

COASST

COASTAL OBSERVATION AND SEABIRD SURVEY TEAM

Reports 11-13

Breaking News

This biennium brought a few surprises: for the first time since 1999–2000, Rhinoceros Auklets came out ahead of Northern Fulmars in the species list (2011–2012), and Black-legged Kittiwakes claimed bronze in the same year after a big wreck outside Whittier, in the Gulf of Alaska. Mixed in with the Rhinoceros Auklets in spring 2012, Tufted Puffins made it into the top 10, and 18 new species showed up on our list.

CALIFORNIA Humboldt

Carl Kalb's November 2011 survey came at the heels of another critter out looking for dead birds at Stone Lagoon South, "otter tracks on beach." What remained? A scoter, a murre and a new find for COASST, a Ruddy Duck. With just a wing and foot, and no species profile in the *Beached Birds* guide, Charlie "caught this baton" by using Carl's

measurements and noting the diagnostic white-flecked rusty plumage of the upperwing.

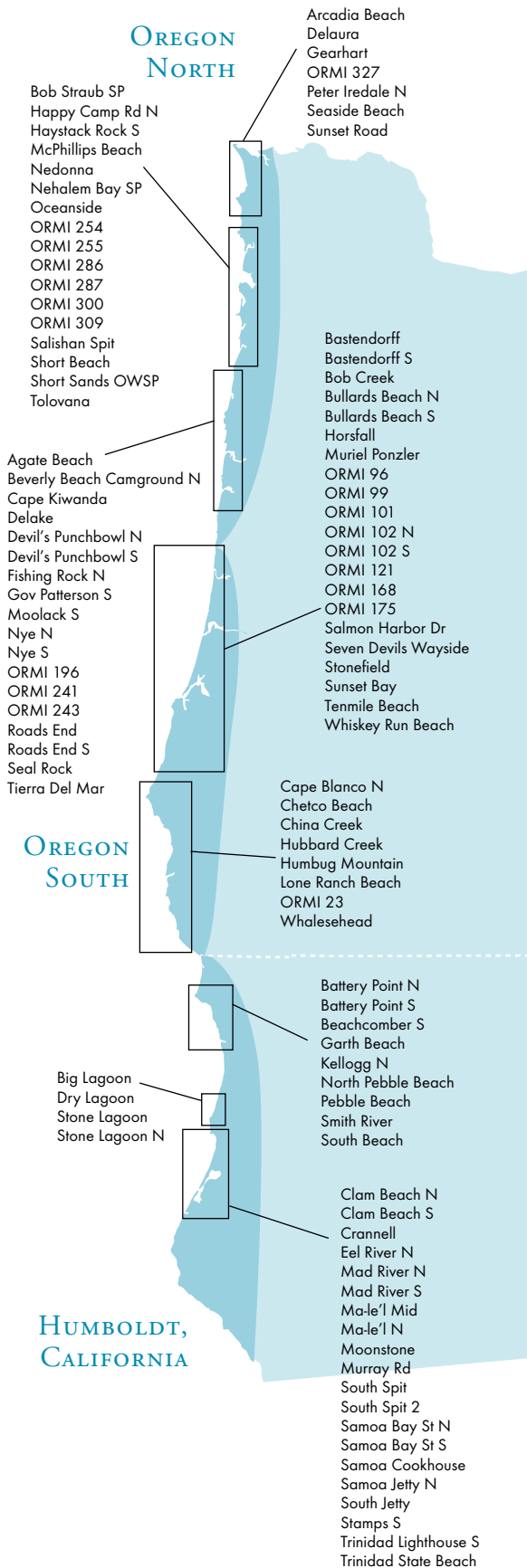
Not on the lookout for long, Sky Lloyd found her first bird on her March survey of Battery Point North—a rare find, COASST's second-ever Osprey, with "legs baby blue." Combing the skies after "zero carcasses found," Michael Tanner spotted a couple of Osprey, "hunting at wave breaks" at Big Lagoon in August 2011.

The following summer, Melissa McDowell noted some serious marine debris accumulation on Battery Point South: "Fourth of July debris still here—mostly cardboard, some plastic" even on her late July 2012 survey. By October, Fourth of July debris had disappeared on Jim Lennon and Dennis Therry's beach, Samoa Jetty North; remaining "debris on beach seemed to be of local origin," even as waves stacked up "deep piles of eel grass."

Rarer than bird finds and bird refinds, 22 marine

Those wavy "lines" are 1000s of shrimp-like organisms: COASST's first-ever krill beaching event (Humboldt to Oregon North) starting in May 2013, in northern California. Photo: S. Lloyd





mammal carcasses were found by COASSTers on Humboldt beaches this biennium. Edge Gerring and Melanie Kasek found the spotted pelt of a harbor seal in September 2011 on South Jetty Beach; Amy and Gary Lester sighted two mammals in May 2013—a live gray whale just offshore and a beached California sea lion on Crannell Beach.

OREGON Oregon South

What caught Patrick and Roberta Smit's eyes on their February 2012 survey of Bastendorff South wasn't just a Cassin's Auklet, but that the "left abdomen and foot were covered in black deposit—breast feathers glued together." Yup, oil. Particularly uncommon—COASSTers recorded only three oiled birds during the biennium, the lowest oiling percentage (.03%) in our 13-year history.

Murres, our usually common species, followed an aberrant pattern in 2011, hitting beaches en masse from Oregon to Northern California in October instead of the usual late summer influx. To the south in Brookings, Tyna and Robert Ivey escaped the mayhem: "No dead or beached birds on the way out. #100, Brandt's Cormorant, found



R. Foster

Beaches from Humboldt to Oregon North saw lots of late Common Murres in October 2011, with multi-murre photos like this one, from Bullards Beach North, commonplace.

on the way back.” The Iveys, like many Oregon South COASSTers, search for birds in both directions because their beach is wider than the 20 meters that two people can easily cover in “drunken sailor” search mode.

When seasoned COASSTers like Anne Caples, Val Knox and Sean Burns write, “you had to be somewhat nuts out there in the storms of that weekend. The low tide was almost up to the normal high tide mark,” you can only imagine how dicey it was in December 2012 on Oregon Mile 175. Even in May 2013, Ken and Cathy Denton arrived at Horsfall Beach to find “wind-blown sand, all birds ¾ buried.” Pacific Ocean-facing beaches show big seasonal changes in angle and substrate as a result of wave and wind action, as John and Marge Renner note, “medium stones pushed up by surf.” The same forces push birds up—55% of new finds in Oregon South occur in the high-and-dry stretches.

Oregon North

Calm conditions during the summer months flattened out Oregon Mile 254 “all the way up to the foredune,” in September 2011, but the survey was not without excitement: “found large, 25–30 cm skate egg case,” remarked Pete and Connie Owston. The case, or “mermaid’s purse,” came from a Big Skate: females lay the leathery cases on the sea floor in flat, sandy areas at the tops of undersea canyons—some of which get pushed ashore to be found by COASSTers.

Jerry Fredericks and Janet Runger caught the October 2011 murre spike that the Iveys in Oregon South did not: “12 Common Murres this survey.” Quite the contrast to their scenic August survey, with only three birds found and “wind-formed ‘dunes’ across the beach continue to lend a ‘Lawrence of Arabia’ touch to survey.”

No epic traveling to far-off lands involved for April Hale and Mark Elliott—they finished a Cape Kiwanda survey in May 2013 that turned up a program first: A Golden-crowned Sparrow and five additional rarities (each accounting for less than 0.2% of birds identified to species): Western Sandpiper, Varied Thrush, Dunlin, Greater White-fronted Goose and Greater Scaup.

On June 5, 2012, one of the mega-pieces of Japanese tsunami debris washed ashore on Agate Beach, Wendy Williams’ site: “beach appears trampled flat due to crowds streaming in to see dock.” The 20-meter-long concrete

dock—which harbored several species of exotic mussels, an invasive sea star, and an invasive marine alga!—was safely removed on August 2, dropping Agate Beach visitors 12-fold from earlier dock-gaping highs.

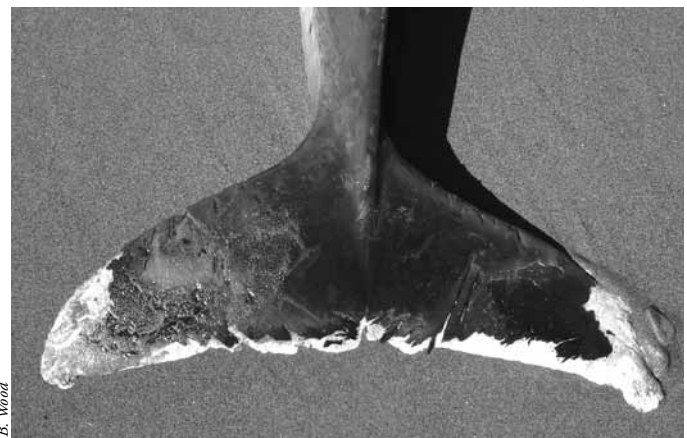
South Coast

The South Coast of Washington is home to a lot of big things—world’s longest drivable beach, Washington’s biggest razor clam harvest, world’s largest frying pan... biggest COASST birds. Nineteen of the biennium’s 46 albatross washed in on the South Coast, including a super intact Laysan Albatross found by Larry and Lorna Frickel on South Damon in September 2011.

But that’s not to say the tiny birds never show up. Lynne Kelly and Carol Sunde found another tiny (but mighty!) species—Fork-tailed Storm-Petrel—in April 2013 on Warrenton Cannery Road North. All seven Fork-taileds and three Leach’s Storm-Petrels arrived between June 2012 and April 2013.

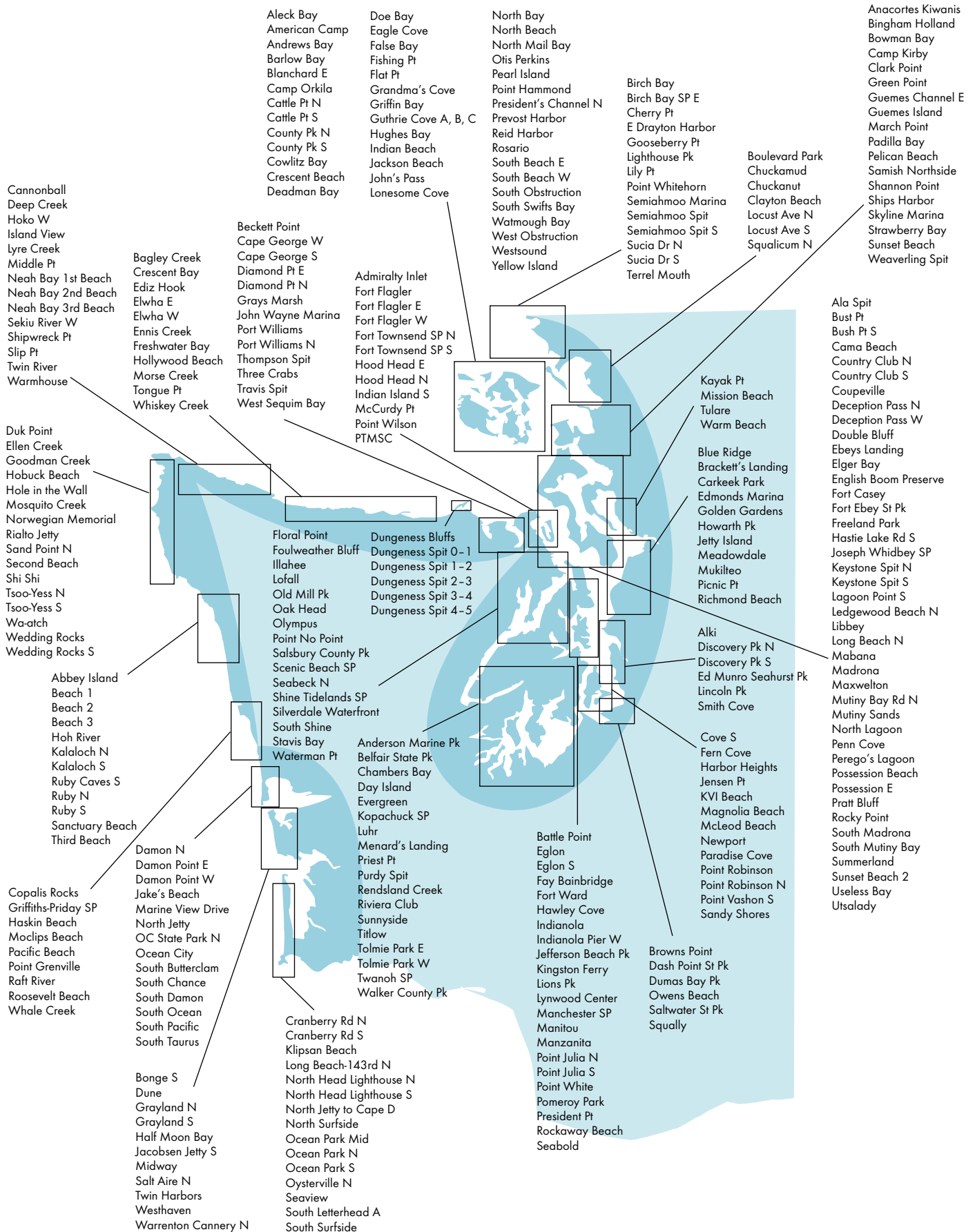
On their Earth Day 2012 survey, Bonnie Wood and Janet Wheeler recorded another rare find, a harbor porpoise. Its size, dark narrow rump and dark tail (even with skin missing) proved this was not a Dall’s porpoise. Just a few months later, Jeanne Finke and Susan Kloeppe found the region’s second harbor porpoise on South Pacific on their July 2012 survey.

