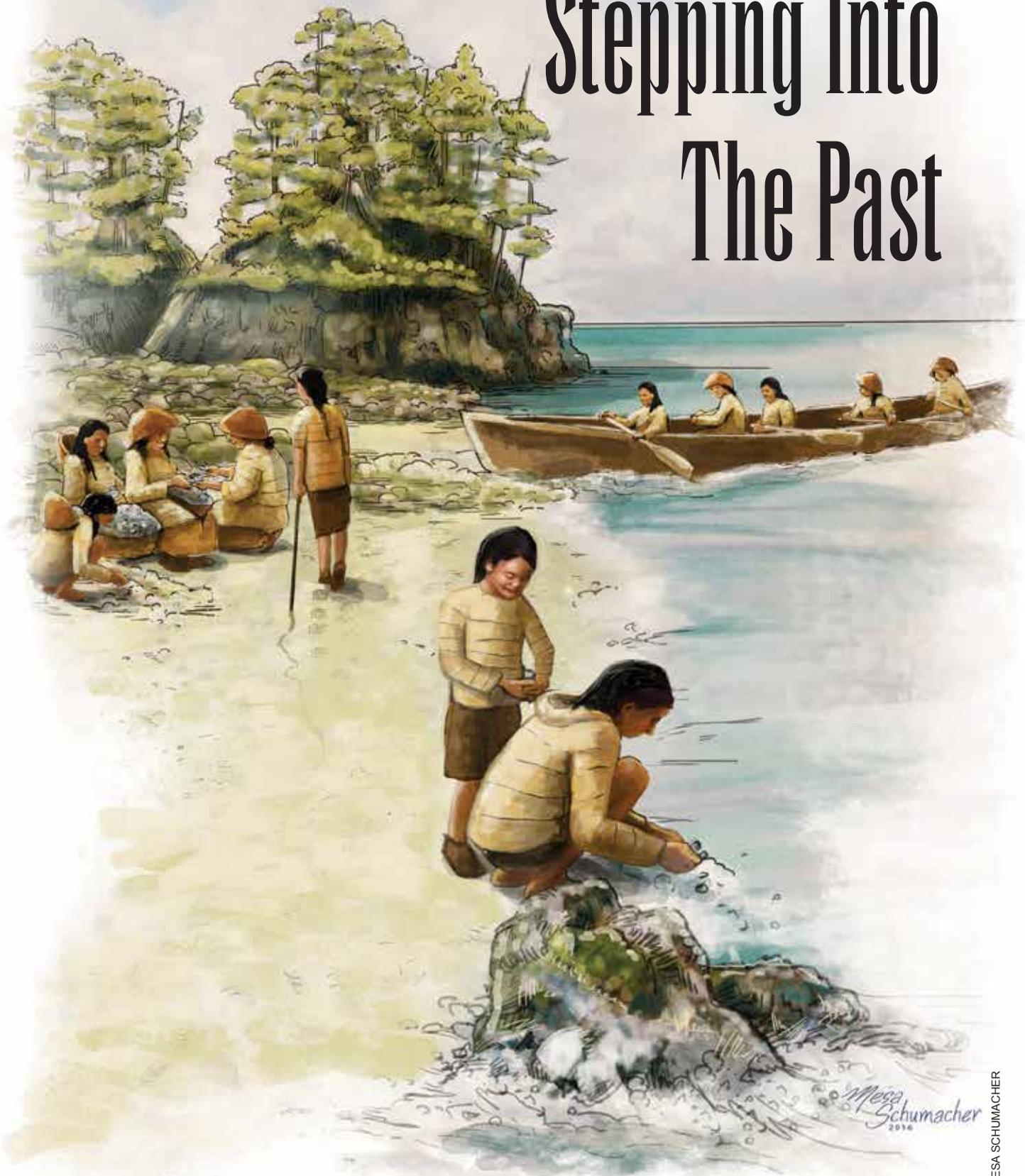


# Stepping Into The Past



MESA SCHUMACHER

*An artist's depiction of what life could have been like on Calvert Island roughly 13,000 years ago. People needed boats to reach the island, and this vessel resembles traditional boats, generally made from sealskins, that were used by the Inuit and Yupik. According to an oral account, these boats were used by native peoples long ago.*

# The discovery of 13,000-year-old footprints on a remote island in western Canada indicates that people were living on the Pacific Coast during the Clovis period.

