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Rebirth in the Aleutians

Story and photos by Ned Rozell

When you step on the beach of Kasatochi Island, something feels wrong. There's a smell of sulfur in the air, mud pudding sucks at your rubber boots, and, after you peel off your orange float suit, there's nowhere clean — no grass, no tundra, no dry rock — to set it down. Unsettled, you place your suit in the mud.

It's August 2009, and you're going to spend the whole day on the island with scientists. This has been a day you've thought about for the past year, ever since Kasatochi blew up in August 2008, surprising the two biologists who were living on the otherwise uninhabited island. The eruption was violent enough to strand air travelers in Seattle, who wrinkled their eyebrows at the Japanese-sounding word that's not Japanese. Most volcanologists also had to check their maps to locate the speck that sent an ash cloud across North America.

All 1.9 square miles of Kasatochi (say *-shee*, not *-chee*) sit alone midway in the broad smile of the Aleutian arc. Russian explorers named the island some 200 years ago. The Unangan people, or Aleuts, were calling it Qanan-tanaã for probably a lot longer.

You are here with Jeff Williams, a likable, boyish biologist, and Derek Sikes, an insect guy from the UA Museum of the North.

Sikes likes to search for insects where few have searched before. In a stroke of luck, he had visited Kasatochi just two months before it erupted. Being a museum guy, he had collected every insect he could catch in his 10 hours on the island: 396 specimens, about 60 species in all. Two of them, a beetle and a sawfly, were new to science. In his netting and tweezering, he noticed that many of them were wingless. As he leaned into gusts of wind along the lip of the great caldera, filled with aquamarine water, he understood why — creatures without wings are less likely to be blown off the island.

A year after its eruption, Sikes saw the aerial photos of the pale, lifeless doughnut the island had become. After an offer came from the keepers of the Aleutians — the men and women of the Alaska Maritime National Wildlife Refuge who run the 120-foot *M/V Tiglax*, based in Homer — Sikes hesitated before responding. Despite his sense of adventure, his summer for collecting is short in Alaska.

"My first thought was, do I want to go to the island and crawl around in the mud and find no insects?" he says. "I expected no survivors and really unpleasant work."

Nobody who saw what happened at Kasatochi predicted escape for any of the former residents — from fly to blade of

UAF alumni in this story: Max Hoberg, '75; Stephen Jewett, '77, '97; Ned Rozell, '90

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grass to bald eagle — from the explosive eruption, the tens of feet of suffocating ash and the gases hot enough to crack teeth seconds before vaporizing flesh. So complete was the destruction that scientists, usually the most cautious of writers, included in their research plan that the eruption “likely extirpated the terrestrial and nearshore marine biota.”

Sikes thought the island had indeed self-sterilized, resetting its biological clock to zero. But that utter destruction also was the appeal to returning to Kasatochi, even if he found nothing but a lifeless dome of mud — not many scientists get to walk on a brand-new landscape. A few have studied Surtsey, an island that popped its steaming head into the maritime air off Iceland in the 1960s, but none had been on a dead island that was crawling with life the last time they were there.

A bug’s life

Hiking away from shore, we are relieved to find the mud-ash mixture farther inland is firm enough to support a boot. After mucking through a few gray canyons that rainwater has cut deeper than we are tall, Sikes, Williams and I find the insect traps Williams had set out for Sikes on a brief June stopover at the island.

Sikes drops to his knees; his head hovers inches above a peculiar box full of golf balls painted ash gray, designed to collect the carcasses of dead insects that rain out of the sky.

He finds nothing, and turns over a plate-size rock, kneeling in his rain gear with his nose almost touching the mud. He squints, looking for movement and the dark specks of bodies.

Williams and I walk uphill to where he had planted a two-by-four on his visit here a few months ago. It marks the site of an old fox trapper’s cabin, built in 1929, that refuge biologists had used for years. After the narrow escape of two biologists one year ago (see sidebar on page 12), the cabin was consumed by the hurricane of hot ash and debris volcano researchers call a pyroclastic flow.

“When I put that stake there, I kind of felt like I was burying the place,” Williams says.

It’s clear he felt affection for that 10-by-12-foot cabin, which he had repaired before and had slept in while the wind howled around its frame walls.

“This was a special place,” Williams says. “It’s kind of like someone you know died.”

Over the wind, we hear Sikes from below, where he is again checking the golf-ball traps.

“I found some flies!”