—continued on page 5



B. Wood

Bonnie and Janet got to Salt Aire North beach just in time to “catch the tail end” of this harbor porpoise on their April 2012 survey. Its flat, dark rump separates it from the Dall’s porpoise and the Pacific white-sided dolphin.



—continued from page 3

No mistaking the epic Dungeness Crab molt on the South Coast in May 2013—five separate surveys from Ocean City Beach to Long Beach 143rd North marked the event. Adult crabs tend to molt simultaneously, females in spring–summer and males in late summer–fall. What happens when thousands of Dungeness literally walk out of their shells? “At the water’s edge there was a wrack line formed by hundreds of crab parts, stretching maybe a quarter of the length of the beach,” described Linda Purlee and Dini Duclos after their South Ocean survey.

North Coast

Sea otter strandings, while slightly more common on Gulf of Alaska beaches (11 of 60 beaches, 21 animals) do happen off the North Coast, but rarely in multiples, like the two found by Michael Tetreau and Chiggers Stokes at Norwegian Memorial in March 2012. Unlike river otters, sea otters have fully-webbed hind limbs; and they have more than three times the heft. The population in Washington (re-established via relocations from Alaska from 1969–1972) continues to grow about 8% annually.

Chiggers might just find everything in multiples: the June 2012 survey with Ed Ansorg on Goodman Creek turned up three harbor porpoises entangled in a net and four birds trapped in a large fish tote. July tides allowed Chiggers and Ed to get “bird-killing fish tote above mean high tide and turn it upside down.”

Sue Keilman, Scott Horton, Birgit Harmon and Katrina Harmon tacked on a first for COASST this biennium—a Pine Siskin (correctly identified to species!)—found on a sunny January 2013 survey of Second Beach. Other notable finds from Sue include, “three smelt, one herring in the wrack. Dog, deer, raccoon and mink tracks. Saw Janet Lamont on the beach!”

It wasn’t the bird (a grebe), its rarity or identification that made the December 2011 Kalaloch South survey so

tricky, but where the bird was: “partly pinned under very large log—only one wing and two feet visible. Adjacent log prohibited access to tag—we could only get one arm close to the bird!” fumed Jan Kummet and Karen Gittleman.

Strait

For Rose Forbes, her solo October 2011 survey of Grays Marsh *felt* like a North Coast venture—five birds: two large grebes, one Horned Grebe and an American Wigeon! Yet another grebe, found by Nancy Messmer at Island View in January 2012 was no more than hours old, with perfect facial plumage that clearly showed the bird’s eye within the dark cap—a Western Grebe. Of the 583 large grebes found this biennium, 53% are unknown to species because of the slight distinction between Western and Clark’s Grebes.

Long sandy extensions like “the spit” (Dungeness Spit) and “the hook” (Ediz Hook) predictably “catch” carcasses, including rare inside waters finds: a Sooty Shearwater found by Pat MacRobbie and Clare Hatler in May 2012 on Ediz Hook and a Black-bellied Plover found by Rod Norvell and Dow Lambert on Dungeness Spit Mile 4-5 in June 2012.

Elwha East and Elwha West may prove to be catcher sites, situated at either side of the newly “dam-free” Elwha River. In September 2012, Dan Lieberman and students from Olympic Peninsula Skills Center found three birds across the two sites—a Large Immature Gull, a Rhinoceros Auklet chick, and one very stiff unknown. Silt streaming out from the river has noticeably changed the nearshore. In May 2013, Bill O’Neill wrote, “the surf was the muddiest gray I have seen in my 16 months of monitoring; the entire bay as far out as I could see was colored by sediment.”

Rick and Kathy Bush remarked on another way that fine sediment enters the nearshore on Travis Spit in January 2013: “200-foot-high banks above eastern ¼ mile continue to sluff off significantly—5 large (28–36 inch diameter trunk) trees lost footing, found perpendicular to banks on beach.”



Bob Marshall and Elizabeth Pernotto recognized this diving duck (second-ever for COASST!) by its white cheek patch and totally pale (blue, in fact!) bill.

E. Pernotto



left: M. Terreas; right: B. Connor

Both from COASST beaches, but only one is a true sea otter (tail about as long as hind flippers). Left: Sea otter found on Norwegian Memorial, March 2012. Right: River otter found at Ships Harbor, January 2013.

San Juans

Must have been beginner's luck for Kim Secunda in another bird-scarce region: two birds on one survey. Three-webbed toes, fourth free—bright pink foot. Lacking a species profile in the West Coast version of *Beached Birds*, Kim called COASST to confirm her suspicion—white morph Snow Goose, both birds.

Maybe looking for a sitting duck, goose, or just “looking for a handout,” Mike Kaill and Arlo (Mike's black lab) came face-to-snout with a Red Fox on Grandma's Cove in August 2011. Foxes were introduced intermittently to hunt another introduced species, the European Rabbit—a critical threat to native vegetation at nearby San Juan Island National Historical Park. The “fox in the henhouse” issue extends beyond the San Juans to more than 400 islands in the Aleutians where they wreak havoc on burrowing seabirds.

Both South Beach teams, Mike and Arlo, and Sharon Massey and Addi Kessler spotted the Snowy Owl perched on a “beach log above the wrack line,” writes Sharon in

December 2011. Winter 2011–2012 was the first since 2005–2006 to see an influx or “irruption” of overwintering owls to Washington State. The following 2012–2013 irruption was even bigger and marked the first of five COASST Snowy Owl finds: Norwegian Memorial (2), Mosquito Creek, Tsoo-Yess North and Ocean Park South.

It was a two-in-one citizen science day for Rosalyn Magnuson at Roche Harbor Beach in December 2012: “found this COGO while also doing the Audubon Christmas Bird Count.” Only three additional Common Goldeneyes were found this biennium, another one the month previous at Camp Orkila by Kim Des Rochers and Mark Smaalders.

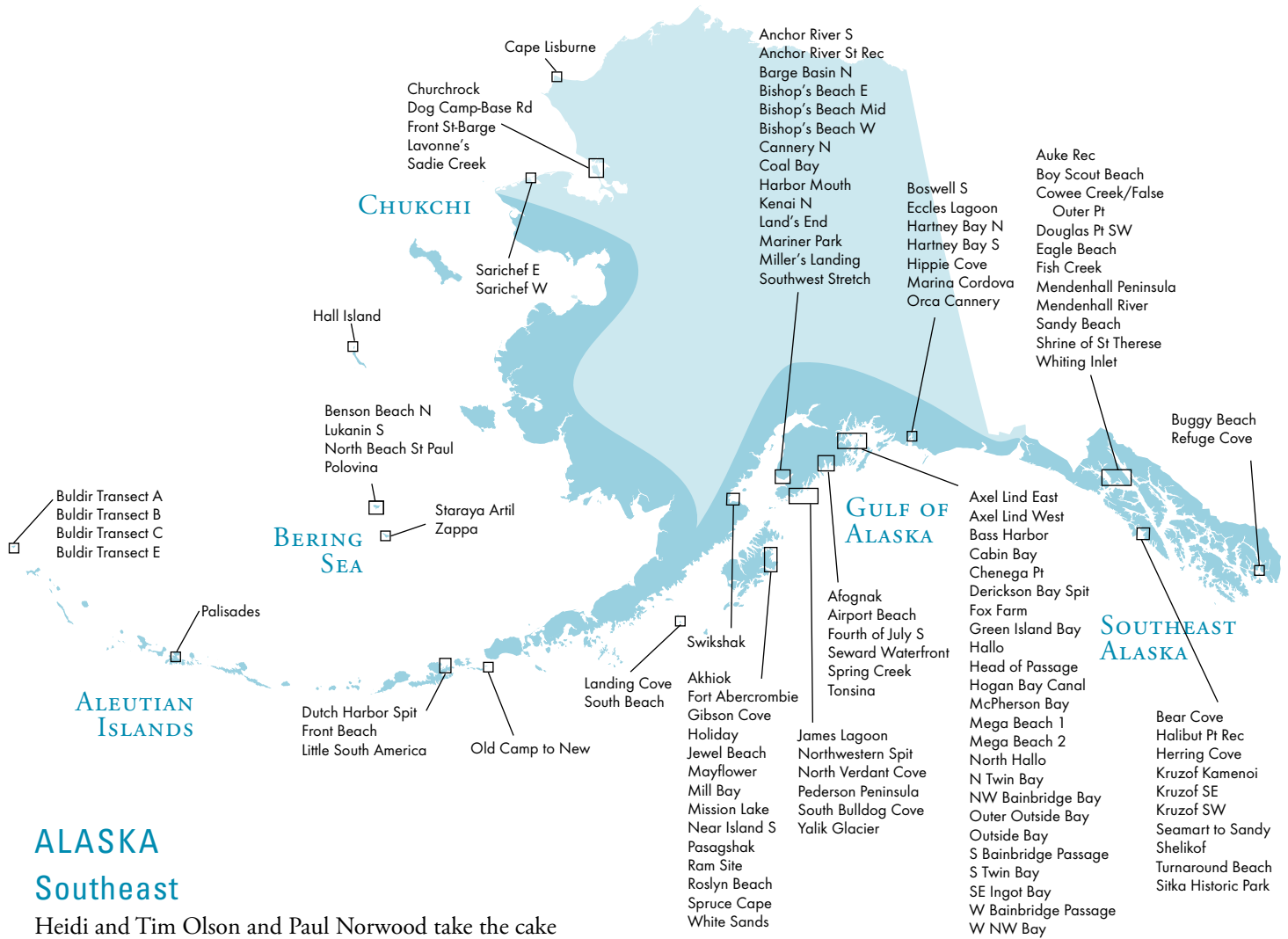
Puget Sound

At the top of the least-expected list for Puget Sound: Laysan Albatross, which was exactly what Paul Dinnel, Vicki McNeil and Dixon Elder found one February 2012 morning. Caught without their chalkboard (rock will do!), the SW Guemes Island team snapped a photo to be sure this find went on the record. How did an albatross get into Puget Sound? Perhaps discarded from a vessel returning from pelagic, open ocean waters.

Bald Eagles, on the other hand, predictably show up at Possession Beach, where Arlene Stebbins and Barbara Paul survey. Usually they see one, except during their May 2011 survey: “This time we saw five near a harbor seal carcass: just skeleton and hind flippers now.”

“Time and tide wait for no man,” writes Geoffery Chaucer, but the Common Loon that Corinne Poole and Pat Karman found in November 2011 at Belfair State Park waited around for five months—from December through April—finally disappearing by May: “could not find our usual COLO, despite rummaging in the wrack.” Though most COASST birds do not stick around (of 244 birds tagged in the Puget Sound this biennium, only 34 were refound), select sites retain birds for multiple months: Kay Norton's Canada Goose was still on Meadowdale in May 2011 after being tagged in June the previous year!

Though it didn't stick around past March 2013, and washed up with everything missing except two wings, the uniform white underwing, white-tipped secondaries and pale gray-brown mantle were enough to determine that Piper Mertle and Mike Sharar found COASST's first Pied-billed Grebe on Locust Avenue North.



