



Brendan Kelly watches Cannon, a Labrador retriever, by an exposed breathing hole.

A Nose for Seals

Labradors aid scientific research

BY MICHAEL ENGELHARD

WITH NOSES 10,000 TIMES SHARPER than a human's, dogs have served to detect the missing, the dangerous, the unbidden: mountain lions, wild hogs, stowaways, and sprung convicts, and more recently, drugs and explosives, victims of murders, earthquakes, and avalanches. In 2014, the federal government mandated that the energy giant BP use trained dogs to avoid impacting seals during ice-road construction and other Beaufort Sea projects. Formerly predators, some canine trackers have turned into protectors.

"Labs" ferreting out ringed seals for science have been deployed since 1975, though their husky cousins guided Arctic hunters to flipped prey for millennia.

The American publisher Charles Francis Hall, seeking Sir John Franklin in 1860-62, admired Inuit who "will go, with their dogs, even in the

very coldest of weather, and under most dangerous circumstances, to hunt for seal-holes." Sled dogs, Hall observed, surprised seals basking in plain view as well. Once trained dogs pick up a seal's odor downwind from it they quarter in a zigzag pattern, which narrows, funnel-like, as they get closer.

Having learned this from an Inuit hunter in Canada, the University of Alaska's Dr. Brendan Kelly and associated biologists in 1982 loosed Labrador retrievers on shore-fast ice between Reindeer Island and Prudhoe Bay to study noise disturbance from oil development. The dogs sniffed out dozens of lairs, snow caves that seals excavate above breathing holes. Females nap and nurse there, concealed from polar bears and men. A seal cow has several such pockets and may leave a pup in one while she forages, shielding it from Arctic foxes, glaucous gulls, and the

elements. Rutting bulls become rank by May and the snow at their lairs smelly—a condition Inupiat call *tigak*. After work conducted in Kotzebue Sound, in 2006, DNA from black “dandruff” in old lairs where seals molted allowed Kelly to identify different subpopulations and to determine that much interbreeding occurred—ice seal species mating outside their subgroup are less vulnerable to extinction. Kelly furthermore investigated the consequences of shrinking sea ice and earlier snowmelt upon these pinnipeds. The team tagged seals with specially developed satellite responders that traced pelagic migrations and returns to certain breeding sites for up to 14 months. With Dr. Peter Boveng of the Alaska Fisheries Science Center, Kelly instrumented seals also after finding them with an infrared camera instead of a canine gumshoe. Dogs proved to be much more sensitive, with an 80 to 85 percent success rate in a search perimeter five to 10 kilometers wide. Seemingly inexhaustible, they struck pay dirt up to 200 times in a month, sensing lairs from 500 meters.

Kelly, who prefers females for their stamina, conditioned his retrievers by taking them downwind of visible, basking seals and with scraps of skin or blubber. Later dogs learned by accompanying experienced ones, responding to the handler’s command “*natchiq*”—Inupiaq for *Pusa hispida*, the “bristly-coated seal.” Praised, primed, and eager, dogs sprinted ahead of the researchers’ snowmachines, directed by hand signals.

Once a retriever pinpoints a target, it alerts or starts digging. An avalanche probe then confirms a find. In time, an aglu hoop net is set up in the exposed breathing hole, to trap a surfacing seal before it can dive again.

Weather conditions affect how often interspecies teams can search for lairs and how successful they are. Strong winds can hamper a dog that is trying to lock into scent plumes and trace them to their source. The window to locate seal pups is short. “If we didn’t have the dogs,” Kelly says, “we’d have to wait until late spring to look for caves exposed by melting snow, and we’d miss the pupping season.”

This specialist dog breed is hardworking and wise to the ways of the sea, like its ancestors, which earned their keep as fishermen’s helpmates, hauling nets, and fetching ropes and fish from chilly north Atlantic waters. Labradors don’t share the dense, double-coated pelt, thick pads, furred paws, and short, frost-resilient ears of the Malamute—the big-boned,

Cannon investigates a seal lair in the sea ice near Kotzebue.



A ringed seal pup in its lair.



tamed-wolf mutt Kotzebue Sound Natives (“Malemiut”) and their Thule predecessors have bred for 1,000 years; but Labs possess the same high-grade olfactory gear. Here’s an analogy to vision: An object a person can spot a third of a mile away, a dog could from more than 3,000. Put another way, Pooch catches the whiff of one rotten apple hidden in two million barrels.

A dog then is two nostrils attached to a brain. The tail merely announces a score. Noses packed with receptors, split airflow paths (for olfaction and respiration), an organ we lack (“Jacobson’s”), and an enlarged brain segment exclusively decoding air clues explain a dog’s feats. Bioengineers now try to replicate this dazzling design. Perhaps some day, robots will replace scientists’ four-legged assistants. Their work, one must assume, will be less entertaining for it. 🐾

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