Alaska's Northern Passages & Glacier Bay
June 29 – July 6, 2024 | Trip Report by Stephen Grace

Naturalist Journeys Tour Leader Stephen Grace with Henry, Maddy, Christy, Kaki, Ann, Mike, Sandra, Tim, Kathy, Trina and Rebecca.

Thurs., June 27 Early Arrival in Sitka | Optional Town Orientation Walk | Optional Birding and Nature Walk at Sitka National Historical Park

On the same flight from Seattle to Sitka, Henry, Maddy, Mike, Ann, and I cruised over snowcapped mountains, emerald rainforests, and sapphire fjords, touching down on a short runway at the edge of the sea—an exhilarating start to our adventure. After dropping off our luggage at our hotels, we set out to explore this enchanting place.

Sitka, a cultural crossroads of Alaska, merges Tlingit, Russian, and American history. Our first stop was St. Michael's Cathedral, a National Historic Landmark and an outstanding example of Russian Orthodox architecture. From there, we took a scenic walk along a marina filled with working fishing boats to Sitka National Historical Park, where totem poles carved by the Tlingit people stand among towering trees.

Amid the hemlock and spruce of the rainforest, we heard the ethereal flute of a Swainson's Thrush and found the songster perched on a snag. A Pacific Wren added a bubbling cascade of song near the forest floor—a lovely introduction to the nature of Southeast Alaska.



Fri., June 28 Early Arrival in Sita | Optional Saint Lazaria Birding and Wildlife Cruise

On the second day, Rebecca joined our group of early arrivers, making us a party of six. We set out with Captain Matt Stroemer of Sea Piper Tours across Sitka Sound to Saint Lazaria. This island sanctuary at the edge of the Gulf of Alaska hosts half a million nesting seabirds—more than 7,000 breeding birds per acre. Common Murres, in their black and white tuxedos, stood upright in crowded colonies on the sea cliffs, resembling "penguins of the north." When Captain Matt maneuvered us close to the volcanic cliffs and caves and quieted the engine, a cacophony of breeding seabirds filled the soundscape.

A plethora of puffins surrounded us. The golden plumes of Tufted Puffins glowed against the green sea, and their bright orange beaks, capable of carrying multiple fish, drew our eyes and camera lenses. The water around our boat boiled with salmon chasing schools of forage fish, and a humpback whale joined the feeding frenzy. The leviathan cruised close to cliffs draped in kelp and plastered with colorful sea stars. Pigeon Guillemots, their legs as red as fire engines, waddled across nesting ledges near the whale, while Black Oystercatchers used their pry-bar bills to probe rocks for mollusks. The oystercatchers gave their wild *wheep wheep wheep* call, the anthem of the intertidal zone, as they flew through the whale's spout. As we left Saint Lazaria, cloud cover lifted, unveiling snow-covered peaks rising from the sea.

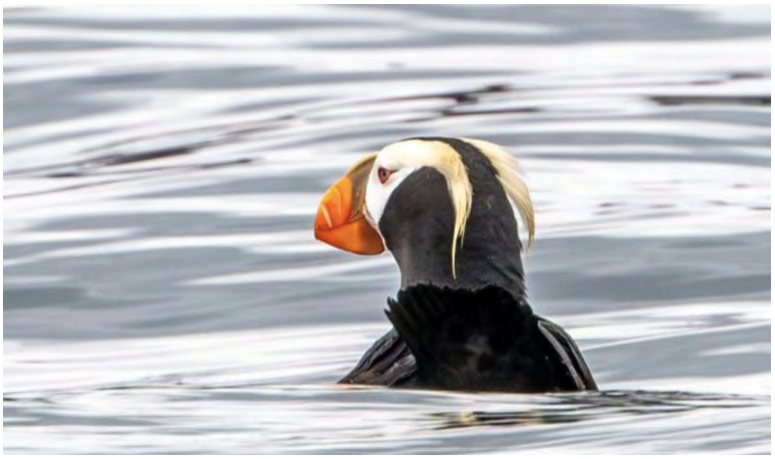
After our pelagic adventure, we walked a rainforest path. Ruby-crowned Kinglet parents fed caterpillars to their hungry fledglings, and Swainson's Thrushes defended their territories with song. Bald Eagles patrolled the shore and perched in treetops, bending the branches. When these bulky raptors took off and landed, the sound of their strong wings smashing spruce boughs contrasted with their weak and chattery cries.

Exploring the history-rich city of Sitka in the seemingly endless daylight of the Alaskan summer was a perfect end to a phenomenal day.

Sat., June 29 Optional Sitka Birding and Natural History Walk | Embarkation

In the morning, we gathered at the Westmark to welcome more members of our group: Christy, Kaki, Sandra, and Tim. Then we walked to Sitka National Historical Park, where we met Kathy and Trina. We were now a group of twelve travelers eager to explore Alaska.