ALASKA Southeast

Heidi and Tim Olson and Paul Norwood take the cake this biennium by finding Southeast's three birds, two adult Bald Eagles (one at Boy Scout Beach in February 2012; one at Kruzof Kamenoi in April 2013) and a Cassin's Auklet on Shelikof in September 2012. No doubt about the first one—each spread talon approximated two of Tim's knuckles. Paul also scored 100% on his COASST report card, noting “gray foot, pale central underwing, white spot at base of bill,” all the key characters that distinguish Cassin's from other auklets, murrelets and murres.

The kelp that washed in at Gary Freitag's site, Buggy Beach, in July 2011 came from quite a ways out: “lots, some with pelagic gooseneck barnacles, indicating pelagic source.” In their planktonic, larval stage (reminiscent of tiny swimming spiders with horns) these open ocean hitchhikers settle onto any handy substrate about a month after they hatch, providing insight on the minimum duration marine debris has spent at sea.

Kathy Maas recorded the largest raft of birds seen from a COASST survey, “over 400 Surf Scoters,” at Douglas

Point Southwest. Not surprising: Southeast Alaska supports more than 77,000 scoters (mostly White-winged and Surf).

A sunny April 2013 day brought Kerry Howard and Sharon Early out to Auke Rec—no birds found, but they did encounter a three-person team of University of Alaska Southeast students conducting an intertidal invertebrate survey. Invertebrates, specifically shrimp-like amphipods, were the highlight of the second June 2013 survey of Kruzof East, surveyed by Ashley Hovis of the Alaska Maritime National Wildlife Refuge seasonal staff.

Gulf of Alaska

Ask Dave Tessler, Alaska Department of Fish and Game, what kept him busy in July 2011—Black-legged Kittiwakes: 164 washed into Head of Passage Canal Beach in Whittier. The beach, not more than three kilometers from a large

cliffside colony, saw kittiwakes continue to wash in through August and early September on surveys by Kent Wohl.

December 2011 proved to be a difficult month for murres, with Seward volunteers Ami Wright, Matt Gray, Mark Kansteiner and Colleen Kelly sounding the alarm after their February surveys: seven murres at Airport Beach, seven murres at Seward Waterfront. This following a report from Dawn Adams of the Skagway Bird Club: hundreds of live murres were congregating in Lynn Canal (the main waterway connecting Juneau to Haines/Skagway), and 20 additional murre carcasses were found on local beaches.

In March and April 2013, Michelle Michaud and John Wiles noted something on Mariner Park Beach never seen before by a COASSTer, “lots of pebble-sized coal at the high tide line.” Coal arrives at the beach via erosion from ocean bluffs—1940s coal miner Evan Jones envisioned a dock below one such deposit, but wasn’t able to sell the idea to Homerians “because people could pick it off the beach,” according to Bureau of Land Management records.

Though this year marked the sixth season of data collection in the Gulf, lots of sites just got started, including five in Cordova (special kudos to Ann Harding Solberg). One of Kodiak’s new sites, Mill Bay, headed up by Linda Freed, Pat Szabo and Nancy Kemp turned up what appeared to be a Rhinoceros Auklet in September 2011. On second look, this pale-bellied, pale-footed, small-billed bird was a pint-sized juvenile Tufted Puffin.



M. Henschen

Beginners’ luck on the first survey of the season at Buldir E in July 2012: fresh dead Laysan Albatross found by John Warzybok and Rohan Dennis, Alaska Maritime National Wildlife seasonal staff.

Aleutian Islands

Puffins (Horned and Tufted) made a showing in the Aleutians as well, taking the bronze behind gulls (all Glaucous-winged) and auklets (Crested and Parakeet). Crystal Behaver, Alaska Maritime National Wildlife Refuge (AMNWR) seasonal staff, found two lone wings in July 2011 while surveying Aiktak Island’s Old Camp to New Beach: “puffin taken as prey and wings left on beach.” How did she know? Turn to the Alaska wing key: “subtle pale smudge on leading edge of wing, looks like worn feathers.”

Each biennium, some surprises pop up, including the region’s first and only Greater Scaup found by David Cockerill and John Warzybok (AMNWR seasonal staff) on Buldir Island Transect A. Rounding out the waterfowl, only two Cackling Geese (Aleutian subspecies) turned up this biennium, both found on Buldir Island Transect B (seven in total 2010–2011, all from Buldir).

“Up the chain,” the Aleutians chain, Reid Brewer tacked on three new beaches to the COASST list in March 2013: Front Beach, Dutch Harbor Spit and Little South America (a stretch of coastline that looks exactly like it sounds). Birds? None. Flash back to June 2007, pre-COASST: Reid recorded the highest deposition index, ever, at Front Beach—1000s of Short-tailed Shearwaters per kilometer.

Its name, meaning “fence” or “enclosure” or “defense,” was just that for beached birds—zero found by Lisa Spittler on Palisades Beach, Adak Island... until July 2012: a bird! Close, but no cigar—Lisa notes, “FINALLY A DEAD BIRD! But doesn’t count as a COASST bird: too incomplete to measure—looked and smelled like Fork-tailed Storm-Petrel, but wings tattered. One dainty black foot, but incomplete tarsus.” Good catch, Lisa—next time!

Bering Sea

It was “Bering Sea light” this biennium, at least for beached birds. Still, when you’re on the “Galapagos of the North,” you’re bound to turn up something amazing. AMNWR seasonal staff member Seth Wagner’s August 2011 survey of Zappa Beach returned just that, an adult Red-legged Kittiwake. Almost exactly a year later, AMNWR seasonal staff member Casey Engstrom recorded the second, and on the same beach. One of two kittiwake species worldwide, the Red-legged population decline continues to raise concern. From the 1970s to the 1990s, the combined



“First bird found since starting with COASST” writes Aaron Mercurief, who found a LIGU with white wing tips: a juvenile Glaucous Gull.

population across the Pribilofs, Bogoslof and Buldir Islands, and in the Commander Islands in Russia, declined by about 35%. Closely monitored by AMNWR seasonal staff, the colony on St. George (about 70% of the U.S. population) seems stable at about 123,000 birds.

The shared Bering Sea species list includes another species found only on St. George Island this biennium—Glaucous Gull. Of the 13 found over the biennium, only two came from outside the Chukchi Sea: one from Staraya Artil found by Aaron Mercurief on St. George and one subadult bird found 3,346 km south by Robert “Olli” Ollikainen, Carolyn Ollikainen and Keith Johanson on Oregon Mile 286 in January 2012.

Unlike the Red Foxes in the San Juan Islands, Arctic Foxes (*Pribilofensis* subspecies) are native to the Pribilofs. Curious animals, foxes scavenge everywhere: around town, at the harbor and on the beach. They’re small, but they’re scrappy and hungry—especially in winter. “Fox tracks,” remarked Aaron Mercurief on the November 2011 survey of Staraya Artil and the December 2011 survey of Zappa. No wonder beached bird numbers were light.

Chukchi

Within the Arctic Circle, rarities become common-place. Take Jim Dau and Randy Meyers’ first survey of the season in May 2011 at Churchrock—Common Eiders, two in one survey. The Pacific subspecies of Common Eider (separated

from the others by the distance between the eye and nostril) breeds along the edges of the Yukon-Kuskowin Delta (Western Alaska) and barrier islands along the Beaufort Sea (part of the Arctic Ocean on Alaska’s northeast side). At this latitude, May surveys are a bit like stepping out of a time machine: “last tidal action was last fall in October or November 2011. Today’s wrack line is left over from then. Snow and ice cover on beach has recently melted—much of beach damp,” notes Randy.

Ken Stenek only needed page one of the *Beached Birds-Alaska* Wing Key: “dark w/ white mid-wing triangle: 26–29 cm, SAGU.” Along with its striking wing pattern, the Sabine’s is one of only two gulls worldwide with a dark head and dark bill with yellow tip. You’ll have to book a trip to the Galapagos to see the other, a Swallow-tailed Gull.

Liz and Jane opened the COASST inbox in August 2012 to find a note from Charlotte Westing, “I’m curious to see if my identification is correct on the Kittlitz’s Murrelet.” An even rarer cousin of the Marbled Murrelet, finding one in the Chukchi would be the proverbial needle in a haystack. With Chukchi COASSTers all abuzz, Randy Meyers jumped in to pack up the specimen (then additionally confirmed by Jane, Charlie, Martin Renner and Gus Van Vliet/USFWS as indeed a Kittlitz’s) for inclusion in the Burke Museum’s Ornithology collection at the University of Washington. ■



Sure it’s sunny... but barely above freezing on Jim Dau and Randy Meyers’ June 2012 survey of Churchrock Beach.

Mortality Related to Human Activities

As usual, oiled birds were a very small percentage of total finds. Only 0.03% of total finds in 2011–2013 were oiled. Entangled birds accounted for only 0.27% of the total finds this COASST biennium, including the first Short-tailed Shearwater.

2011–2012

Oiled Birds

Cassin's Auklet	Bastendorff South (OR)
Pacific Loon	Griffiths–Friday State Park (WA)

Entangled Birds

Brandt's Cormorant	OR Mile 99 (OR) ¹
Common Murre	Crannell Beach (CA) ² Nye North (OR) ²
Glaucous-winged Gull	Locust Ave South (WA) ²
Large Immature Gull	Grayland South (WA) ² Peter Iredale N (OR) ²
Northern Fulmar	Pacific Beach (WA) ²
Pacific Loon	(2) South Pacific (WA) ³
Pelagic Cormorant	Nye South (OR) ¹
Short-tailed Shearwater	Twin Harbors State Park (WA) ²
Sooty Shearwater	OR Mile 309 (OR) ²
Surf Scoter	Crannell Beach (CA) ²
Western Gull	Battery Point N (CA) ² Stamps South (CA) ³

¹ Hook, ² Line, ³ Rope, ⁴ Net, ⁵ Fish Tote

2012–2013

Oiled Birds

Rhinoceros Auklet	Port Townsend Marine Science Center (WA)
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Entangled Birds

Brant	South Damon (WA) ²
Common Murre	Bonge South (WA) ² Ma-le'l Mid (CA) ² Marine View Dr (WA) ² Shi Shi (WA) ³ Tsoo-Yess North (WA) ⁴ Twin Harbors State Park (WA) ^{1,2} Bonge South (WA) ²
Glaucous-winged Gull	Kenai North (AK) ² Squalicum North (WA) ²
Large Immature Gull	Garth (CA) ²
Northern Fulmar	Delaura Road South (OR) ³
Pelagic Cormorant	Nye South (OR) ¹
Sooty Shearwater	North Jetty (WA) ² North Jetty (WA) ¹
Unknown	Marine View Drive (WA) ²
Unknown Cormorant	Seaview (WA) ³
Western Gull	Battery Point South (CA) ²

Entrapped Birds

Unknown	Goodman Creek (WA) ⁵
Northern Fulmar	Goodman Creek (WA) ⁵
Large Immature Gull (2)	Goodman Creek (WA) ⁵



Chiggers Stokes and Ed Ansorg reported a new type of mortality related to human activity on Goodman Creek beach in June 2012: entrapment. Four birds landed in this tote, afloat on the ocean, but were unable to fly out. Ed and Chiggers tipped the tote (see above), processed the birds, and hauled it to high ground.