His discovery of four tiny carcasses in the fallout collectors translates to four flies per square meter dropping from the sky in the two months since Williams set them out.

“Not very much insect biomass,” Sikes says.

Williams wants to check out the site of the former auklet colony and retrieve a digital audio recorder he left on a wooden stake at the site. We leave Sikes to his flies and climb up a steep slope of greasy volcanic ash, our feet slipping a few inches with each step before the treads of our boots catch.

“See those scratch marks?” Williams says, pointing out small grooves cut into the slope. “That’s from about 200,000 auklets that came back here to breed this June. But there’s nowhere for them to do their business now.”

Williams estimates there was zero nesting success for the auklets one year after the

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eruption. Thousands of chicks

once hatched in rock crevices here, their parents feeding off the sea’s riches; from the ship, the slope had looked like a green beehive. Now, ash has filled all those crevices, and the poor chickless auklets are elsewhere.

Looking at the desperate claw marks, we see an unexpected bit of color — the mint green of a spidery sprig of vegetation, the size of a child’s palm. We’ve been on the island for an hour, and it’s the first plant life we have seen. We spot other bits of greenery, including a few stalks of rye grass, the knee-high blades of which used to cover the island.

Climbing high on the side of the caldera, we see a tall, shallow recess formed by rocks. Williams squeezes himself in and pulls out a flashlight.

“There’s flies in here!” he shouts. “And what looks like a tick ... It’s a little bug bomb shelter!”

Williams pulls from his pocket a small vial filled with preservative liquid. Sikes had asked that all the scientists going onshore carry one or two, so they could collect any insects they encountered. Williams coaxes the tick in and catches one of the four pairs of mating flies. He also finds a spider, a small wasp and a beetle.

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Following biologist Jeff Williams across the island, Derek Sikes begins a climb on Kasatochi.

Inset top to bottom:

Sikes, curator of the UA Museum of the North's insect collection, checks a trap for dead insects.

Sikes checks under a rock for signs of life. He spent more than an hour on the island before finding a live insect.

After a mile of hiking, this sprout of an unidentified plant was the first sign of greenery.



Pyroclastic flow on the beach, eroded by a year's tidal action. Photo by Chris Waythomas, USGS, AVO.



Jeff Williams finds a "bug bomb shelter" in which several species of insect survived the eruption.

His vial filled with surprises for Sikes, Williams heads down the slope, stopping at another subtle rock crevice.

There, in a shoebox of a depression, is a dead bird. Next to it is another. Williams pulls one out and gently spreads its wings.

"Fork-tailed storm petrel," he says. "They used to nest up here, right in this spot."

The bird is supple and soft, showing no signs of trauma. There are no insects feeding on the carcass. Why is it dead?

"I don't know," Williams says. "This is a bit strange."

A possible clue is a few feet away. Moss with clinging beads of moisture is growing at the opening of a crack just big enough to insert your fingers. On the back of my hand, I feel the warm breath of the island flowing out of the crack. Williams ponders the information for a second.

"Maybe these birds were gassed [by sulfur or carbon dioxide]," he says. "Makes just as much sense as anything else."

After descending a few hundred feet, we catch up with Sikes, who has made a similar discovery — in a rock crevice, he's found 50 dead flies, in perfect condition. "I have never found anything like this before," he says. "Some gas may have poisoned them. It's giving me a little scare."

Later, back on the *Tiglax*, the captain, Billy Pepper, says he thinks it's unhealthy to have the ship anchored in the lee of the volcano. The sulfurous emissions of Kasatochi are bitter and stale, and your gut instinct is to get away.

The crew pulls up the anchor and we steam westward about 25 miles until we're in a protected bay of Great Sitkin Island. Great Sitkin is lovely and green, a vibrant place representative of a mature Aleutian island.

We return for one more day on Kasatochi, and the weather is surly, not unusual for where the Bering Sea meets the Pacific.

Captain Pepper has warned that a storm is coming, and we may not be able to spend much time on the island.

At midday, Pepper calls the handheld radios of the scientists onshore.

"Let's wrap it up, folks. This wind is getting stronger, and it's going to get worse."



Plants like this seabeach senecio were abundant on Kasatochi before the eruption. This plant was on the nearby island of Great Sitkin.



A dead fork-tailed storm petrel in a rock crevice, possibly killed by gases still escaping from below the surface of Kasatochi.

