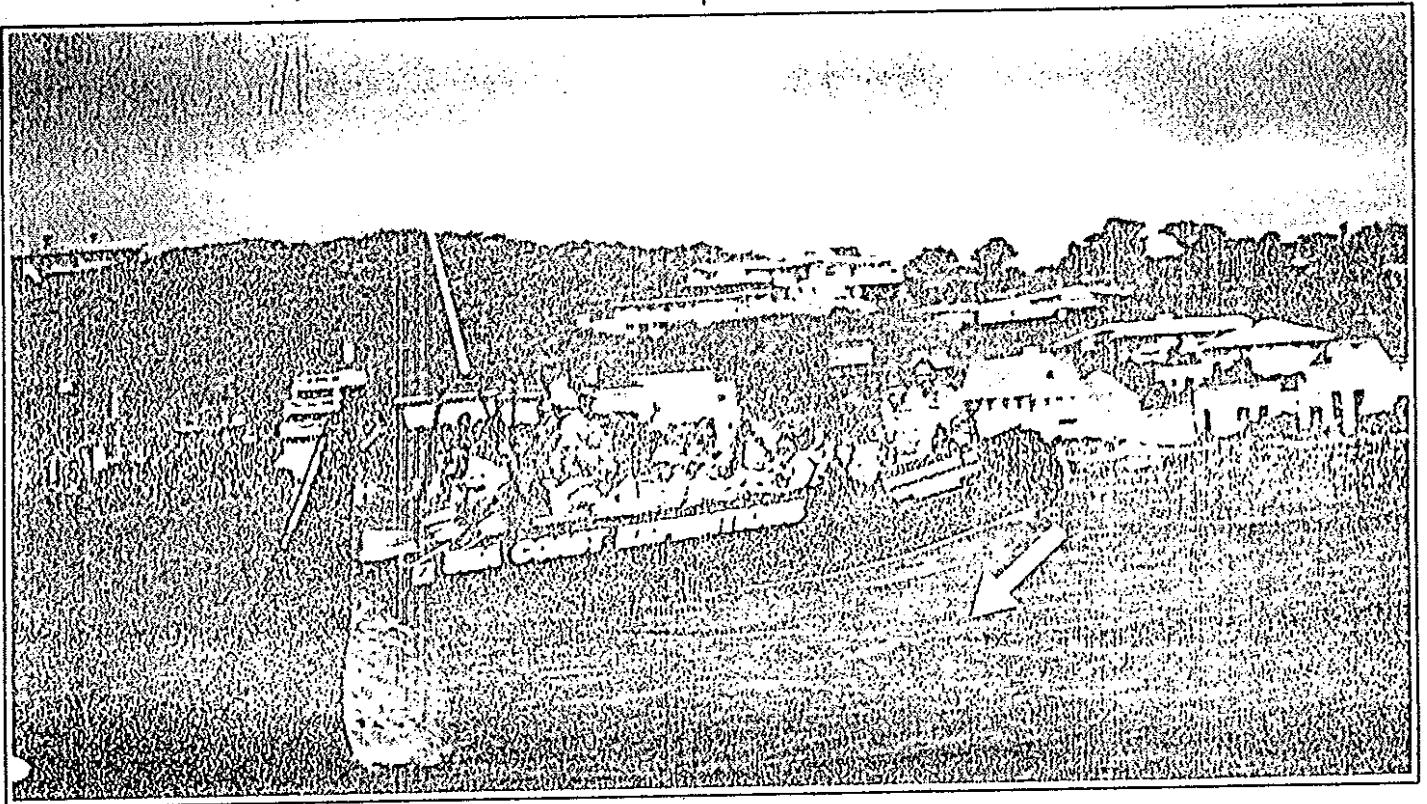
The reactions of harbour seals to killer whales are not always easily predictable. A variety of factors are involved in the extent of reactions of harbour seals when they detect killer whales. The resident killer whales are not a great threat to harbour seals. The reactions of harbour seals when residents travel past a haulout site seem to attest to this. On several occasions we have observed resident killer whales passing closely by a harbour seal haulout, with seals visible in the water next to the rocks. Although there was certainly increased vigilance by the seals, escape reactions, such as climb-

ing out onto the rocks, were not observed.