Just as I finished explaining that we had an excellent opportunity to hear a Townsend's Warbler but a slim chance of seeing one, a striking male showed his black and yellow face in the tree canopy. He moved down low in the branches to give us good looks, and then, astonishingly, he dropped to the shore below the walkway where we were standing. We craned our necks to look *down* at this Townsend's Warbler, instead of the usual scenario of tipping back our heads to squint at warblers in treetops.



After lunch in town, some of us returned to the park and had superb views of other forest birds that can be challenging to spot—Swainson's Thrush, Pacific Wren, and Western Flycatcher.

Excitement mounted as embarkation neared. UnCruise Adventures, the company that Naturalist Journeys partners with to provide this journey into the wilds of Alaska, bussed us to the *Safari Endeavor*. Our home for the next seven nights, this ship is large enough to be comfortable but is a pipsqueak compared to the gargantuan cruise ships that ply Southeast Alaska waters. This nimble vessel would take us into remote coves and hidden inlets of the Last Frontier. After a hearty welcome from all the crew, including Captain Shep and Expedition Leader Keika, we were shown our comfortable cabins and given a ship orientation and an overview of Southeast Alaska. Then we were served one of many fine meals to come.

Most of us ordered Alaskan sockeye salmon with potatoes and asparagus, followed by chocolate cake made by the shipboard pastry chef. Being a group of twelve in a small ship's dining room with immovable tables, we sat with some members of our group at meals but also mingled with other UnCruise guests on the ship. We made many new friends, both with birders and with people who, inexplicably, were not interested in birds but were fascinating and fun humans nonetheless. Everyone aboard the vessel appreciated aspects of the natural world, whether whales in the sea, bears on shore, or a Lincoln's Sparrow singing from a spruce bough.

Sun., June 30 Sukoi Inlet

We woke this morning to gorgeous light illuminating the glass-calm water of a secluded inlet. Rainforest cloaked the surrounding mountains, and in the distance, snow-covered crags poked through the clouds. A Bald Eagle snagged a salmon, sea otters dove for their breakfast, and Sitka black-tailed deer browsed along the shore. Later in the morning, while our ship was underway, humpback whales blasted their breath into the air and lifted their flukes skyward as they dove. Near the ocean's edge, a coastal brown bear ambled through sun-dappled grass before disappearing into a dark forest.

The brown bear, *Ursus arctos*, is a Holarctic species, meaning its range covers the Northern Hemisphere from North America to Eurasia. *Ursus* is Latin for bear; *arctos* is Greek for bear. Carl Linnaeus scientifically described and named this quintessential bear species the "Bear bear" in his 1758 edition of *Systema Naturae*. Various brown bear subspecies have been causing confusion among scientists and the public ever since. To see the brown bear subspecies known as grizzly bear, *Ursus arctos horribilis*, you must travel to interior Alaska, away from the coast. The coastal brown bears we saw in Southeast Alaska gorge themselves on fat-rich salmon,

allowing these beasts to grow to massive proportions—much larger than the grizzlies of the interior. These coastal brown bears can be five feet tall at the shoulders when on all fours; when they rear up, they may tower ten feet above the ground. A male weighing 800 to 1,000 pounds is not uncommon, and some of these beasts can top 1,500 pounds.

As we watched these bruins probe coastal meadows and paw the wrack line along the shore, we could clearly see features distinguishing the brown bear species from the black bear species. The brown bear has a muscular hump on its back that provides power for digging plants and animals out of the ground. The "dished" or concave shape of its facial profile is also distinctive. From the safety of a boat, studying the features of these massive omnivores and observing their foraging behavior was thrilling.

Our group left the mother ship to search for wildlife in a small boat, known as a skiff. Identifying female Surf Scoters without males nearby proved to be a fun challenge. These sea ducks swallow mollusks whole and pulverize the shells with their powerful gizzards. Although avian species diversity is low in the northern wilds relative to latitudes closer to the equator, the birds of Alaska are endlessly fascinating.

Even the crows here are intriguing—they offer a window into one of the geologic forces that shaped this region. The Northwestern Crow was not long ago considered a separate species from the American Crow. The population that we observed foraging on seafood in the intertidal zone evolved in relative isolation from the American Crow during the Ice Age, when massive glaciers encased much of the region beneath frozen water. As the climate fluctuated across millennia, deep and narrow valleys were carved by rivers of ice growing and shrinking, advancing and retreating. When the ice made its final retreat, many of the glacially carved valleys were flooded with seawater and became the fjords of Southeast Alaska. And when the geographic barrier of massive glaciers disappeared, the separation of crow populations ended, and they began to intermingle. Recent genetic studies have shown extensive interbreeding between the Northwestern Crow and the American Crow, leading to the reclassification of the Northwestern Crow as a subspecies of the American Crow.

On our skiff tour, we encountered a multitude of Marbled Murrelets. These elusive creatures wore their forest camouflage that helps them avoid predators during breeding season. The Marbled Murrelet nests in forests up to 50 miles inland, laying a single cryptically colored egg on the mossy limb of an old-growth tree, and then commuting between forest and sea to carry fish to feed its chick.

