



EXPEDITION PROFILE

May – June, 2019 aboard DISCOVERY Yacht SAM

On the morning of May 7, the 48' Garcia aluminum cutter SAM and her crew slipped her lines in Oahu and set northward to the Aleutian Islands and beyond for the 4,000 nautical mile third leg of her voyage of genomic discovery.

The crew carried sampling nets and basic laboratory equipment to conduct the first ever gathering of surface and subsurface plankton across the North Pacific specifically for genomic sequencing. Following the protocols provided by Dr. Leonid Moroz of the Whitney Laboratory of Marine Bioscience of the University of Florida, samples were taken once or twice a day as conditions permitted.

Weaving through and taking advantage of three North Pacific late spring storms, SAM made a fast 14 day passage to Unalaska Island and Dutch Harbor, collecting and stabilizing nearly 125 samples over 2,250 nm.

Dr. Moroz joined the crew for the next challenging run along the Aleutian chain through the Shumigan Islands and eastward on to Kodiak Island. A fourth and final storm put them into safe anchorage at Unimak Island, safe but for the grizzlies that roamed the beach, supposedly some of the largest in Alaska. With good crew work and favorable winds, SAM covered over 1,000 nm taking advantage of some narrow passages and strong currents to gather unique plankton samples.

The third and final crew covered the third 1,000 mile stretch from Kodiak Island to Cape Spencer, the northern entrance to SE Alaska's Inside Passage finalizing the run across the whole of the northern Gulf of Alaska. Sampling often took place under towering coastal mountain ranges and the glaciers such as 18,000' Mt. St Elias and the massive Hubbard and Malaspina glaciers.

Seakeepers originally connected SAM with the Whitney Laboratory in 2017. Captain Peter Molnar and Dr. Moroz quickly assembled a crew for the first 2,650 nm run from Cabo San Lucas, Baja Mexico to Oahu, Hawaii. In 2018, Dr. Moroz joined for a circumnavigation of the Hawaiian Islands finding some 3,000 new species within a week. Taken together, the 8,000 nm of sampling is the longest citizen science voyage conducted by a SeaKeepers vessel.

SAM's genomic voyage demonstrates that small to medium vessels can use very basic and very advanced nanotechnology to conduct cutting edge science as much lower cost and much more quickly than traditional large research vessels. SAM's voyage stands as a model for a fleet of small and mid-sized private and institutional vessels to conduct extensive and rapid survey of a fast changing and often degrading ocean.

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The Oceanic Genomic Atlas Project (OGAP) aims to gather and capture genomic information from at least 80% of the extant marine species worldwide. As Dr. Moroz explains “using advanced nanotechnologies, the project will provide unbiased molecular profiling of biodiversity by creating a genomic atlas of the world ocean to understand the evolution of life and preserve critical genomic information for future generations in the face of accelerating species extinction. In addition the project will generate information for at least 20 million novel biologically active molecules as prototypes for future drug development.”

Captain Molnar as his crew were taken by the vitality and intensity of the North Pacific and the Alaskan coast encountering massive snow covered volcanoes, grizzlies, grey, sei and humpback whales as well as rafts of otters and pods of orcas. “We often crossed paths with Captain Cook’s voyages, even anchoring in some of the same coves such as Kealakekua Bay, Hawaii and Dutch Harbor, Unalaska. It’s thrilling think that these new genomic technologies may be just the beginning of a true deep dive into a detailed and dynamic evolutionary map of the web of life in the ocean and that the explorations started by Captain Cook and others are accelerating as we and others literally go beneath the surface and decode these signatures of life in the Pacific.”

Crew:

Peter Molnar	Captain
Jeff Svihus	First Mate – leg 1&2
Gabriel Molnar	First Mate – leg 3
Dr. Leonid Moroz	Lead Scientist
Tyler Meade	
Tom Hicks	
Matthew Stromberg	
Tarim Chung	
Mark Tukman	
Olivia Tukman	
Jonathan Kaplan	
Jacob Kaplan	

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