COASST Quiz

A



C. Ogan

Found 7/25/2012
Samoa Bay St N
(Humboldt, CA)
Bill: 45 mm
Wing: 28 cm
Tarsus: 56 mm

B



H. Zwiicker

Found 9/12/2011
Fort Ward
(Puget Sound, WA)
Bill: 25 mm
Wing: 14 cm
Tarsus: 45 mm

C



M. Croncher

Found 6/11/11
Oregon Mile 101
(Oregon South, OR)
Bill: 44 mm
Wing: 24 cm
Tarsus: 54 mm

D



L. Climo

Found 9/30/2011
Anchor River South
(Gulf of Alaska, AK)
Bill: 54 mm
Wing: 39 cm
Tarsus: 62 mm

E



C. Westing

Found 6/30/2012
Lavonne's Beach
(Chukchi Sea, AK)
Wing: 27 cm

Beached Birds Identified to Species

SPECIES	YR 14#	YR 13#	YR 14%	YR 13%	YR 12%	YR 11%	YR 10%	YR 9%	YR 8%	TOTAL #	TOTAL %
Common Murre ¹²	1458	1590	33.7	31	14.3	30.5	35.7	26.6	19.5	10317	28.5
Northern Fulmar	426	271	9.9	5.3	33.1	19.9	8.8	30.5	9.5	7125	19.7
Sooty Shearwater ^Y	338	269	7.8	5.2	3	1.3	2.5	1.1	1	1092	3
Large Immature Gull	253	154	5.9	3	5.7	6.4	11.6	9	10.6	2888	8
Western Gull	144	125	3.3	2.4	4.4	2	4.3	3	5.3	1039	2.9
Glaucous-winged Gull	132	127	3.1	2.5	4.7	2	4.4	3.4	6.1	1182	3.3
Western Grebe ¹²	120	142	2.8	2.8	1.8	1.8	2	2.7	3.4	966	2.7
Rhinoceros Auklet	106	882	2.5	17.2	6.6	0.9	2	2.2	13.2	2056	5.7
Brown Pelican	103	57	2.4	1.1	0.7	1.6	2.9	0.5	0.4	390	1.1
California Gull	70	54	1.6	1.1	2.2	0.7	0.8	0.5	1.1	401	1.1
Cassin's Auklet ¹²	69	48	1.6	0.9	1.2	0.2	1.3	0.7	4.7	589	1.6
Cackling Goose [*]	45	34	1	0.7	0.5	0.3				115	0.3
Pelagic Cormorant	43	38	1	0.7	1.8	2.6	1.3	1.7	2.1	611	1.7
Brandt's Cormorant ¹²	42	164	1	3.2	1.6	2.2	3.8	4.4	3	962	2.7
Black-legged Kittiwake	39	350	0.9	6.8	2.2	0.9	1.8	0.7	2	669	1.9
Surf Scoter	35	95	0.8	1.8	1.4	13.7	1	1	1.1	1109	3.1
Black-footed Albatross ¹²	32	11	0.7	0.2	0.3	0.2	0.9	0.4	0.5	163	0.5
White-winged Scoter	24	83	0.6	1.6	3.2	4.5	0.5	1.1	1.3	638	1.8
Pigeon Guillemot	24	32	0.6	0.6	0.9	0.5	0.7	0.5	1	247	0.7
Pacific Loon	23	55	0.5	1.1	0.6	0.9	0.4	0.7	0.5	230	0.6
Fork-tailed Storm-Petrel	20	7	0.5	0.1	0.5	0.1	0.6	0.6	1.5	156	0.4
Heermann's Gull	16	8	0.4	0.2	0.3	0.2	0.3	0.3	0.3	96	0.3
Northern Pintail	15	8	0.3	0.2	0.2	0.2	0.5	0.2	0.2	87	0.2
Common Loon ¹¹	14	23	0.3	0.4	0.4	0.3	0.4	0.7	0.3	160	0.4
Double-crested Cormorant	14	15	0.3	0.3	0.5	0.5	0.6	0.6	0.5	178	0.5
Bufflehead	14	5	0.3	0.1	0.2	0.1	0.2	0.1	0.1	59	0.2
Bonaparte's Gull	14	2	0.3	0.04	0.1	0.02	0.2	0.05	0.1	32	0.09
Leach's Storm-Petrel	12	2	0.3	0.04	0.4	0.04	0.1	0.2	0.1	56	0.2
Ancient Murrelet ^Y	11	9	0.3	0.2	0.4	0.1	0.5	0.2	0.4	91	0.3
Herring Gull	10	16	0.2	0.3	0.6	0.1	0.3	0.1	0.1	81	0.2
Mallard	10	10	0.2	0.2	0.1	0.2	0.2	0.05	0.5	66	0.2
American Crow	10	8	0.2	0.2	0.1	0.3	0.3	0.2	0.3	94	0.3
Marbled Murrelet ^{2, 7, 9, 10, Y}	9	4	0.2	0.1	0.2	0.02	0.2	0.3	0.4	64	0.2
Glaucous Gull	8	5	0.2	0.1		0.3		0.05	0.1	35	0.1
Tufted Puffin ¹²	7	175	0.2	3.4	0.2	0.2	0.4	0.4	1	251	0.7
Horned Puffin	7	38	0.2	0.7	0.2	0.07	0.09	0.1	2.6	123	0.3
Red-throated Loon	7	20	0.2	0.4	0.1	1.1	0.09	0.2	0.1	117	0.3
Greater Scaup	7	9	0.2	0.2	0.1	0.02	0.2	0.1	0.2	45	0.1
Green-winged Teal	7	8	0.2	0.2	0.2	0.2	0.2	0.2	0.3	60	0.2
Red Phalarope	7	5	0.2	0.1	0.1	0.2	0.04	0.02	0.05	250	0.7
Mew Gull	6	6	0.1	0.1	0.2	0.02	0.3	0.2	0.16	51	0.1
Canada Goose	6	5	0.1	0.1	0.1	0.09	0.4	0.3	0.52	74	0.2
Bald Eagle ^{7, 10, 11}	6	4	0.1	0.1	0.03	0.02		0.1	0.05	26	0.07
Varied Thrush	6		0.1		0.03	0.02	0.04	0.1	0.1	6	0.02
Horned Grebe	5	12	0.1	0.2	0.06	0.02	0.09	0.05	0.1	29	0.08
Rock Dove	5	10	0.1	0.2	0.2	0.07	0.3	0.2		49	0.1
Red-necked Grebe ¹³	5	4	0.1	0.08	0.06	0.02	0.1	0.1	0.05	29	0.08

* Cackling Goose is now considered a distinct species rather than a subspecies of Canada Goose.

SPECIES	YR 14#	YR 13#	YR 14%	YR 13%	YR 12%	YR 11%	YR 10%	YR 9%	YR 8%	TOTAL #	TOTAL %
Parakeet Auklet	5	2	0.1	0.04	0.7	0.2	0.5	0.1	0.16	63	0.2
Dunlin	5	1	0.1	0.02	0.06		1.4		0.05	45	0.1
Greater White-fronted Goose	5		0.1		0.1	0.2	0.6	0.02		36	0.1
Snowy Owl	5		0.1							5	0.01
Great Blue Heron	4	6	0.09	0.1	0.2	0.05	0.09	0.05	0.05	34	0.09
Barred Owl	4	5	0.09	0.1	0.06	0.05	0.09	0.02	0	17	0.04
American Wigeon	4	3	0.09	0.06	0.1	0.04		0.02	0	18	0.05
Pink-footed Shearwater ^R	4	3	0.09	0.06	0.1	0.07	0.3	0.02	0	27	0.07
Northern Shoveler	4		0.09		0.03		0.04	0.02	0.05	10	0.03
American Coot	3	16	0.07	0.3	0.03		0.09	0.1	0.42	39	0.1
Brant	3	5	0.07	0.1	0.06	0.1	0.09	0.02	0.05	24	0.07
Caspian Tern ¹³	3	2	0.07	0.04	0.1	0.2	0.3	0.1	0.26	86	0.2
Eared Grebe	3	2	0.07	0.04				0.02		7	0.02
Laysan Albatross ^R	3	2	0.07	0.04	0.06	0.05	0.09			13	0.04
Black Oystercatcher ¹³	3	1	0.07	0.02		0.05	0.04		0.05	11	0.03
Red-legged Kittiwake ^Y	3	1	0.07	0.02	0.03		0.2	0.02	0.05	12	0.03
Crested Auklet	3		0.07		0.06	0.04	0.3	0.05	0.1	15	0.03
Northern Flicker	3		0.07		0.03	0.07		0.02		6	0.02
Snow Goose	2	6	0.05	0.1	0.09	0.07	0.4	0.07	0.26	33	0.09
Black Scoter	2	4	0.05	0.08			0.04		0.02	15	0.04
Black-bellied Plover	2	2	0.05	0.04	0.03	0.05				11	0.03
Common Eider	2	2	0.05	0.04	0.03		0.04			6	0.02
Common Goldeneye	2	2	0.05	0.04	0.09	0.02				10	0.03
Northwestern Crow	2	2	0.05	0.04	0.09	0.04	0.09	0.1		15	0.04
Red-breasted Merganser	2	2	0.05	0.04	0.03				0.05	10	0.03
Ruddy Duck	2	2	0.05	0.04						4	0.01
Sabine's Gull	2	1	0.05	0.02		0.02		0.07	0.1	10	0.03
Marbled Godwit ^Y	2		0.05							4	0.01
Mottled Petrel	2		0.05				0.04	0.02	0.05	5	0.01
Ring-necked Pheasant	2		0.05			0.02	0.04	0.02	0.05	7	0.03
Whimbrel	2		0.05		0.1	0.05	0.3	0.05		19	0.05
Clark's Grebe ^{12, Y}	1	8	0.02	0.2	0.03	0.07		0.07	0.2	27	0.07
Red-tailed Hawk	1	3	0.02	0.06	0.03	0.02				6	0.02
Sanderling ^{1Y}	1	3	0.02	0.06	0.03		0.04			13	0.04
Thick-billed Murre	1	3	0.02	0.06	0.4	0.2	0.3	0.2	0.05	43	0.12
Band-tailed Pigeon	1	2	0.02	0.04				0.02	0.05	6	0.02
European Starling	1	2	0.02	0.04		0.04				7	0.02
American Robin	1	1	0.02	0.02				0.05		6	0.02
Common Merganser	1	1	0.02	0.02			0.09		0.05	7	0.02
Common Raven	1	1	0.02	0.02		0.05		0.02	0.05	7	0.02
Osprey ¹³	1	1	0.02	0.02		0.02				3	0.01
Pomarine Jaeger	1	1	0.02	0.02		0.04		0.05		6	0.02
Sharp-shinned Hawk	1	1	0.02	0.02						3	0.01
Turkey Vulture ¹³	1	1	0.02	0.02		0.02		0.02	0.05	5	0.01
Western Sandpiper ^Y	1	1	0.02	0.02	0.03		0.04	0.1		10	0.03
Wild Turkey	1	1	0.02	0.02						2	0.01
Black Turnstone ^Y	1		0.02							1	<.01

Beached Birds Identified to Species

continued

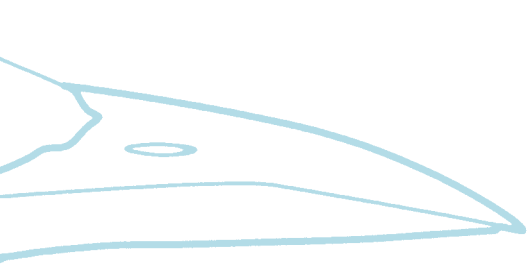
SPECIES	YR 14#	YR 13#	YR 14%	YR 13%	YR 12%	YR 11%	YR 10%	YR 9%	YR 8%	TOTAL #	TOTAL %
Black-headed Grosbeak	1		0.02							1	<.01
Common Tern	1		0.02							1	<.01
Cooper's Hawk	1		0.02			0.02				2	.01
Eurasian Wigeon	1		0.02						0.05	2	.01
Golden-crowned Sparrow	1		0.02							1	<.01
Great Egret	1		0.02					0.02		11	<.01
Great Horned Owl	1		0.02			0.02				3	.01
Harlequin Duck	1		0.02			0.02	0.04			3	.01
Hermit Thrush	1		0.02							1	<.01
Kittlitz's Murrelet ^R	1		0.02							1	<.01
Long-tailed Jaeger	1		0.02							1	<.01
Pied-billed Grebe	1		0.02							1	<.01
Pine Siskin	1		0.02							1	<.01
Willow Ptarmigan	1		0.02							1	<.01
Yellow-billed Loon ^{4,Y}	1		0.02		0.03				0.05	3	.01
Short-tailed Shearwater		13		0.25	0.7	0.5	0.4	1.6	0.7	218	0.6
Lesser Scaup		5		0.1			0.04			7	0.02
Chicken		3		0.06			0.04	0.05		8	0.02
Long-tailed Duck		2		0.04	0.06			0.02		5	0.01
Red-necked Phalarope		2		0.04			0.04	0.05		5	0.01
Ring-billed Gull		2		0.04	0.06	0.09	0.04	0.02	0.2	19	0.05
Surfbird ^Y		2		0.04			0.04			4	0.01
Thayer's Gull ^Y		2		0.04	0.03					3	0.01
Fox Sparrow		1		0.02						1	<.01
Hooded Merganser		1		0.02						1	<.01
Northern Goshawk		1		0.02						1	<.01
Red-faced Cormorant ^Y		1		0.02	0.03	0.02		0.07	0.05	7	0.02
Virginia Rail		1		0.02						1	<.01
Western Meadowlark		1		0.02						1	<.01
Western Tanager		1		0.02						1	<.01

	YR 14#	YR 13#	YR 12#	YR 11#	YR 10#	YR 9#	YR 8#	TOTAL #
Total ID to Species	3906	5137	3500	5513	2241	4088	1920	36137
Total Finds	4314	5433	3756	5911	2489	4626	2186	39512
Total Species	110	98	90	90	81	90	81	151

SPECIES OF CONCERN:

¹ Federally Endangered, ² Federally Threatened, ³ Federal Species of Concern, ⁴ Federal Candidate, ⁵ WA State Endangered, ⁶ OR State Endangered, ⁷ CA State Endangered, ⁸ AK State Endangered, ⁹ WA State Threatened, ¹⁰ OR State Threatened, ¹¹ WA State Sensitive, ¹² WA State Candidate, ¹³ WA State Monitored, ^R 2007 Audubon Watch List Red, ^Y 2007 Audubon Watch List Yellow

Total finds include all first-found birds. Refinds not included in totals. Note that major species—accounting for greater than 5% in any COAST year—are in bold. Only species found in Years 13 and 14 are listed. Cumulative totals for each species are listed in the right-hand darker-shaded columns. Reported totals shown here may vary slightly from those in past annual reports due to processing of survey data submitted after publication.