The most extraordinary spectacle we witnessed involved a Bald Eagle. Two small birds chasing the eagle had us puzzled. What birds would battle an eagle ten times their size? After tussling with the eagle, these mysterious warriors perched atop conifers and gave strident alarm calls for several minutes without pause. All of us had seen Bald Eagles and Greater Yellowlegs before, but none of us imagined we would ever see Greater Yellowlegs chasing a Bald Eagle. Presumably, these shorebirds that breed in Southeast Alaska bogs were defending their nest from the marauding raptor.

While savoring another delicious dinner, we wondered: What surprises will tomorrow hold in this vast wilderness?

Mon., July 1 Ushk Bay

Several of us gathered on deck before breakfast, gazing through my spotting scope across the sleepy water of a bay shrouded in mist. Just before breakfast was served, two bears strayed into the open, jolting us fully awake.

An exciting morning meal of Mexican chilaquiles was followed by an “eco-meander.” We rode in a skiff from the mothership to shore. Wearing knee-high rubber boots (called the “Alaskan tennis shoe”), we splashed our way through mud onto solid ground. Known as a “wet landing,” this is standard practice while skiffing in the Alaskan wilderness. After meandering among boulders encrusted with barnacles and covered with rockweed and mussels, we were greeted by a Rufous Hummingbird as we moved higher onto the shore. Some of us nibbled on goose tongue, a fun edible plant, and we grazed on pickleweed, also known as beach asparagus.

The voices of birds drew us away from the water’s edge. While scanning through binoculars, our attention was snagged by wildflowers in the distance. We waded through fields of beach ryegrass to investigate these botanical wonders. From the bold purple blooms of flag iris to the delicate waxy petals of shy maiden to the intricate architecture of coralroot orchid, we marveled at the myriad ways nature has devised for organisms to grow and reproduce. The fetid smell of the chocolate lily, a scent that evolved to attract pollinating flies with the stench of rot, wrinkled our noses as we sniffed this pretty flower.

Before passing from a meadow into a forest, we found piles of fresh bear scat that showed what the animals had been eating: grasses and sedges. As we gathered around this scat, we realized that the salmon we had seen in

the sea would soon arrive in the rivers to spawn. The bears would fatten on these fish in preparation for their long winter slumber. Further, the salmon carcasses that the bears dragged into the forest would fertilize the soil, helping grow the trees that stabilize the streambanks and shade the cool waters where the salmon spawn. Exploring the braided strands that weave the web of this ecosystem was exhilarating.

Birdsong surrounded us. American Robins came into the open, and Lincoln's Sparrows were confiding, perching at eye level as they delivered their lovely songs. Other species were easy to hear but difficult to see. If you aren't birding by ear in Alaska, you are missing so much. I helped our group hear the songs of common but seldom-seen forest species: Western Flycatcher, Pacific Wren, Townsend's Warbler, Chestnut-backed Chickadee, Swainson's Thrush, and Hermit Thrush. Red Crossbills gave their *jip jip jip* flight calls, but we couldn't get clear views of these birds as they flitted in the tops of trees that scraped the sky.

We passed from daylight into shadow as we entered Tongass Rainforest, the largest intact temperate rainforest on the planet. Encompassing nearly 17 million acres, this rain-soaked wonderland wrapped in mosses and strewn with ferns shows every shade of green. Aside from providing a home for myriad living things and stoking our sense of awe and wonder, this vast forest sequesters an enormous amount of carbon, helping mitigate global climate change.

After tromping across a creek, we entered a stand of old-growth western hemlock and Sitka spruce with gigantic trunks. Some of their limbs were as large as individual trees. Witch's hair and methuselah's beard lichens draped from the branches. Amid tangled roots, tunnels made by creatures in the mossy forest floor led to hidden places, letting our imaginations roam. In this fairytale forest, we not only searched for charismatic megafauna. Our group had great fun finding banana slugs—arguably the most charismatic of all the world's slugs. Some members of our group even kissed one of these creatures that looks like an overripe banana and plays a critical role in the forest ecosystem. This slimy gardener consumes nitrogen-rich lichens that fall from tree branches. The banana slug then fertilizes the soil with its droppings, which are rich in nitrogen and other essential nutrients. This process helps nourish plants, including gargantuan rainforest trees; these trees, in turn, support the growth of lichens that feed the banana slug, thus completing a loop that has cycled for ages in the ancient forest.

Back aboard the *Safari Endeavor*, we refueled with a Mediterranean-themed lunch of chicken shawarma and falafel pitas. Rock cod salad was another tasty option. Trying to pick a favorite meal from the ever-growing list of delicious feasts became a challenge.

Another challenge: keeping track of all the wonders we witnessed on our adventures. After lunch, we set out again to see what we could find. UnCruise offers a choose-your-own-adventure model. Options most mornings and afternoons range from a relatively relaxing skiff tour to an arduous bushwhacking excursion, where an UnCruise guide leads a group into untracked wilds, exploring forests, meadows, and muskeg (Alaskan bogs). This afternoon, several members of our group opted for a skiff tour—a good choice, it turned out. From our small boat, we saw a brown bear mother foraging with her three cubs.