“You can’t stop life”

Assembled on the beach, with the fog so thick the *Tiglax* is invisible just a few hundred yards offshore, we look back through the sheeting rain and see Sikes’ blue rain gear along a gray backdrop. He is hugging a column of basalt rock, using every last minute to search for insects. When he hikes back to the beach, ash smeared on his cheek and water droplets on his glasses, he is smiling like a little boy.

“I found a dwarf spider and a stone centipede,” he says. “Both definitely survivors of the eruption, though I’m not sure how. Looked like they hadn’t eaten for a while because when I put them in the same vial, the centipede went right for the spider. I had to separate them. I wouldn’t be surprised if he hadn’t eaten all summer.”

Four at a time, we jump in the inflatable skiff that takes us to the *Tiglax*. After dinner, we have a meeting to share what the researchers have found. The theme is awe (at the destruction) and surprise (at the life that endured it).

Two UAF divers, Steve Jewett and Max Hoberg, found “a biological desert” on an apron surrounding the island where the rich kelp forests no longer exist. Plant scientists from Anchorage and Nevada found 19 species that survived the eruption; a blanket of ash seems to have insulated regenerative root mats from the hottest pyroclastic flows. Sikes reports that he and others have found 17 species of insect — flies, carrion beetles, predator centipedes and wasps — and he thinks they probably were in their own “bomb shelters” when the eruption happened.

“I thought we’d have a few years of zero, but this has been much more exciting,” he says.

As we begin to motor away from Kasatochi — an island that, unlike every other Aleutian island I’ve visited, I am ecstatic to leave — one of the botanists, Steve Talbot from Anchorage, sums up the experience.

“Dune grass and [a type of sea sandwort] are getting a toehold,” he says. “These are the plants that can take a real beating. They get going, and then get clobbered by erosion, but their buried seeds and rhizomes keep coming back.

“The plants will keep coming back,” he says. “All of man’s things — concrete, steel — all those things fade away. But you can’t stop life.”



Ned Rozell, '90, is a science writer at UAF's Geophysical Institute.



This weevil (*Lepidophorus inquinatus*) is commonly found on Aleutian islands, including pre-eruption Kasatochi.



View satellite footage of the eruption at www.uaf.edu/aurora/.

Imagine the excitement you would feel in being left behind on your own island for an entire summer, with an agreeable partner and a small but comfy cabin. You're there to continue bird studies started more than a decade before, and, when the Alaska Maritime National Wildlife Refuge ship pulls away, you are on your own.

Then imagine that near the end of your summer on Kasatochi, you and your coworker, Ray Buchheit, feel earthquakes every few hours. One day, Buchheit tells you to go look at the caldera, because rock avalanches pour into the water one after the other. You don't know it yet, but your island, a volcano with no modern history of eruption, is erupting.

Chris Ford of Kupreanof, in Southeast Alaska, spoke about this experience recently, after more than a year of not talking publicly about how he and Buchheit escaped the island's destruction by one half hour.

Ford talked about the last night he and Buchheit spent in their small cabin, listening to their island groan.

"We were just laying there counting the seismic movements," Ford said. "There's these little explosions, muffled booms, and then there'd be this massive vibration that would just rattle the cabin."

Cans of food skittered across shelves, some hitting the floor.

"We're sitting there looking at each other like wow, this is crazy," Ford says. "It hadn't really hit into our brains that this volcano was erupting. Maybe your mind just won't go there or something."

While debating whether the booms were coming from deep beneath their island or somewhere beneath the ocean floor, both men drifted off into fitful sleep. Ford remembers waking the next morning to the sound of an island in labor.

"I wake up to massive vibration, just the whole cabin going back and forth," he says. "Stuff being pitched on the floor. I was like wow, it's eight in the morning and I guess we're still here."

A few hours later, the men felt the island shake for 10 minutes straight. They had just heard on the VHF radio that a fisherman from Adak was approaching (Fish and Wildlife Service people had decided he could reach the island the soonest). The stench of sulfur penetrated the cabin.

Ford and Buchheit looked at each other, knowing it was time to move. They each grabbed a dry bag and staggered down the long, heaving, crooked path that led to a rock beach where their skiff was anchored offshore.

When they got to the ledge above the skiff, they looked back at the rocky slope where the auklets lived, a place they knew well from walking a study route along it every day.

"We stopped and looked up — the whole face of it was completely caved in," Ford says. "It had collapsed on itself. This was an area where we spent our whole summer, and it's just turned upside down, and it's still turning upside down, with rocks falling in on themselves. We were just kind of amazed."