The visual presence of transient killer whales, however, definitely elicits an escape response in seals, who climb out on any available rock. As you can also see in the accompanying photographs, taken off Oak Bay near Trial Island, harbour seals will even overcome their fear of vessels and humans when faced with less pleasant alternatives. The seal shown here was being harassed by Y pod, three transient killer whales which are frequently seen in this area. The whales had already been playing with the seal for about fifteen minutes, leaping on top of it and making high speed passes around it, before the seal began to hide beside and under the vessel "Porpoise II". While the seal was next to the boat the whales circled around and under the boat, but did not come too close. Eventually the seal climbed up onto the engine, and into the back of the boat. After about a minute and a half, it returned to the water on its own. This escape behaviour into a boat has been noted several times before with harbour seals and at least once with a sea lion. After re-entering the water, the seal hid for a short period between the triple hulls of a U.S. whale research vessel, tried to climb into a dingy being towed by a passing sailboat, and then attempted to climb into our research

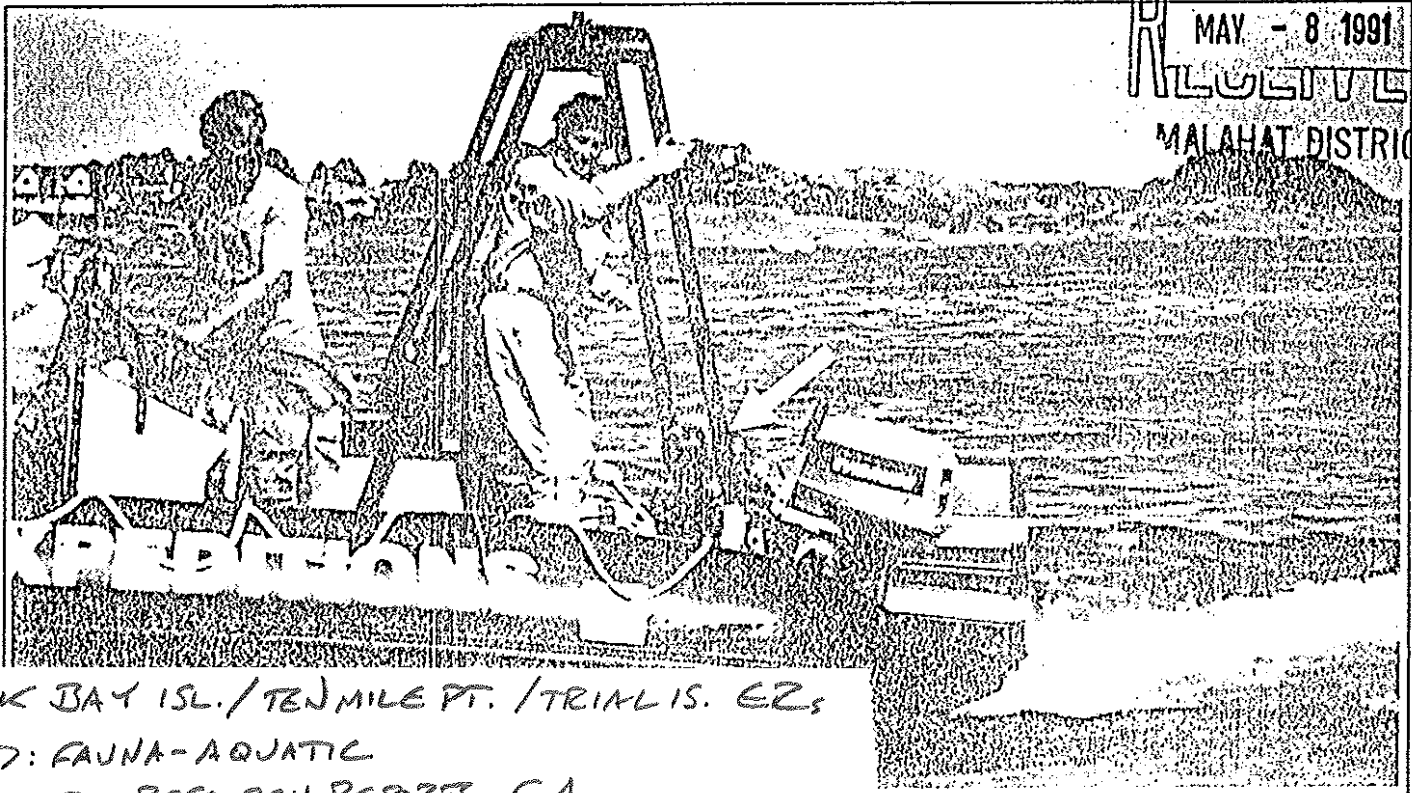
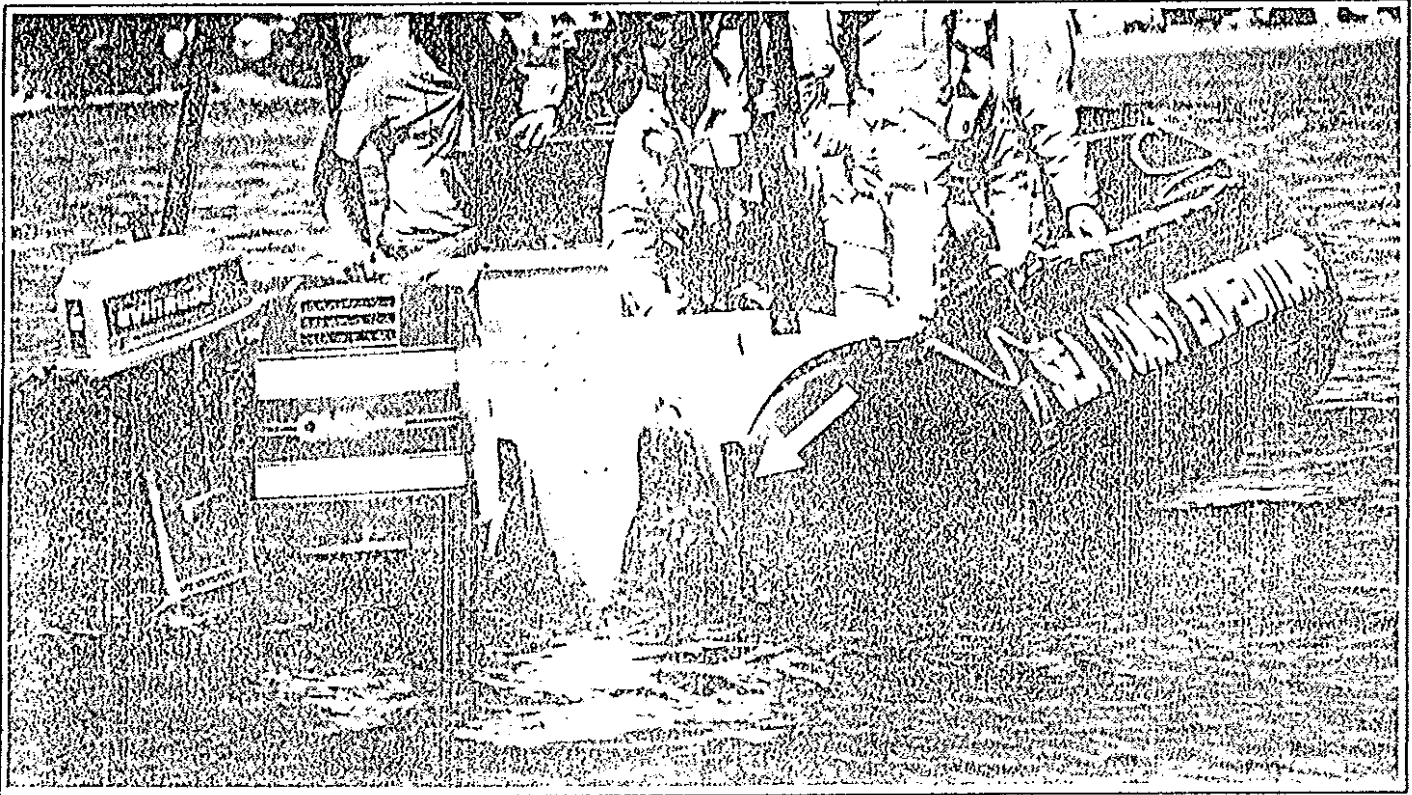
This was an extreme case where the whales had already detected and captured the seal and it tried, unsuccessfully, to escape. When harbour seals detect killer whales before the whales have detected them, such as in open water, they seem to cease all movement to avoid being detected. This tactic may actually work in most situations, since according to research undertaken by Dr. John Ford of the Vancouver Aquarium, transient killer whales are largely silent and not echolocating

when they are hunting, probably to avoid early detection by their mammalian prey.



It is possible that harbour seals use a combination of visual and acoustic cues to detect killer whales, evidenced by their different reactions to residents versus transients. Since residents do vocalize frequently, harbour seals hearing killer whale vocalizations may know they have little to fear, whereas sighting the whales or hearing the exhalation without any un-

derwater vocalizations could indicate a definite threat. They then respond with some sort of reaction, either stopping movement in open water so they can't be heard or hauling out on the nearest available piece of dry land—or, in some cases, boat!



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