Two of the cubs were bright blonde, and the other was dark chocolate brown, almost black, illustrating how color is not a reliable indicator of bear species. The muscular hump on the mother's back, diagnostic of the brown bear species, bulged as she dug for food in a grassy strip between forest and sea. While watching these animals at close range, we discussed in hushed whispers their adaptation of delayed implantation. The body of a mother bear doesn't implant an embryo until the mother is sufficiently nourished to give birth to healthy cubs and nurse them. If she is stressed and starved, instead of becoming pregnant, she will reabsorb the protein of the embryo.

While we watched the bears, a Hermit Thrush played beautiful flute music at the forest's edge, and a Red-breasted Sapsucker hammered a tree out of sight. The cadence of this woodpecker species is distinctive: slow and irregular, like a drum roll that trails off—not the fast and steady pounding of a Hairy Woodpecker or Downy Woodpecker. Once again, the benefits of birding by ear in Alaska, where many species hide in dark forests, were made manifest.

Bald Eagles are easily seen, however, as are their nests. Just beyond the bears on the beach and the hidden sapsucker, the white head of a mature Bald Eagle poked above the thatched sticks of a nest. Throughout our journey, even the non-birders in our midst were intrigued by Bald Eagles wearing various plumages, ranging from the uniformly dark feathers of juveniles to the mottled brown and white bodies of immature birds to the white heads and tails of adults who achieve their iconic plumage around age five.

Members of our group who opted to kayak this afternoon instead of exploring by skiff saw a Southeast Alaska rarity: a Sabine's Gull. Perhaps the most beautiful of all gull species with its dark hood, yellow-tipped bill, and tricolored wings of black, gray, and white, this bird is common in Northern and Western Alaska. But Sabine's is a rare visitor to the panhandle of Southeast Alaska, underscoring the varied ranges of birds in this state eight times the size of Great Britain. Larger than Texas, California, and Montana combined, Alaska, if placed over the lower 48 states, would stretch from coast to coast. In this sprawling crossroads between Eurasia and North America, anything can turn up.

One of the birders we befriended on the cruise had an extraordinary encounter while paddling. Based on her detailed description, and after scrutinizing bird books and bird apps, we surmised that she had spotted a Black-

winged Stilt. This long-legged wader, a close cousin of the Black-necked Stilt, is a species found throughout much of Africa and Eurasia and sometimes appears in Southeast Alaska.

The kayakers in our group paddled alongside harbor seals. Like the brown bears we watched from the skiff, seals have evolved the adaptation of delayed implantation. The harbor seals raised their curious heads from the water to watch the humans watching them. These sleek beings are as beguiling as selkie myths, the stories of seals taking human form in the folklore of Scotland, Ireland, and Scandinavia, where this same species lives. A person could get lost in the large, liquid eyes of this marine mammal that has stirred the human imagination for centuries.

Humpback whales breaching next to our ship provided a spectacular grand finale to the day. The explosions of their exhaled breath blended with the thunderous clap of their bodies slamming into the water as these behemoths hurled themselves from the sea.

Tues., July 2 Kasnyku Bay

In the morning, we woke up in a new and wondrous location. Captain Shep had steered the *Safari Endeavor* to Chatham Strait along the east side of Baranof Island, a land of waterfalls. In the calm bay surrounding our ship, a playful sea otter rolled like a log, pausing to groom its furry face. Unlike seals and whales, which rely on blubber for insulation, sea otters maintain their warmth through a supercharged metabolism, fueled by consuming a quarter of their bodyweight daily. Also, their dense fur that packs a million hairs into a square-inch traps insulating air—a remarkable adaptation that almost led to their extinction due to the fur trade, which prospered from their plush pelts. Witnessing species like sea otters and humpback whales rebounding in their natural habitat is a heartening testament to conservation efforts.

On the serene waters of Kasnyku Bay floated rafts of Surf Scoters, including males with their striking black and white heads and bright orange bills, earning them nicknames like “skunk-headed coot” and “poor man’s puffin.” Also populating the scene were Marbled Murrelets. Many wore their brown breeding plumage, but some immature birds were dressed in black and white winter attire, prompting scrutiny to distinguish them from Ancient Murrelets with their distinctive white tufts, reminiscent of an old mariner’s whiskers. A Rufous Hummingbird darted over our ship—a marvel, considering its tiny size and the monumental distances this hummer migrates annually between Mexico and Alaska, making it the longest migration relative to body size among all birds.

After breakfast, a skiff excursion took us to Hidden Falls Hatchery, part of Alaska’s efforts to supplement wild salmon populations sustainably. Our guide, Jackie, discussed the complexities of hatcheries and the ecological impacts of farmed salmon, setting the stage for her later talk aboard the ship.