Ford and Buchheit jumped in their inflatable skiff and made it to Al Giddings' 32-foot bow-picker, the *Homeward Bound*. As Giddings steamed away through neighboring islands, ash suddenly covered his windscreen — Kasatochi had erupted. Nothing larger than a centipede survived.

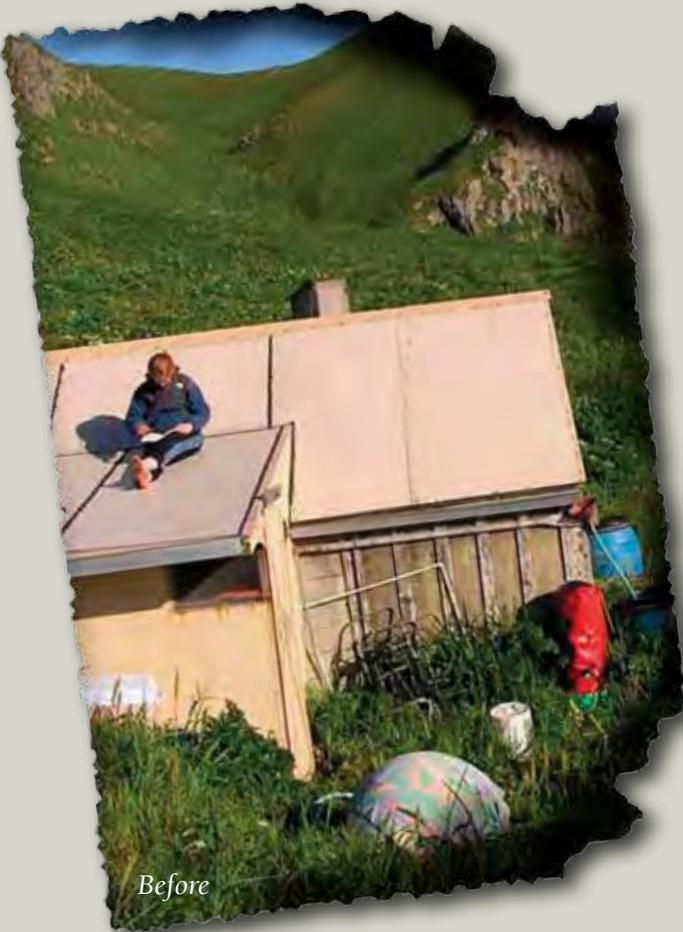
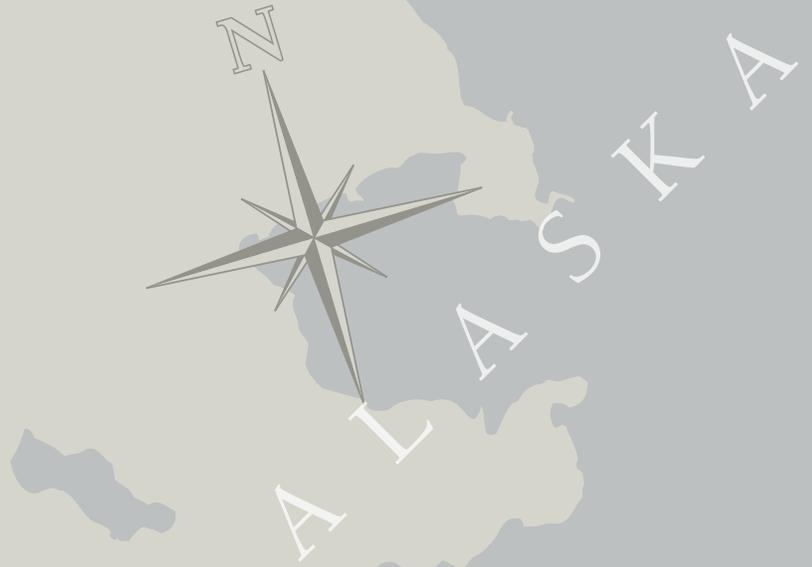
"It's sort of weird," Ford said. "That volcano blew up and it wasn't ready to take us with it. That's the gist of it."



Before



After



Before



After

Above: The U.S. Fish and Wildlife Service cabin (photo by Vernon Byrd, USFWS).

Right: USFWS cabin site after eruption.

Below left: Kasatochi crater the day before the eruption (photo courtesy of USGS), and after eruption (photo by pilot Jerry Morris of Security Aviation, courtesy of the Alaska Volcano Observatory).

The Great Escape

Kasatochi