Answers to the Quiz

A. Zero in on the foot—three webbed with a tiny fourth toe (just a nail, actually) behind—that leaves us at Tubenose: Petrels—it's not big enough for an Albatross. Flipping to the Tubenose family page, it's too large for a Storm-Petrel. Good work, Goldilocks, "it's just right" in the middle of the range—the long, thin, dark bill, flat tarsus and white underwing linings leave us at Sooty Shearwater.

B. Hey, we know lobed toes when we see them. Too big for a phalarope, so this has to be a grebe, and too small for a Western or Red-necked. The species found from the Bering Sea coastline south to Humboldt that sports a pale-tipped bill—that's right—Horned Grebe.

C. Drill down—foot is lower right. Four webbed toes puts us in Pouchbills, and the bill is cormorant-sized, too short and slender for anything else other than a Pelagic Cormorant.

D. Lower 48ers, don't rush this one! Gray mantle with dark/black wingtips and a wingchord greater than 33 cm? For sure, a gull. We can narrow the array of light gray, dark gray and in-between colored mantles down to three species in Alaska: Mew Gull, Herring Gull and Slaty-backed Gull. No white knuckle band and pale gray mantle means we have ourselves a Herring Gull.

E. Typical Alaska find—two wings. Turn to the wing key and select dark secondaries (this species does occur along the West Coast: using the table, choose med-lg, upperwing with patch/speculum). The Alaska guide leaves us with four species: Mallard, Northern Pintail, American Wigeon and Green-winged Teal. Too large for a teal, and only one option sports a pale stripe above and white below—Northern Pintail.

COASST at a Glance 2011-2013

Surveys: 8035

Surveys with no birds: 68%

Volunteers: 1054

COASST beaches surveyed: 578

New species found this biennium: 18

- Black Turnstone
- Black-headed Grosbeak
- Fox Sparrow
- Golden-crowned Sparrow
- Hermit Thrush
- Hooded Merganser
- Kittlitz's Murrelet
- Long-tailed Jaeger
- Northern Goshawk
- Pied-billed Grebe
- Pine Siskin
- Snowy Owl
- Ruddy Duck
- Virginia Rail
- Western Meadowlark
- Western Tanager
- Wild Turkey
- Willow Ptarmigan

U.S. Fish & Wildlife Service banded birds found: 6

- Rhinoceros Auklet
Tierra Del Mar, Oregon North, 1/8/12
- Rhinoceros Auklet
Marine View Drive, South Coast, 1/27/12
- Cassin's Auklet
Tierra Del Mar, Oregon North, 2/19/12
- Black-footed Albatross
Tsoo-Yess North, North Coast, 7/3/12
- Brown Pelican
Crannell North, Humboldt, 8/17/12
- Brown Pelican
Second Beach, North Coast, 11/21/12



What's Washed In?

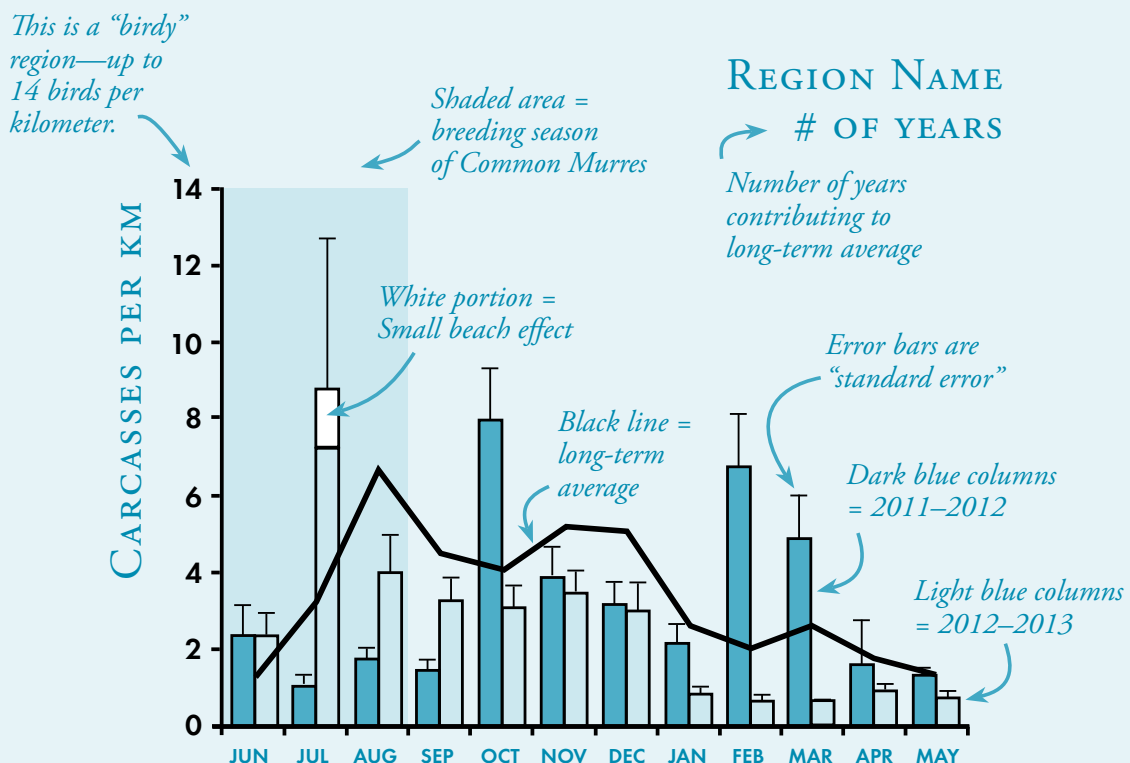
What's in a Graph?

We display COASST data using bar graphs (pages 19–20, 22) to allow us to easily compare seasonal and regional differences. The axes of every graph have the same variables: months along the bottom (X axis) and carcasses per kilometer along the left side (Y axis).

The Y axis is the “encounter rate” or the average number of *new* finds COASSTers are likely to encounter if they walked one kilometer (0.61 miles) of coastline in that particular region and month. And remember, we’re only showing the new finds within the month. The refinds from the previous months are taken out of the calculations. One subtle, but important, note—technically, COASST doesn’t measure the rate at which birds are deposited on-shore (deposition rate) for two reasons: First, even the most dedicated COASSTers will miss a bird, making encounter rate lower (more conservative) than deposition rate. More important, over a month lots of birds wash in and are subsequently lost to scavengers, burial or rewashing out to sea before a COASSTER has the chance to find them.

Make sure you check out the scale of the Y axis—COASSTers in different regions have very different likelihoods of finding a beached bird on their surveys. Inside waters regions and Southeast Alaska all top off at 0.6 birds/km—about one bird found for each 2 kilometers surveyed. Compare that to the Bering and Chukchi Seas—their scale tops off at 4 birds/km, or 7 times higher than inside waters and Southeast Alaska. All other regions have much higher deposition. COASSTers surveying outer coast sites in the lower 48 have their data graphed on the 14 birds/km scale, or 23 times higher than our low deposition regions.

The encounter rate reflects an average across all beaches within a region. But we still look all the way down to the individual beach level—that’s because some sites, constrained by cliffs or headlands to short scallops of beach, reflect the math rather than the reality of beaching. COASSTers in the San Juans and the Aleutians know this well. In these regions, sites can be as short as 0.3 km (that’s 300 meters!). On a beach that short, a single bird multiplies up to an encounter rate of 3.3 birds per km (literally 1



bird ÷ 0.3 km). We remove this math-based “small beach effect” by graphing the regional bars with small beaches (blue + white) and without (blue portion only).

Each graph has three different datasets: the long-term average or baseline (black line), the 2011–2012 data (dark blue columns) and the 2012–2013 data (pale blue columns). And notice that the COASST year starts in June and ends in May. We graph this way to accentuate the normal patterns of deposition—post-breeding (summer, fall), winter-kill (late fall, winter), and spring migration (late winter, early spring).

Baseline (heavy black line): The baseline is the long-term average, calculated across all years and all beaches surveyed in that region. We’ve included the number of years directly under the region name. Chukchi Sea surveys, which began in 2009, have the shortest time series, whereas regions along the outer coast of Washington have a 12-year baseline. Almost all regions are shown with a single baseline, but take a look at the North Coast of Washington. Some COASSTers may remember the once-in-a-decade massive scoter wreck in the fall of 2009. For the North Coast only, we depict the baseline with (black line) and without (dotted line) that wreck.

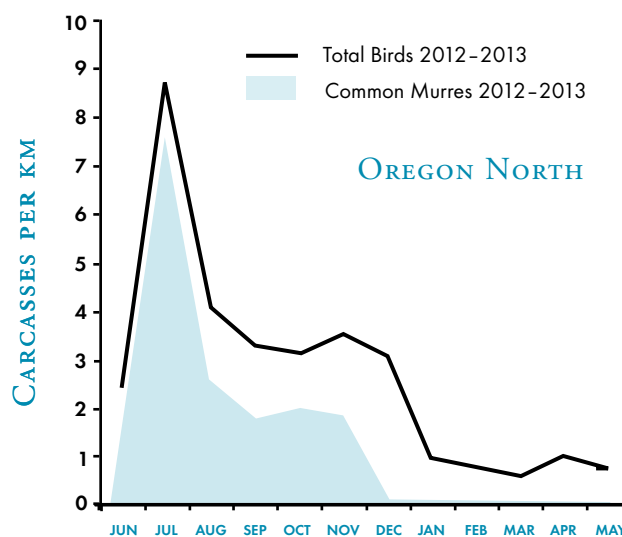
Annual Data (columns): Columns depict the average (across beaches) monthly encounter rate from 2011–2012 (dark blue) and 2012–2013 (light blue). Occasional columns with white space at the top (for instance August, in the Aleutian Islands) signal the small beach effect—total column height includes these elevated “math signals” while the shorter colored portion of the column is encounter rate calculated with those beaches removed.

Thin “T”s on top of each column are the error bars (technically, the standard error of the mean), a measure of the variation in encounter rate across all of the beach sites in the region that contribute to the monthly average. Longer lines indicate higher variability in the number of birds encountered beach-to-beach—some beaches with only a few birds, others with lots. We’ve only included the positive (above the column) error to reduce visual clutter. To see if a monthly signal in 2011–2012 or 2012–2013 is significantly different from the baseline, imagine a mirrored error bar below the column top. If the heavy black line falls outside (above or below) that plus/minus range described by the error bars there is a statistical difference.

Wrecks and Baselines

Any type of monitoring, be it water quality, plant flowering or dead birds on beaches seeks to establish the long-term pattern—or baseline—against which deviations from the “normal” range can be measured. Every year, we highlight several of these “outside of normal” events. In beached bird lingo, we refer to outsized mortality events as “wrecks.” Wrecks are usually one-to-several species, usually similar in characteristics (e.g., all nearshore diving fish-eaters) and often closely related (e.g., Surf and White-winged Scoters). At COASST, we also look for different kinds of wrecks—short duration, high intensity peaks that might occur over only a few kilometers of coastline, or lesser magnitude peaks that cascade across weeks-to-months and thousands of kilometers of real estate. Peaks we expect—right time, right place—and those that are unusual in seasonal and/or geographic occurrence. Recently, COASST has begun to investigate wreck patterns—or the who, how many, when and where of mortality events.