Near the hatchery's fish ladder, several bears feasted on salmon. One of the bears got in the water and swam. Its head, poking above the surface in the distance, resembled the big, boxy head of a Steller's Sea Lion that appeared next to our boat. A Belted Kingfisher and numerous Bald Eagles added to the spectacle. Our skiff captain, Nate, whom we nicknamed "Nate the Great," finessed our boat so close to a waterfall that we could feel its mist on our faces. A Hermit Thrush unexpectedly appeared on a boulder—a rare treat to closely observe this shy bird that breeds in forests. Its reddish tail, which it slowly raised and lowered, dispelled any doubt about its identity, separating it from Swainson's and Gray-cheeked Thrushes.

Leaving the waterfall, we enjoyed excellent views of a female Harlequin Duck perched on a rock and a handsome male in the water, displaying the slate blue and chestnut plumage adorned with bold white accents that makes this species one of the most striking waterfowl in the world.

In the afternoon, as Captain Shep navigated the *Safari Endeavor* through Chatham Strait, we encountered sixteen humpback whales. These animals as big as school buses were engaging in bubble-net feeding—a coordinated technique using bubbles as tools to corral and confuse the schooling forage fish they feed on. For a couple of hours, we watched the whales dive in unison and then poke their heads above the sea in perfect synchrony as they gulped fish in their giant maws.

Nearby, orcas appeared. A male's six-foot-tall dorsal fin rose from the water, and a calf swam close to its mother. Though the humpbacks and orcas didn't interact, their presence together provided unforgettable memories of marine life thriving in this majestic wilderness.

Wed., July 3 Wachusett Cove

Early morning bird and wildlife viewing from the ship offered a superb look at a pair of Bald Eagles lingering on the shoreline. A Common Merganser swam past with several fuzzy ducklings in tow, and Great Blue Herons demonstrated their statue-like patience and lightning-fast strikes as they hunted fish. Suddenly another mother bear with triplets appeared. Through our scopes and binoculars, we watched the cubs clamber over boulders and forage along the shore, mimicking their mother's feeding techniques.

After breakfast, we boarded a skiff and quietly approached the bears on shore, observing them closely as they combed the intertidal zone for breakfast. We then ventured to explore our own stretch of shoreline, finding treasures like the empty shell of an Oregon hairy triton, a predatory snail the size of a child's fist. We passed these discoveries among our curious group, examining them and speculating about the lives of mysterious creatures in the sea.

We touched sea anemones in tidepools, feeling the sticky grip of their tentacles—these animals that look like pretty flowers are carnivorous predators, close relatives of jellyfish and coral. Every tidepool teemed with sculpin, a little fish that changes color like a chameleon to camouflage itself and crawls onto shore to breathe air through its skin when stranded in oxygen-poor pools at low tide. Limpets clung to rocks alongside barnacles and mussels, making use of every available surface.

We marveled at an enormous strand of bull kelp that had washed ashore—a glimpse of the vast undersea kelp forests that rival the grandeur of the temperate rainforests on land. Then we found isopods. These marine relatives of the pill bugs or roly-polies found in damp basements and yards resemble insects but are in fact crustaceans. They crawled on their many legs among clumps of rockweed. We popped rockweed bladders to feel the gel inside, as soothing and moisturizing as aloe vera. Then we explored sea caves and an enormous arch carved in volcanic rock by ocean waves. Before returning by skiff to the mothership, we sampled salmonberries at the forest's edge.

After lunch aboard the *Safari Endeavor*, some of us kayaked while others ventured on a bushwhack deep into the forest. We navigated obstacles like slippery mud and thorny devil's club, pausing to admire orchids, and even discovering a bear skeleton. Bear scat containing blueberries and deer remains, including a complete hoof, told tales of the varied diet of bears.

Emerging from the rainforest into a meadow adorned with wildflowers and framed by towering ferns and mist-shrouded mountains, we savored a moment of silence to absorb the untouched beauty of this primordial wilderness.

In the evening, a guest aboard the ship exclaimed, "Baby orca by the bow!" Everyone within earshot hurried to the front of the boat. A Dall's porpoise, with its black and white markings resembling an orca, rode the bow wave of our ship at sunset. This playful porpoise delighted us with its agility and speed—the perfect capstone to a day filled with wonders.

Thurs., July 4 Glacier Bay

We awoke in Glacier Bay National Park as the *Safari Endeavor* approached our morning anchorage. The landscape evoked a journey back to the Pleistocene, when colossal glaciers carved deep fjords and valleys. This rugged terrain offered us a glimpse into a world still shaped by powerful geological forces.

Near Lamplugh Glacier, we were thrilled to spot several Kittlitz's Murrelets. These elusive alcids forage near tidewater glaciers and nest on the ground in remote mountain reaches safe from predators. To prepare for this encounter, the previous evening our group had studied this murrelet's field marks that separate it from its

Marbled Murrelet cousin, noting the paler plumage with a golden sheen, and the tail that flashes white when the bird is flushed. These seabirds have evolved large eyes to hunt in waters murky with glacial silt, an adaptation that allows them to thrive in a world where ice meets water. How this species will fare in a warming world as glaciers melt and recede from the sea remains to be seen.