*By Tom Koppel*

“FOOTPRINTS HAVE RAISED RIDGES,” says Duncan McLaren, as he crouches and scrapes with his trowel at the bottom of the seaside pit. “Here, you can see what we think is the back—the heel—of a footprint, and here is another entire footprint, with toes.” When someone steps into soft sand or

mud and then pulls their foot out, he explains, it raises the area around the edges and leaves a slight depression. In this case, the yellow-gray clay eventually became firm. “This black sediment is set into it,” he adds, pointing with the trowel to where dark sand later filled in the depressed area. The



JOANNE MCSPORRAN / HAKAI INSTITUTE

*A 13,000-year-old footprint is prepared for removal. The impression, which was made in light colored clay, was subsequently covered by dark sand.*

contrast makes the print readily visible. “You can almost feel the edge of the footprint with the trowel, and the clay has a slight anaerobic scent from lack of oxygen. Like rotten eggs.”

McLaren, forty-five, wiry and athletic, is working one end of a rectangle the size of two queen beds. It has been sunk into the foreshore just below the high tide line on a sheltered bay at remote Calvert Island, in British Columbia, Canada. McLaren leads a team of archaeologists and support personnel that has spent portions of five field seasons here already. Most have links to the University of Victoria on Vancouver Island either as students, recent graduates, or faculty members. There are also representatives from the Wuikinuxv and Heiltsuk First Nations whose traditional territories encompass Calvert and neighboring islands.

Colleague Daryl Fedje, sixty-three, tall and slim, is working away in the opposite end of the pit. McLaren and Fedje have collaborated on numerous projects and published papers, their research funded by the privately endowed Hakai Institute. The dig site is ten minutes by boat from the Institute’s island field station, where the crew is housed and fed. Visitors come and go by seaplane.

Painstakingly shaving away the muck at the lowest levels of the pit, the archaeologists uncovered twelve well-defined prints in just a few days. These are in addition to the equally numerous footprints they unearthed here last year. Each find is a eureka moment. There are large ones, likely from an adult male; medium-size ones, perhaps left by a woman; and notably smaller ones, possibly belonging to a child. It is tempting to imagine a family gathered around a campfire on the beach. There are other foot-shaped impressions in the clay that overlap and are not as clearly defined. There is also a hearth-like feature, some stone artifacts, and ample bits of wood or charcoal, samples of which can be used to date the layers.

What makes the dig unique, however, is that these human traces were left behind some 13,000 years ago, making them the oldest footprints ever found in North America. They are roughly the same age as the Clovis culture, which inhabited much of our continent’s interior. But their location is very different from the numerous sites where Clovis artifacts have been found. Calvert Island lies off the Canadian mainland midway between Vancouver and southern Alaska. Anyone living there toward the end of the Ice Age must have adapted to a marine ecosystem and travelled by watercraft. The footprints, therefore, may help in understanding how and when some of the earliest settlers arrived in the Americas in late Pleistocene times.

**THE DISCOVERY OF THE PRINTS** is the result of a decades-long search for ancient sites by McLaren, Fedje, and a few others. Finding evidence of human habitation of this age on the Pacific coast requires precise knowledge of where the shoreline was located then. This is no simple task. As the great ice sheets covering northern North America (and high latitudes elsewhere) melted, the water returned to the ocean

and worldwide sea level rose some 350 to 400 feet. This drowned most places that ancient maritime people might have occupied. Even though glaciers didn’t form as far south as what is now Oregon and California, those shorelines lie deep under water today and are practically inaccessible.