The COASST regional graphs (pages 19–20, 22) show all species combined, that is—all birds. So when we look to answer the “who” question, we graph a single species (e.g., Common Murres) and compare it to the regional all-bird pattern. Concurrent spikes in the species-specific baseline tell us whether murres, for instance, might be part of the regional peak.



Common Murres (blue area) drive the COASST annual pattern (black line).

Sometimes birds wash in at the right time, in the right place, and just the species you'd expect. Common Murres in the Pacific Northwest following the breeding season, Northern Fulmars shortly thereafter as they migrate away from disintegrating Alaskan weather. Are these wrecks? Well, they are certainly major mortality events, and occasionally they are truly large annual peaks. The thing is that these peaks aren't (necessarily) worrisome. Instead, they indicate that the usual—normal—pattern is happening. If anything, we wonder when these birds don't grace our shores. But the "right" species can occasionally go wrong. COASSTers surveying in the spring of 2005 saw tons of Common Murres hit the beaches; definitely a wreck, but at the wrong time of year.

Not all wrecks occur across large scales: even a single beach can raise the annual regional signal (bars) significantly above the long-term baseline (black line). These "pinpoint" wrecks can happen for a variety of reasons. Check out the Black-legged Kittiwake story in Whittier, Alaska during the 2011–2012 year for a good example.

Occasionally, we see a species skyrocket into the top 10. Red Phalaropes did this in the winter 2002–2003. It was quite a wreck. Because Red Phalaropes aren't "heavy lifters" when it comes to contributing to the regional baseline—in some years they're no more than .02% of the annual total (or one in 5,000 finds!)—so when they do show up in droves, we label them the "wrong" species.

Over the last two years we've saved up several wreck stories, in fact almost every kind of wreck possible: "right species, right time" "right species, wrong time" and "wrong species, right time." We're only lacking a "wrong species, wrong time" story; and that would be really hard to come by, and could signal serious deterioration of the coastal ecosystem.

Alaska

For the past two years, the Alaska signal has been largely at or below normal (but see the Gulf in 2012–2013!), with a breeding season peak and a smattering of winter birds mostly in the Gulf.

In northern Alaska, extreme conditions and a frozen ocean prevent year-round surveys. Far north in the Chukchi, the ocean surface is a frozen sheet from October to May, making for—at most—five months of surveys. Year-to-year patterns are variable, although the peak of

this short season is usually June–July. Note the spike in Black-legged Kittiwakes in July 2012 that pushed up this monthly rate almost exactly to the long-term average.

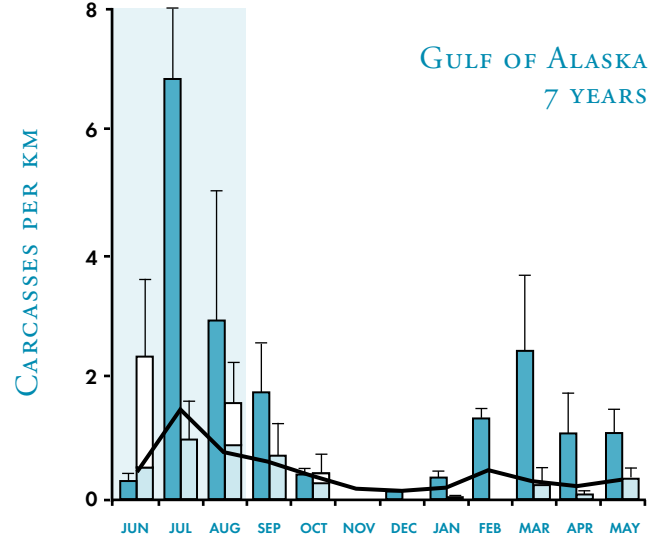
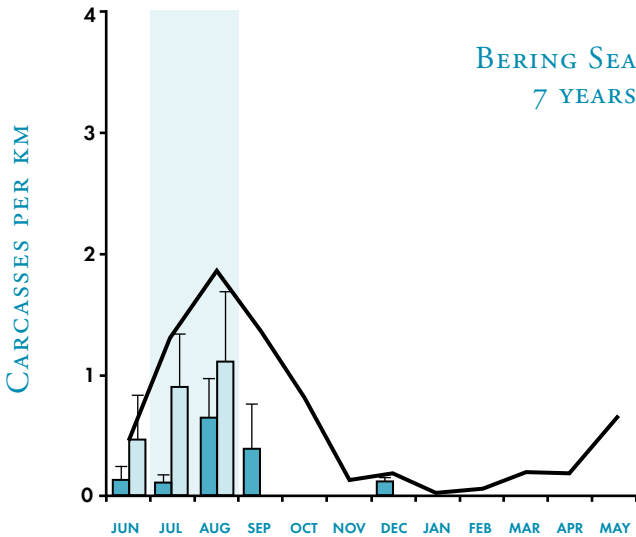
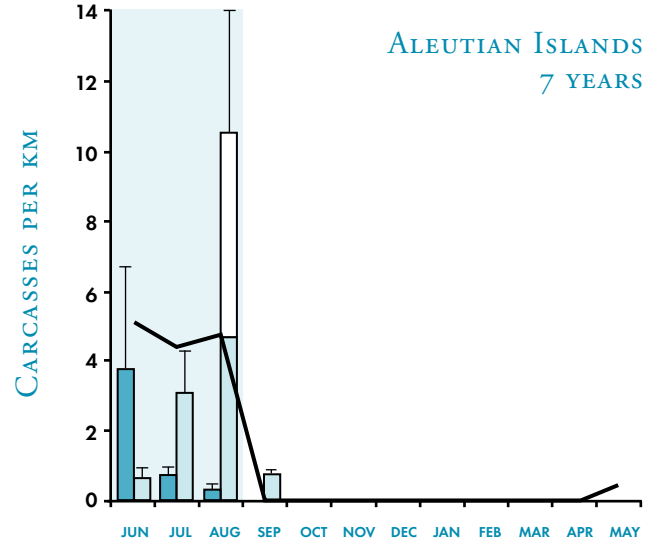
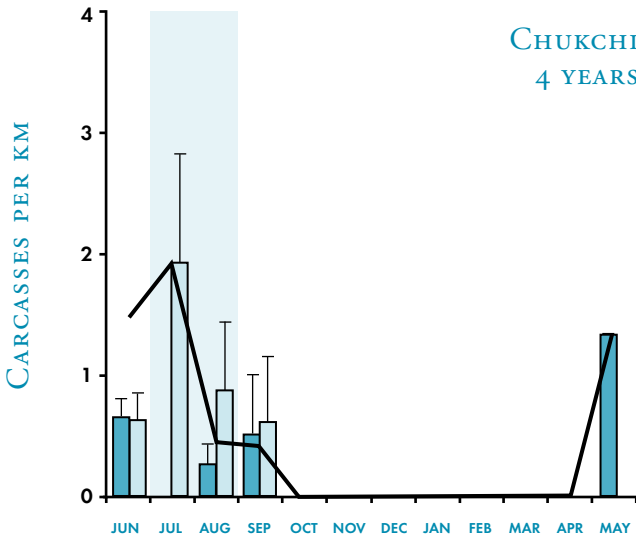
It was a quiet couple of years in the Bering Sea as well, where ice sets and clears earlier, but winters still turn up very few carcasses. The predictable peak is August and Northern Fulmars and Black-legged Kittiwakes usually form the bulk of the signal. In some years, shearwaters arriving all the way from the Southern Hemisphere get folded into the mix. But this biennium, shearwaters were almost completely missing. Perhaps that's one reason why the overall encounter rate was lower than the long-term baseline. Ditto story in Southeast, where dedicated COASSTers survey, and survey and survey and hardly ever found a bird. No exceptions to that pattern in this biennium.

In the Aleutian Islands, beaching was at or below normal with the exception of August 2012, which turned out to be a small beach effect. Buldir B—where a passel of Glaucous-winged Gulls washed up on this 0.5 kilometer stretch, pushed the regional signal in that month up by more than double. But wreck-wise, the main story is in the Gulf of Alaska. Two peaks: a huge one in July 2011 and a late-winter early-spring elevation in 2012 literally lifted the entire 7-year baseline. What happened?

The July 2011 story is a wreck of the "right" species, albeit shifted slightly in time: Black-legged Kittiwakes do create part of the Gulf of Alaska's late summer pattern. Dave Tessler, Alaska Department of Fish and Game (ADFG), recorded 174 birds, 164 of them Black-legged Kittiwakes (BLKI) over the 0.67 kilometer stretch at Head of Passage Canal Beach, just west of the harbor in Whittier (that's 260 birds/km—a *big* wreck). Cliffs on the north side of Passage Canal support a large colony estimated at 8000 kittiwakes according to ADFG. The follow-up survey in August by Kent Wohl recorded an additional 106 BLKI, and September came in at 33 birds, all kittiwakes.

February 2012 saw a wreck of murres along the Kenai Peninsula, outside of Seward and Homer. This spike reflects the "right" species for the Gulf of Alaska, but the wrong time—murres usually contribute to the baseline in June through October during and after their breeding season. Leslie Adams of Kenai Fjords National Park first sounded the alarm that sparked the interest of folks in the U.S. Fish and Wildlife Service and U.S. Geological Survey Alaska offices. Turns out a similar wreck of murres occurred