Turquoise-colored waters thick with silt around Lamplugh Glacier also revealed Pigeon Guillemots. These charismatic alcids showcase ruby-red feet and red linings in their open beaks. On a nearby cliff, we watched Bald Eagles in a nest, including two eaglets. Then Black Oystercatchers with their long reddish-orange beaks and flesh-colored legs captured our attention. As we observed these shorebirds probing rocks, a flock of White-winged Scoters flew past against a dramatic mountain backdrop, like an epic scene in a nature documentary.

We took a skiff to explore the shore where the Lamplugh Glacier is receding from the sea. When we encountered Short-billed Gulls protecting their nests by chasing larger Glaucous-winged Gulls away, we gave these protective parents a wide berth. Chunks of melting ice, ranging in size from bowling-ball-proportioned pieces to blocks as big as cars, lay scattered across the landscape. We noticed intricate details of the ice, including trapped air bubbles, perhaps containing molecules exhaled by Pleistocene megafauna like mammoths, and we marveled at the vivid turquoise and sapphire hues produced by sunlight scattering from dense glacial ice.

Navigating over boulders and slippery glacial silt, we examined plants thriving in recently exposed earth. Dwarf fireweed and ferns added vibrant splashes of color to the rocky landscape revealed by the rapid retreat of millennia-old ice. Delicate-looking plants pioneering what to our eyes appears as a barren, inhospitable moonscape makes a poignant scene.

When our glacier exploration ended, we returned to the ship, and some people prepared for a “polar plunge.” An UnCruise tradition, this shockingly cold baptism takes place in Glacier Bay. This water where icebergs float barely pushes the mercury above 45 degrees, but there are no lion’s mane jellyfish to sting bare flesh. Those of us who took the plunge jumped into the bracing sea. We were immersed in water recently transformed from solid to liquid as the glaciers melt at a staggering rate.

The great rivers of ice in this bay advanced during a period known as the Little Ice Age, reaching their maximum extent around 1750. Glaciers completely engulfed the bay and spilled into Icy Strait, forcing the indigenous Tlingit people to abandon villages. When Captain Vancouver sailed here in 1794, the glaciers had already begun their retreat, and the bay was a subtle indentation in the ice. By the time the famous naturalist John Muir first

explored this area in 1879, the ice had retreated some 40 miles into the bay that the glaciers had carved. Today, an additional 20-mile-long stretch of vanished ice is evident. To view tidewater glaciers that touch the sea, you must travel by boat 65 miles up this bay that was completely buried beneath ice a mere 275 years ago, just an eyeblink in geologic time. There is an ebb and flow to Alaska's glaciers as the planet's climate continually shifts, but the natural retreat of ice in Glacier Bay is now being accelerated by anthropogenic warming. Plunging into the meltwater of the bay provided a vivid education in the rapidly changing environment of our planet.

As we warmed our bodies with hot drinks and enjoyed lunch aboard the ship, Captain Shep navigated toward Johns Hopkins Glacier, a towering river of ice that calves into the sea. Seabirds have learned to capitalize on the shockwaves caused by calving ice. When the clever birds hear the thunderous crashes of ice collapsing into the sea, they swoop down to forage on stunned prey. Harbor seals make use of floating icebergs, hauling out on these surfaces by the hundreds to escape the frigid water, to rest, and to give birth to pups in spring.

With seals strewn on bergs of floating ice, and a gargantuan glacier surrounded by lofty peaks glinting in sunlight that leaked through clouds, it seemed we had traveled toward the Arctic Circle, far from the temperate rainforests of Southeast Alaska. This impression lingered as we made our way through Glacier Bay to one of the most important seabird breeding colonies in Alaska.

As we sailed for hours toward South Marble Island, jaw-dropping scenery scrolled by, and floating icebergs in fantastic shapes tricked our eyes into seeing seals and otters amid a frozen wonderland. Two of these ice sculptures looked exactly like swans. We realized that one floating ice chunk held a real Bald Eagle.

Some of us bundled up and headed out on deck for spectacular birding. Two Pelagic Cormorants flew across our bow, showing us their white flank patches and broomstick-thin necks. Marbled Murrelets and Kittlitz's Murrelets waited to dive until our ship was within a hundred feet, giving us good looks. A Pacific Loon and a Caspian Tern expanded our bird list and heightened our excitement as we neared South Marble Island. Our mood sagged, however, as storm clouds swallowed the island.

Our luck with weather had thus far been superb—a few rain showers but no deluges. We worried that our good fortune had finally run out. Would our one opportunity to experience the seabirds of South Marble Island be erased by poor visibility?