In once-glaciated areas along the North Pacific, however, the situation was different. As the ice sheets receded from Canada’s coast, their enormous weight was gradually



removed. Where they had pressed down on the Earth's somewhat flexible crust, the land rebounded and was uplifted. On some outlying islands, including Calvert, the rate of uplift closely matched the rise in sea level. This made for remarkably stable shorelines. People were able to continue occupying roughly the same seaside locations millennium after millennium. At Calvert Island, the shell midden that built up behind the beach, representing countless years of

seaside food harvesting and daily life, is hundreds of feet long and over twenty-feet deep in places—an archaeological treasure-trove.

McLaren did his Ph.D. research at the Dundas Islands, which are just south of the Alaska Panhandle and are thought to have a sea level history similar to Calvert's. His focus was on confirming the location of ancient shorelines and searching for coastal habitation sites. Fedje had pursued



*The crew excavates in an intertidal zone where the footprint features were found preserved beneath beach sands.*

similar research interests many years earlier, mapping sea level history and directing major digs as the Parks Canada archaeologist for the Queen Charlotte Islands, which are also known by their native name Haida Gwaii. When government cutbacks eliminated his position four years ago, Fedje joined McLaren's group. "I'm not proud," he quips, resigned to playing second fiddle as the two men work side by side. "I used to be important. Now I'm just an old shovel bum who does what I'm told."

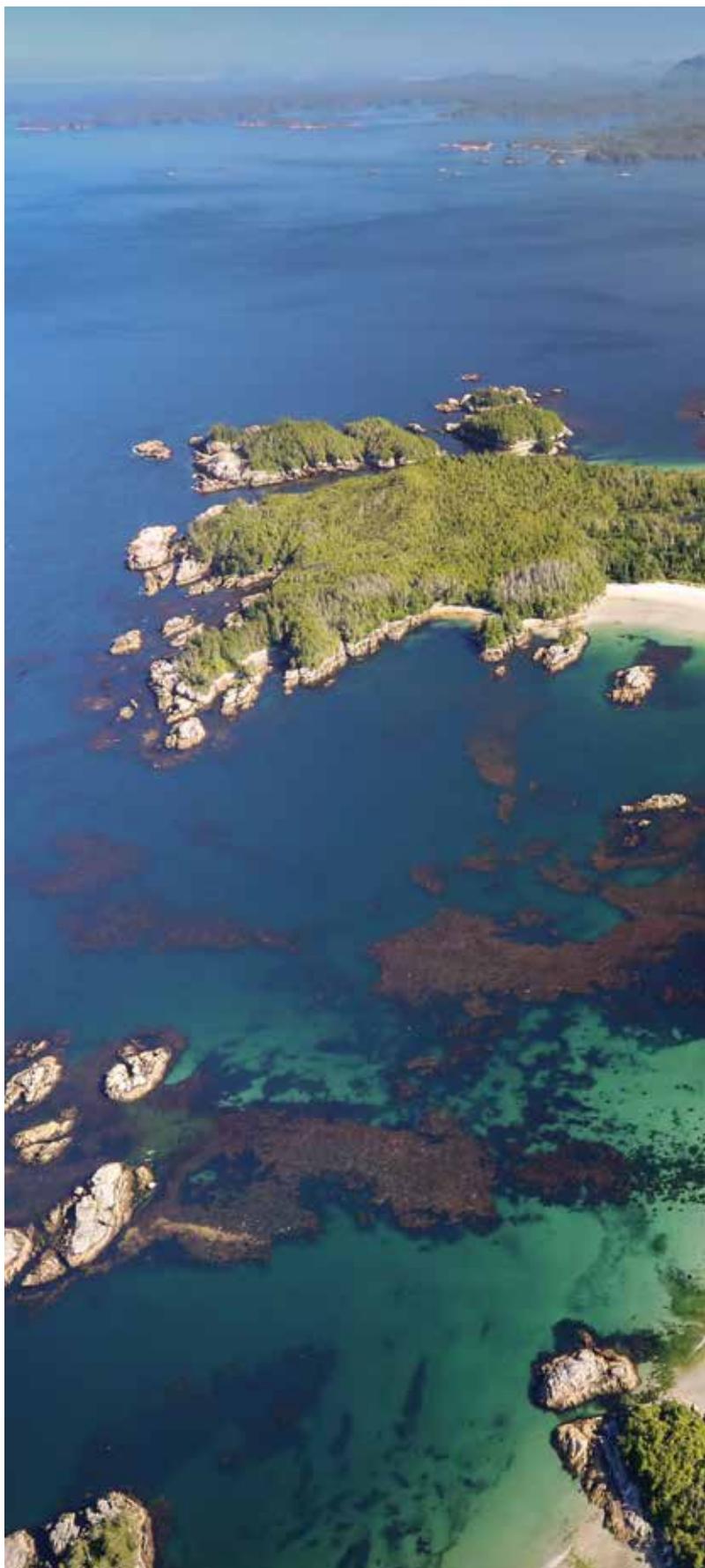
Fedje is in fact more eminence grise than old shovel bum, and it was he who found the first footprint at Calvert. In 2014, the team was digging small test pits, doing a transect from high on the beach down into the inter-tidal zone. Suddenly, Fedje saw something he could hardly believe. It looks like a footprint, he announced to his colleagues. They gathered around, gazing down doubtfully into the dark little hole. It was near the end of their season, so they collected a sample of charcoal from within the print for radiocarbon testing. When they got the results they were shocked: the footprint is 13,200 years old.