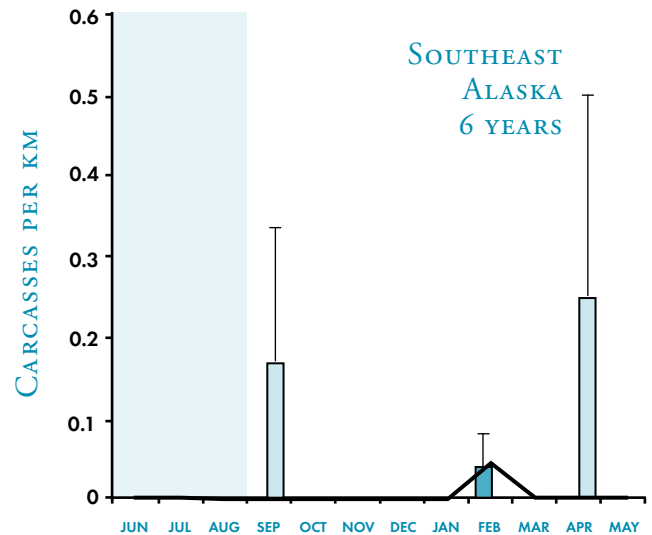
ALASKA



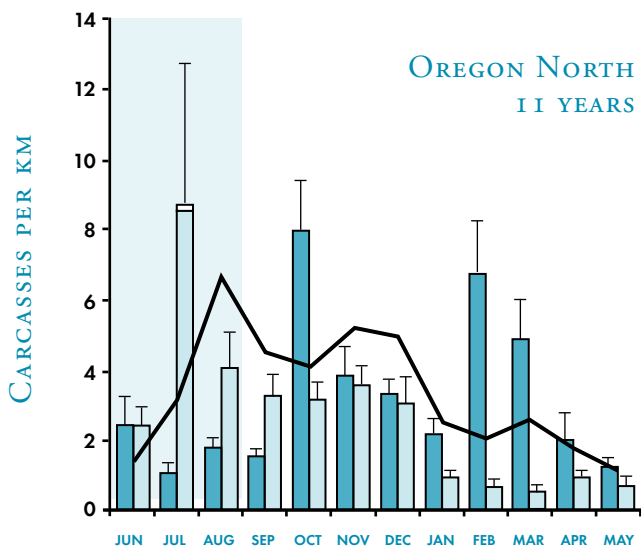
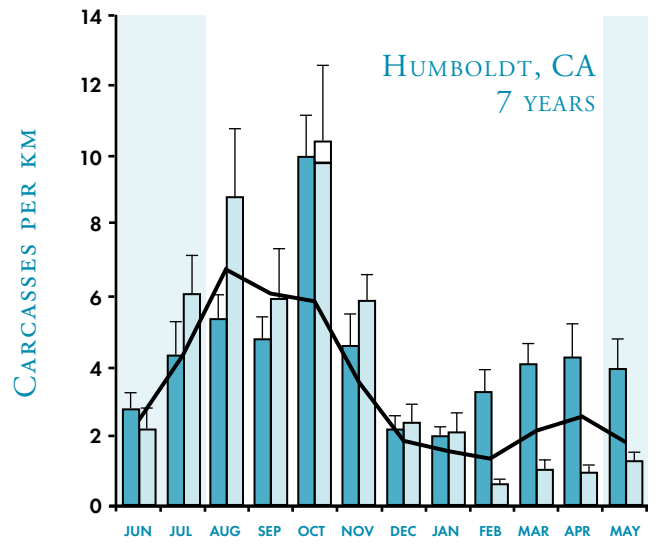
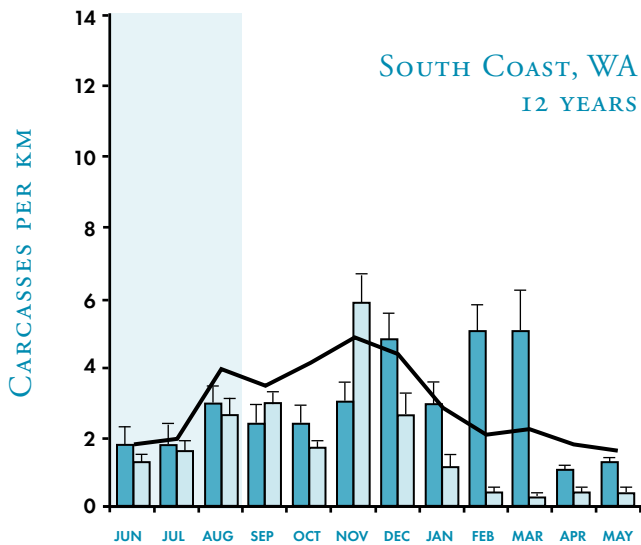
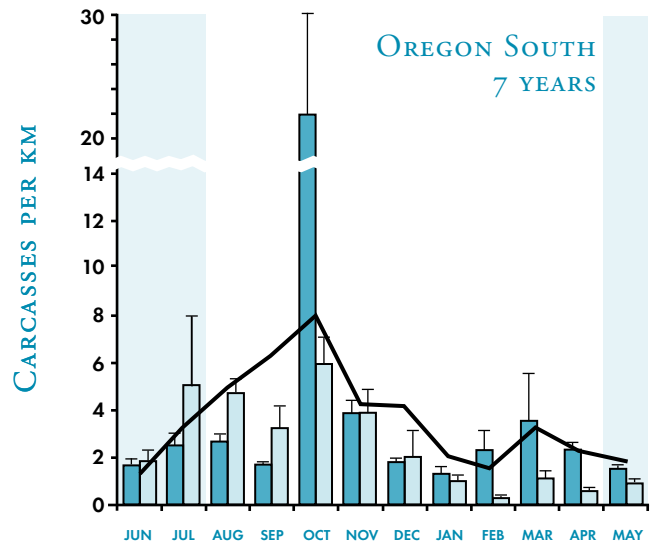
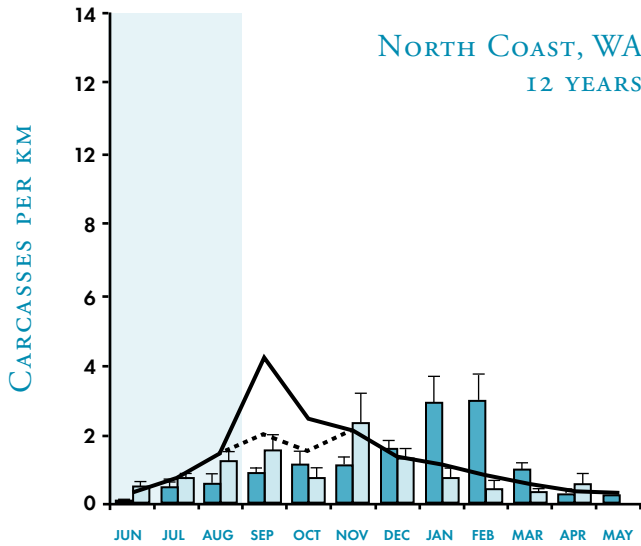
in Seward in mid-March 1993, and was written up in the scientific literature by our Advisory Board member Tom Van Pelt. Although the 2012 wreck (peaking at approximately 10 birds/km) was only a third the magnitude of the 1993 wreck (peaking at over 30 birds/km), the timing was similar as was the ultimate cause: starvation.

Pacific Northwest

The outer coast Pacific Northwest (PNW) pattern looks a lot different from Alaska. For one, there are more birds found—check out the shift in the Y axis scale. A second difference is the annual pattern. Oregon North displays our quintessential PNW pattern with three distinct peaks



OUTER COAST



that dominate the baseline: post-breeding (usually August through September), winter-kill (November through December) and the variably occurring northward spring migration “baby” peak (February through March). For each of these peaks, predictable species wash in: Common Murres dominate the fall post-breeding peak, Northern Fulmars take over during winter-kill peak, and Rhinoceros Auklets show up on the beaches in the early spring. These are “right species, right time” wrecks, and each of the five PNW outer coast regions have a baseline that is some version of this “trimodal” pattern.

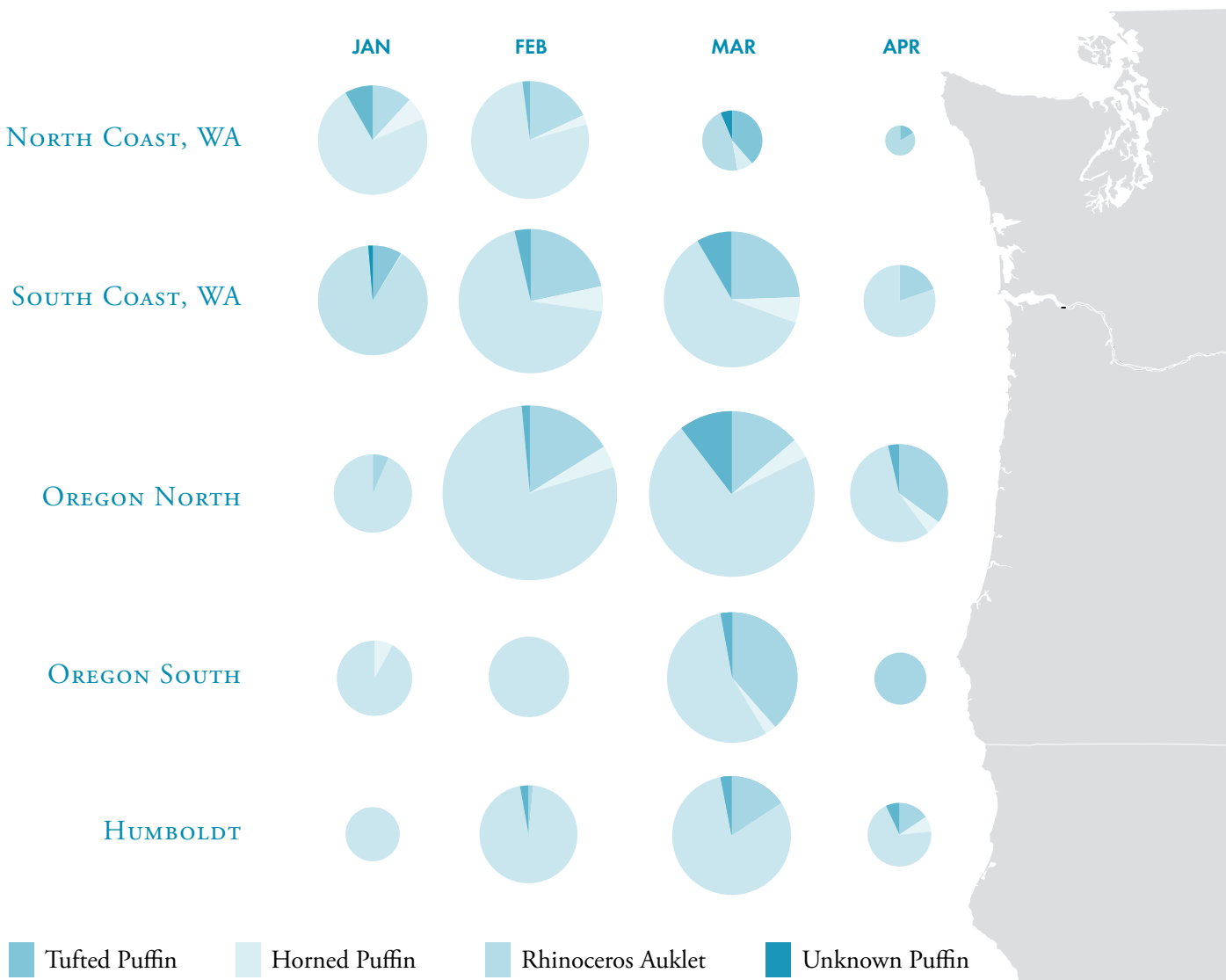
The post-breeding spikes of Common Murres typically seen in July–August came way late in 2011. “Missing

murres” piled up on beaches across Humboldt and the coast of Oregon in October, spiking on five beaches separated by many kilometers of coastline: Oregon Mile 327, just south of the Columbia River; Bullards Beach, North/South in Southern Oregon; Hubbard Creek Beach near the Oregon/California border; and Trinidad State Beach in California. And we checked, no small beach effect.

The exact opposite happened in 2012: murres showed up on Oregon North beaches in July. And like the Black-

legged Kittiwake story in Alaska, this one is also colony-based. Tens of thousands of Common Murres breed on the rocks surrounding Yaquina Head, just north of Newport, Oregon. Most years, especially early in the breeding season, Bald Eagles dive-bomb the colony flushing adult birds who leave early-laid eggs to the mercy of crow, raven and gull scavengers. In some past years, this facilitation of egg predators has seriously depressed reproductive success for murre colonies up and down the coast.

PUFFIN WRECK 2012



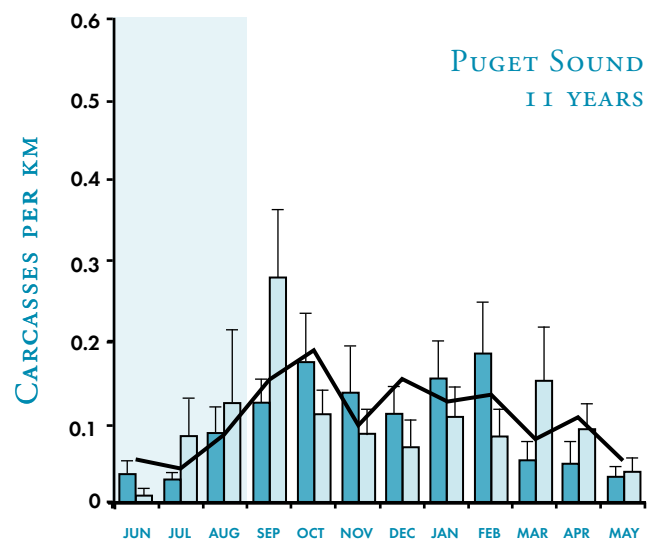
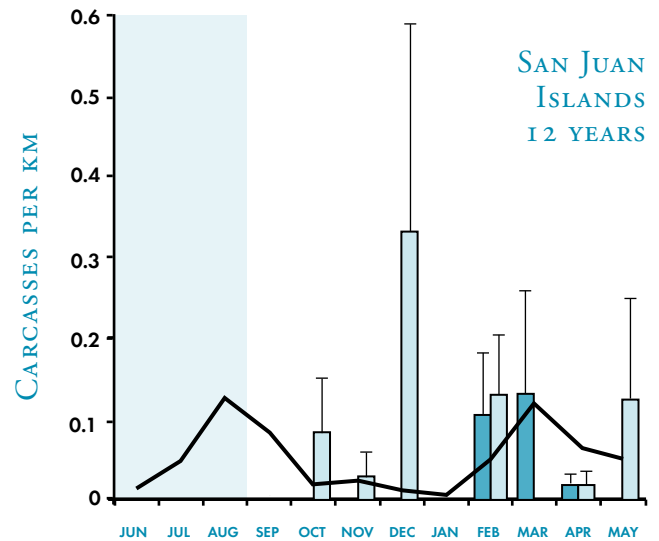
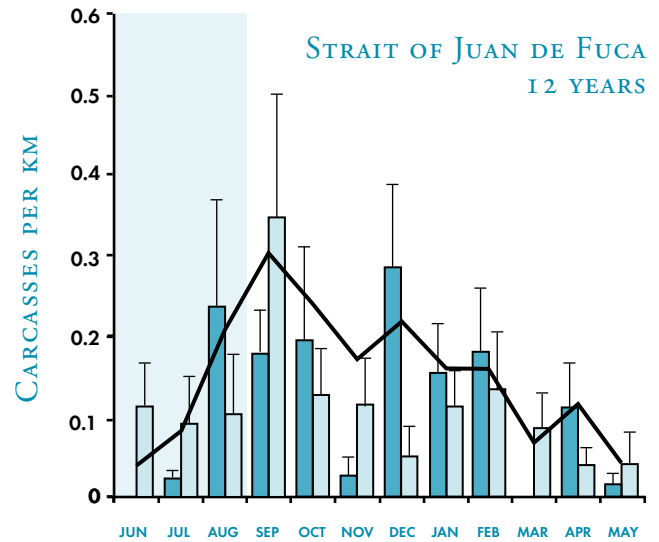
Pie size reflects total puffin encounter rate, and each “slice” a separate species: Tufted Puffin, Horned Puffin, Rhinoceros Auklet and unknown puffin. Puffins began washing up in the north, and later, to the south—the center of the wreck was in Oregon North.