A rainbow arched out of the gloom. By the time we reached South Marble Island, the rain had stopped, and the seas had calmed. Our first Tufted Puffin elicited excited shouts, and soon we were surrounded by these alcids, along with their cousin, the Common Murre. It seemed that every inch of available rocky cliff was occupied by Pelagic Cormorants. Black-legged Kittiwakes were also abundant. Through the scope, the black feet and stubby legs of these members of the gull family standing on rock ledges made them look comical and endearing—the corgis of the bird world.

The shipboard chef commemorated the Fourth of July with a feast of Dungeness crab, a memorable meal to celebrate our nation's birthday. When we anchored near the town of Hoonah, some people peeked out of their

windows or went out on deck to watch fireworks just before midnight, when darkness finally descended at the end of a long and eventful summer's day in Alaska.

Fri., July 5 Neka Bay

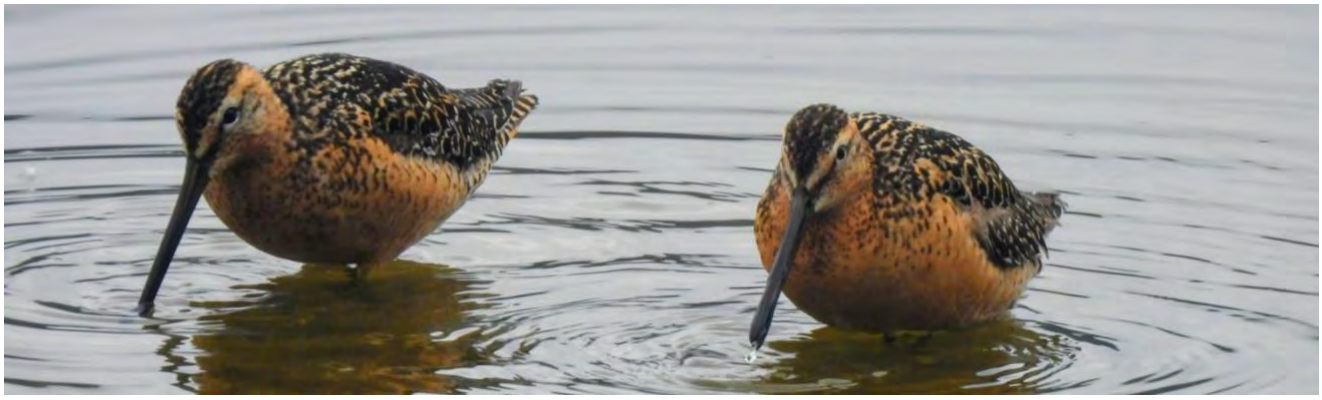
In Neka Bay we made the most of our final full day. We skiffed over to Chimney Rock Island, named for a prominent rock pillar. While exploring the island's shores at low tide, we encountered Pigeon Guillemots carrying long, eel-like fish for their chicks. After turning over a few rocks, we found some of these fish, known as gunnels.

We examined mussels and clams, favorite foods of sea ducks like the Surf Scoters and Harlequins we had seen well on our tour. We touched the leathery tunics of black katy chitons, eaten by the Black Oystercatcher, and we were awed by the gemlike beauty of a lined chiton painted cyan and pink. Though these hues are striking, this colorful creature is camouflaged when it grazes on crusts of pink coralline algae. Chitons are mollusks related to snails. They are shielded not by a spiral shell but by eight overlapping plates—this flexible shell can conform to irregular rock surfaces along the shore, making them challenging for predators to pry loose. With our curious fingertips, we traced the shape of chiton plates and the smooth slopes of limpet shells. A snail cousin with a conical shell, the limpet is another creature that the Black Oystercatcher dislodges from rocks with its long bill. Interacting with the food that sustains our avian friends heightened our appreciation for the birds we love.

Gulls will eat starfish (or sea stars, as scientists prefer to call them). The stiff arms of a sea star can make a gull's neck bulge bizarrely as the bird tries to swallow its prey. Sea otters will sometimes gnaw off sea star arms, but these animals have extraordinary powers of regeneration—we marveled at arms being regrown by sea stars that covered the rocks along the shore. These creatures came in enough colors to decorate a pride parade, a rainbow of hues that included pink, tan, teal, and blue. We examined their hydraulic tube feet, which were attached to clamshells and mussel shells that these predators were trying to pry open so they could eat the soft mollusks inside. Though sea stars look pretty and seem docile, they are "tigers of the tidepools." These apex predators of the intertidal zone also serve as keystone species. Sea stars have a powerful effect on the ecosystem at the ocean's edge because they eat so many mussels, freeing up space for other organisms to inhabit.

The carapaces of shore crabs were investigated to find out if the shells contained dead crabs or were molts—the empty exoskeletons that crabs slip out of, like shrugging off a shrunken sweater, when they grow too large to inhabit their armor and must grow larger coverings. The hermit crabs we watched scurrying through pools used empty snail shells as their homes. One live snail we found closed its operculum, the trapdoor that keeps the soft sea creature inside moist and safe, sealing it off from the dry and hungry outside world. This shell gleamed in the sun with mother-of-pearl opalescence.