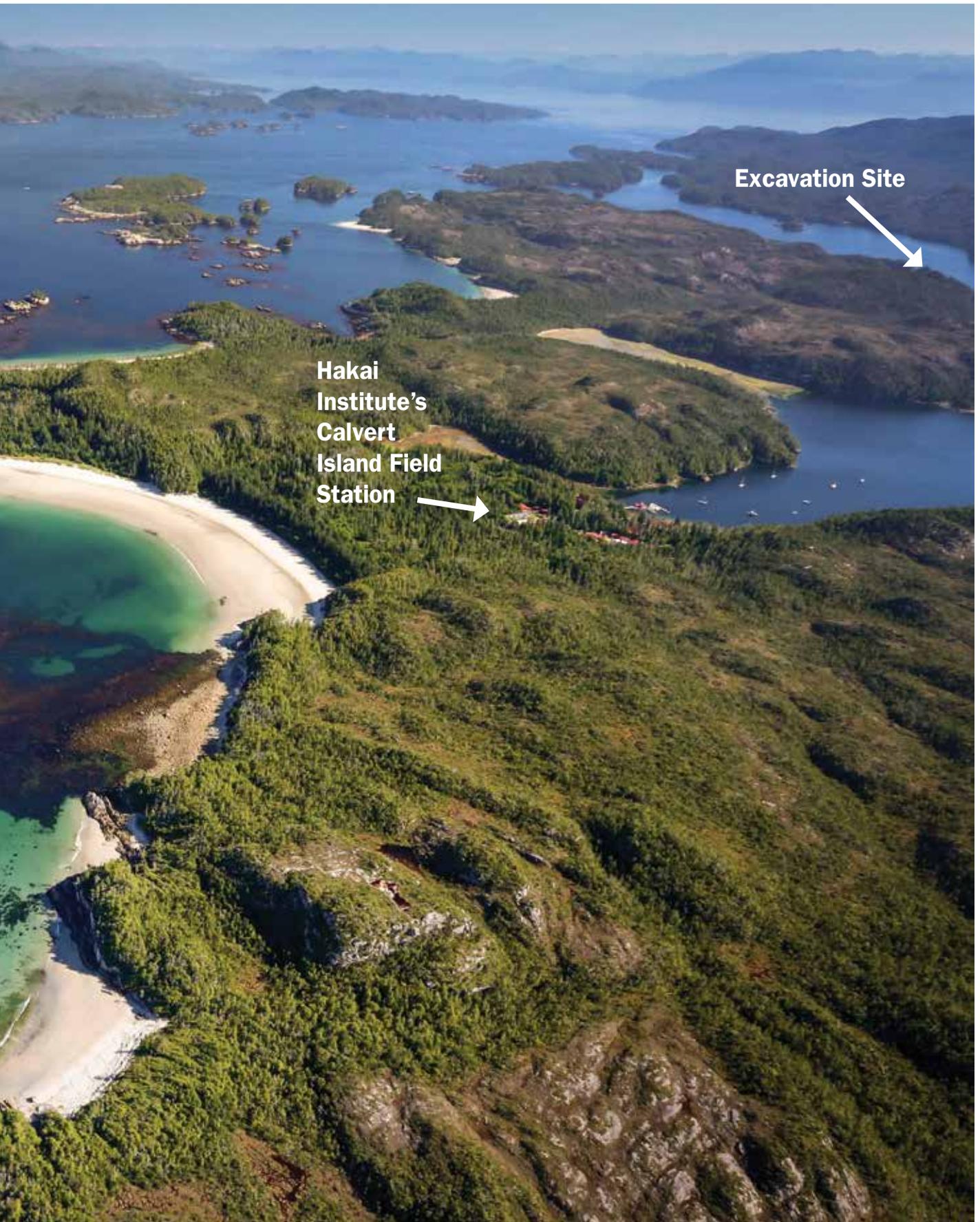
The following year McLaren excavated a square measuring nearly seven feet on each side. This revealed the first twelve footprints and what looked like part of a hearth. They took more samples to radiocarbon date. Five of the samples are roughly 13,000 years old, while two from just above the footprint layer were in the 2,000-to-4,000-year-old range. It was pretty convincing, but the conditions had been difficult, with rain and high tides flooding the pit each night. McLaren was reluctant to publish the results until he obtained clearer photos of the prints.