One tidepool held a nudibranch, a sea slug that not only is immune to the poison of an anemone's tentacles but also steals the stinging cells of its prey to use for its own defense against predators. Nature's clever intricacy was on full display in the intertidal zone of Chimney Rock Island.



Live sea urchins moved their spines like little chopsticks, gripping bits of kelp and pinching our fingertips. The "test" (internal shell) of a dead sea urchin with its spines stripped away looked like a bejeweled cushion. In its mouth opening, we saw Aristotle's lantern, a five-sided chewing structure named for its resemblance to Greek lanterns in the philosopher's time. Urchins are the favorite food of sea otters, and when this furred mammal was hunted to the brink of extinction, marine ecosystems spiraled out of balance. Left unchecked by otters, urchins multiply and use their Aristotle's lantern to mow down kelp, turning productive undersea kelp forests into urchin barrens. The fact that all things are connected is the central tenet of ecology. And humans, too, are an integral part of the planet's ecosystems. The urchin we held in our hands links the soft gold of the sea otter pelt, which fueled the commerce of the Russian empire, to the undersea kelp forests that support biodiversity—when the urchins are held in healthy balance by sea otters. Like terrestrial forests, these kelp forests sequester vast amounts of carbon. They help moderate the warming of the planet, now experiencing a climate swing so rapid that melting glaciers are raising the sea level at a rate that threatens to inundate coastal cities and make island nations uninhabitable. The ecosystems of this Earth are not only home to eagles and otters and whales. They are our home as well.

On our journey of exploration through Southeast Alaska, we witnessed wonders too numerous to name, from whelks to whales, from orchids to bears. We also considered the big-picture ecology of this region, and we celebrated the value of preserving this relatively pristine wilderness, one of Earth's last great places. From the lingering glaciers of a vanished Ice Age to the conifer forests on land and the kelp forests in the sea that sequester climate-warming carbon, Alaska offers not only a portal into the wild past of our planet. The Last Frontier also provides a window onto the future of our world.

Our final adventure came in the afternoon. An extreme high tide allowed our skiff captain to take us deep into a flooded wildland, where we explored a labyrinth of waterways. Flatfish swam in the clear shallows, and a Bald Eagle that stood on the shore looked as tall as a small person. When the raptor returned to the trees, it revealed

the location of its nest. By turning off the skiff engine, we could hear eaglets in a nest that may have weighed a ton or more, stressing the limbs of a Sitka spruce. Eagles with their ever-growing nests that they add to year after year exist in a precarious balance.

On the shore lay a decrepit hulk of equipment abandoned in the wilderness. We skiffed close to investigate. The cogs of this rusted machine were a mystery. Perhaps this was a remnant of the logging industry, which has already removed vast swaths of old-growth trees in Tongass National Forest and is now trying to eliminate environmental protections so that logging companies can turn the last of the ancient trees into timber. Right now, Southeast Alaska with its fjords that have been recolonized by sea otters, its seas filled with humpback whales that have returned from extinction's edge, its rivers teeming with salmon supplemented by hatcheries, and its last stands of ancient forest that have not fallen to the saw, seems a sort of Eden. But the balance is precarious. A relentless commitment to conservation is necessary to preserve this imperiled wilderness for future generations of species, including our own.

Sat., July 5 Juneau

We woke up at the dock in Juneau, Alaska's capital city. Lofty mountain walls and waterfalls surround this bustling urban center. Historic sites and museums abound, and the Mt. Roberts tram ferries people to the subalpine world of elfin trees and wildflower meadows high above the rainforest. An Arctic Tern, a new bird for our group on this tour, flew past our ship, its long, forked tail streaming behind its elegant body. This bird undertakes the longest migration of any animal in the world, traveling up to twice the circumference of the Earth in a single year. Seeing this bird sent our hearts soaring, even though our journey was ending.

After a final scrumptious breakfast, we disembarked. Although our tour had officially concluded, people who were staying extra days in Juneau, along with those of us who had evening flights, gathered to do some birding near town. Common Ravens, uncommon in the wilderness, had been everywhere in Sitka and were common again in Juneau. Ravens are among the handful of species that seem to have no problem with the Anthropocene and appear to thrive around humans.

Forest birds that had eluded us in the vast woodlands we explored now revealed themselves in wild fringes near town: Varied Thrush, Brown Creeper, Yellow Warbler, and Wilson's Warbler. We stopped by a coffee shop where a Willow Flycatcher had been hanging out; we saw this rarity singing on a powerline. At Mendenhall Wetlands, a Global Important Bird Area located next to the airport, dowitchers and yellowlegs probed the mudflats, and Townsend's Warblers showed their gorgeous faces in the low branches of trees next to the trail. A Yellow-rumped Warbler parent stuffed a caterpillar into the hungry beak of a clumsy, puffed-up fledgling, putting smiles on our faces during our final time together in Alaska.

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