This year the excavation coincides with a lower tidal cycle, which largely eliminates the flooding. The weather is mild and dry, and his crew takes much better photos. After reinforcing the edges of the footprints, they carefully dig around and under them, recovering several of the prints for future study.

**ARCHAEOLOGISTS TODAY INCREASINGLY** favor the Pacific coast migration model as the most likely explanation for the initial peopling of our hemisphere. This hypothesizes that maritime people from northeast Asia skirted the ice that blanketed Alaska and Canada, using a chain of ice-free offshore refugia as stepping-stones. They would have populated the northern Pacific coast some 15,000 to 16,000 years ago, or even earlier, with some spreading inland once they reached unglaciated North America at Washington State. Others would have continued south along the coast. This is long before anyone could have migrated south through a supposed ice-free corridor that was probably blocked during the relevant millennia.

McLaren is contributing one of the "little bits of





Hakai  
Institute's  
Calvert  
Island Field  
Station

Excavation Site

*This aerial photo of Calvert Island shows the location of the Hakai Institute and the excavation site. To the west of Hakai are a series of sand beaches that are exposed to the open ocean. The excavation site, located east of Hakai, is fronted by a calm harbor.*



*Duncan McLaren holds a prism that's used for mapping with a total station.*

evidence” that are relevant to this issue. But he is not fixated on migration per se. Rather than viewing ancient people as passing through on their way to somewhere else, he prefers to emphasize how long they lived on this coast, with its wealth of resources from sea and forest.

Still, the Calvert discovery adds nicely to the ancient sites on the periphery of the continent, including places that could only be reached by people with some kind of boats. To the north, on Prince of Wales Island, Alaska, a mammal-bone tool found in 1994 at On Your Knees Cave dates back 12,000 years, while 14,000-year-old bear fossils show that the island was free of ice by then and had ample food for land mammals. On Santa Rosa Island, off the coast of southern California, human remains found at Arlington Springs in 1959 were dated to 13,000 years ago.

More recently, several sites that predate Clovis have been found on, or very close to, the Pacific. There is the Manis site on Washington’s Olympic peninsula, where a 13,800-year-old bone spear point was found lodged in a mastodon’s rib. Human coprolites dating to 14,350 years ago were discovered at the Paisley Caves in Oregon. Though these caves are not near the Pacific, coastal migrants could have reached them via river valleys. And in Peru, Tom Dillehay, the archaeologist who excavated Monte Verde, has reported 14,000-year-old evidence of humans at the shoreline site of Huaca Prieta.

Knut Fladmark of Simon Fraser University first proposed the coastal migration model in 1979. Another long-time advocate is E. James Dixon of the University of New Mexico. “Shellfish beds,” he argues, “can be harvested by children and the elderly, and watercraft enable family units to travel in much greater safety and numbers” than on land. “If you look at the resources in Kamchatka and northeast Asia, and along the North Pacific Coast, and you look at them on the Northwest Coast, they’re very similar. You have salmon and shellfish and seals. So I think once you have that adaptation, moving along that coastline is very easy.”

This ecological productivity and similarity around the Pacific Rim led

Jon Erlandson of the University of Oregon to propose that a “kelp highway” lured coastal peoples from northeast Asia into the Americas. Erlandson says that if the Calvert Island footprints dates prove to be correct, it will be “yet another nail” in the coffin of the Clovis-First ice-free corridor model.

There are alternative views on how the Americas came to be inhabited, such as multiple migration routes from Asia or an influx of Solutrean people from Europe. The most persuasive evidence in support of the coastal migration hypothesis would likely be to find traces of human occupation on or near the North Pacific coast that are oldest in the north and sequentially younger farther south and elsewhere in the Americas. The search for such evidence is bound to be difficult, because so many likely habitation sites lie deep beneath the sea. But the Calvert Island region, with its stable shorelines and long history of occupation, holds great promise, especially given the presence and unique nature of the Hakai Institute.

Hakai is the pet project of a wealthy philanthropic couple, Eric Peterson and Christina Munck. Peterson, born and raised in British Columbia, earned a Ph.D in biology and was co-owner of a private medical imaging company. When the company was sold, he and Munck netted over \$160 million [USD], most of which has gone to worthy causes. In 2009 they purchased a deluxe fly-in fishing lodge on otherwise uninhabited Calvert Island and turned it into a

well-equipped and staffed marine science facility that can house 100. They support long-term research and education programs in archaeology, oceanography, marine biology, geology, bio-diversity studies, and other disciplines.

McLaren recalls how exciting it was to be approached by Peterson to join Hakai. “Eric sat me down and said, well, I’ve read your Ph.D. thesis” about sea level and archaeological sites in the Dundas Islands. “Which was surprising,” McLaren laughs, “because I don’t even think all of my committee read the whole thing.” Both McLaren and Fedje have enjoyed an enviable professional and personal relationship with Peterson and Munck. Beyond covering research expenses, Hakai’s power couple funds their half-time positions at the University of Victoria. Most other scientists can only dream of such non-bureaucratic support, year after year, with no need to face university committees or apply for grants.

The unusual local sea level history makes the Calvert region one of the very best places to search for ancient sites, adds Fedje, taking a break from digging. Having the field station right here, with its comfortable accommodations, boats, labs, and other logistical support, doesn’t hurt either. “It’s that perfect storm, just an ideal environment for archaeology.”

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TOM KOPPEL is a journalist living on Salt Spring Island, British Columbia. His book *Lost World: Rewriting Prehistory—How New Science is Tracing America’s Ice Age Mariners* documents the search for evidence of ancient coastal migration.



GRANT CALLEGARI / HAKAI INSTITUTE

*Daryl Fedje uses a trowel to excavate the black sand that covered the footprints.*