INSIDE WATERS

In fact, our nation's bird is not to blame for the Oregon inundation of beach-cast murre. Another formerly listed bird is: the Brown Pelican. Starving juveniles, newly arrived from the coasts of Central America, Mexico and southern California, descended on the colony and chaos ensued. Turns out pelicans eat more than fish. Over a two-day period, Professor Rob Suryan's research team at Oregon State University counted 369 murre chicks from Agate Beach (just south of the Yaquina headland) to the city of Newport—just 3.6 kilometers—as juvenile pelicans rampaged the Yaquina colony. Only three COASST beaches—Moolack South (just north of Yaquina), Agate Beach and Nye North (both just south) comprised this wreck, pushing up the size of the error bar as these beaches literally pulled up the “norm.” Talk about a rough first survey: Wayne Branum and Signe Hurd signed on to do Moolack South after attending their first COASST training in Lincoln City: 85 birds found, of which 80 were Common Murre chicks. Yeow.

Though this wreck doesn't take the cake for Oregon North by magnitude or extent—that's August 2004 (15 birds/kilometer, 3 sites of 50 birds or greater)—it's on par with post-breeding peaks that regularly occur at the end of a good season. By comparison, the Washington outer coast story was, well, bland—no post-breeding season wrecks to speak of; all in all, a quiet set of years.

But that's not the case for the winter–spring season. Starting in January 2012 on the North Coast of Washington, and spreading south down through Humboldt and on through the spring, COASSTers up and down the PNW outer coast picked up a plethora of puffins—Tufted, Horned and Rhinoceros Auklets (which are, after all, true puffins). We've seen spring upticks of true puffins before, notably in 2006 and 2007, so this wreck falls into the “right species, right time” category. But the magnitude, geographic extent and persistence were much greater in 2012. A quick look at the year 13 numbers in the species table tells the story: 175 Tufted Puffins washed in over the 2011–2012 year, or 70% of all Tufted Puffins found by COASST since inception! And what about the Horned Puffin contribution? They were also part of the combined puffin peak, but their encounter rate was nowhere close to the March–April 2007 wreck in the same locations.



Inside Waters of Washington

Turn the corner from the outer coast of the PNW into the protected waters of the Salish Sea and you're most likely to find... no birds. Note the scale change on the Y axis of the encounter rate graphs from a maximum of 14 birds/kilometer on the coast down to 0.6 birds/kilometer for the inside waters regions. At the same time, the relative size of the error bars has increased, indicating

higher variability—mostly zeroes with “spikes” up to one bird! Even so, we find echoes of the classic pattern, at least in the Strait and Puget Sound: post-breeding August–October, winter-kill December–February, and a spring migration blip in April. By contrast, for San Juans beaches, marine mammals come close to birds. Add in those ubiquitous upland deer carcasses (five this biennium) and it's essentially a draw. ■

Charlie and COASST interns (left to right) Sam, Zoe and Clinton explore Kalaloch's sea caves on a field trip to the coast of Washington.

J. Johnson



Species Profile: Tufted Puffin



With wing beats that sound like the shudder of distant helicopter blades, Tufted Puffin parents all but crash into the vegetation of their remote breeding islands to tend to their single chick. Cautious ungainly birds on land, Tufteds quickly scurry into their underground burrows at the slightest sign of danger, be it fox or falcon. During the breeding season—April through September—Tufted Puffins can be sighted by intrepid birders in the waters surrounding their nesting islands; but come the non-breeding season, parents and fledglings disperse widely throughout the open waters of the North Pacific.

These birds are a bit smaller than crows, but much heavier, fortified for the rigors of a deep-diving Alcid lifestyle. Adults eat mostly invertebrates (shrimp-like euphausiids known as krill), but chicks are served up more substantial fare, including herring, anchovies and thin eel-like fish common to North Pacific shorelines—sandlance. And here's where a big bill comes in handy; puffins can cram up to 25 small fish held sideways (like a fish moustache) before the adult delivers its catch to the chick.

People love to see puffins, and all eyes are usually on that bright orange bill featuring a raised ridge, smoothly curved edges and two or three deep grooves at the tip

(upper bill only!). The head plumage on these black-bodied birds is unique. From the upper corners of the neat white face patch erupt two curly wisps of yellow feathers that give rise to their “tufted” name. In the winter, both the head and bill ornaments are shed, leaving a less distinguished looking bird from October to March. At any time of year, COASSTers should watch for the bright orange-red feet, and if they look super carefully, an inner toenail strongly hooked and pointing inwards.

Tufted Puffins occur in each of COASST's regions (except Puget Sound and the San Juans), but breeding populations from Humboldt to the Canadian border have declined dramatically. Along the entire Oregon coast, surveys in 1979 estimated about 6,000 TUPUs; the 2001 estimate at Three Arch Rocks (about 2/3 of the Oregon population) hovers around 200 birds (perhaps over a 95% decline). In Washington, populations have declined by an order of magnitude from the early turn of the century (more than 25,000 birds in 1909) to now; of the 43 historically occupied colonies, only 17 sites are active today. Why the plunge? It's still a science mystery, but contributing factors certainly include introduced species (European rabbit, red fox, Norway rat, ground squirrel), fishery bycatch, oil spills and disturbance to breeding colonies. Climate warming may play a significant role in the future, as anomalously warm ocean temperatures dramatically decrease growth and fledging success of Tufted Puffin chicks. Fortunately, the situation is not as dire to the north. With a world population of about 3 million birds, mostly breeding in Alaska, it's no wonder lower 48 numbers swell in the winter.

Prior to the 2011–2012 COASST year, finding a beached Tufted Puffin was relatively uncommon (1 to 25 birds annually program-wide) and most likely during the spring mini-pulse when northern breeders are high-tailing it home. January to April 2012 saw a major change from this long-term pattern, when COASSTers found a whopping 175 TUPUs from South Spit in Humboldt to Hobuck Beach on the North Coast. Does this mean our northern puffin populations are crashing as well? Unlikely. But it may well mean ocean changes are on the rise. And importantly, COASSTers will be watching. ■



K. Mack

Project Profile

CoastWatch

For centuries, humans have turned their eyes seaward to scan for looming danger. In Oregon, this idea lives on in CoastWatch, a program within the Oregon Shores Conservation Coalition. “The idea is the only practical thing I gained from being a medieval history major,” jokes Phillip Johnson, the program’s founder and executive director. A friendly man who can sweep up practically anyone with his intensity and enthusiasm for the marine environment, Phillip was frustrated with the lack of early warning signs for many of the issues threatening the 340 miles of Oregon coastline; he suggested, “What if residents watched over every mile of shoreline; everyone paying attention to his or her local beach?”

For the last 18 years, CoastWatch volunteers have been adopting an OREGON MILE and conducting seasonal surveys: ORMI 121—Doug and Mariann Croucher, ORMI 196—Bert Johnstone and Peggy Spear, ORMI 99—Dave and Diane Bilderback. Landslides and erosion, hundreds of dead octopi, oil, chemical drums, marine debris—CoastWatchers have seen it all. Data help create the long-term pattern of change, both natural and human-caused.

“The most profound, long-term threat to Oregon shores is the impact of climate change,” Phillip noted. He said that volunteers are seeing this play out in rising sea level, intensified storm surges, changes in beach topography and coastal erosion, and added, “the huge challenges we face are educating the public about climate



B. Berman

CoastWatch founder and director, Phillip Johnson, keeping watch at Yaquina Head. Below: ORMI 327 beach.

science and building support for adaptive planning. Volunteers on the front line can see the changes for themselves.” COASSTers know that lesson in spades.

CoastWatch and COASST have partnered for years. We even share many of the same volunteers. Phillip and CoastWatch have been instrumental in publicizing COASST trainings, organizing joint science talks and recruiting volunteers for COASST all along the Oregon coastline. Phillip said, “participating in COASST gets CoastWatch volunteers out monitoring monthly, allowing us to track all kinds of shoreline impacts.” We agree! Creating a network of concerned coastal citizens who are knowledgeable, report their observations and sound the alarm is a goal we all share. ■



COASST People

Volunteers

We've upped our game this biennium, with a record 1054 participants who spent 18,757 hours surveying 16,247 kilometers (one-way) in the 2011–2012 and 2012–2013 years. Add on to that 12,702 hours traveling to and from COASST sites—by boat, by plane, by car, by foot—that's almost 800, 40-hour work weeks.

Staff

Annie Woods kept the office abuzz with 10(!) interns per quarter at the same time, leading 20 trainings and spiffing up the COASST database to tip-top shape in preparation for the roll-out of evaluation surveys, part of a study on participant learning that began in February 2011. When opportunity arrived for Annie to pursue her passion for urban farming, she accepted a full-time internship at Local Roots Farm and passed the baton on to Liz Mack in September 2012.

COASST welcomed Liz, graduate of the University of Washington's Masters in Biology-Teaching program, to mentor students for the UW Undergraduate Research Symposium and develop the curriculum for COASST's HAZWOPER trainings, part of a Washington Department of Fish and Wildlife grant to improve oil spill preparedness and response in the Strait of Juan de Fuca and northern Puget Sound.

Speaking of the Strait (and North Coast), Janet Lamont continued monthly trainings at Hobuck Beach, roping in the helpful hands of Sally Parker and Nancy Messmer, and kept COASSTers going with Port Angeles refreshers, supply refills and data support. Coming out of retirement to take one of those “short-term, temporary appointments,” Janet finally immersed herself in full-retirement in August 2012 as Heidi Pedersen settled in.

Look into the COASST archives to find Heidi's first COASST survey—October 2002! With a wealth of connections on the Olympic Peninsula, Heidi dove head-first into becoming one of COASST's lead trainers and now assists Charlie with bird data verification.

Come summer, Charlie Wright heads to Alaska to do summer field work aboard the *USCGC Healy*, or on Middleton Island, but back in the temperature-controlled COASST office, he finds himself fully immersed in verification. How many birds get reviewed by Charlie's eyes? Thousands—about 8000 yearly, if you include refunds.

Jane Dolliver tag-teamed with Annie, Liz and Heidi to lead an additional 34 trainings this biennium in addition to work on the wing key now part of the West Coast *Beached Birds* guide, trainings for the Alaska Groundfish Observer Program, data requests and reports to funding partners.

Executive Director Julia Parrish made the rounds at five state, national and international conferences, including

—continued on page 28

Takes three to tackle this bird: Charlie, Jane and Liz at Golden Gardens, Puget Sound.



Arrivals & Departures

After two years as COASST's Volunteer Coordinator, **Liz Mack** embarked on an epic trip to Bangladesh (of course sending back photos of her cool bird finds—Black Drongo and Pied Myna). Congrats Liz, on your new Communications and Outreach consultant position with EnviroIssues.

Hillary Burgess brings a wealth of knowledge about ecology, survey design, and the science of citizen science, ready to dive in as the new Marine Debris Program Coordinator.

Erika Frost joins the COASST team as the new Volunteer Coordinator, sharing with COASSTers a love of all things aquatic, from freshwater mussels to alligators to fur seals.

Hooked on seabirds after work on the Audubon Society's Puffin Project, **Jenn Ma** begins work on her MS degree using more than a decade of data generated by COASSTers.

When Janet "fledged" into full retirement, **Heidi Pedersen** took over as trainer and data verifier for COASST.



*top row, left to right: Liz Mack, Hillary Burgess
middle row, left to right: Erika Frost, Jenn Ma
bottom row: Heidi Pedersen*

*Charlie, wing-to-arm
comparison with an
Black-footed Albatross
(albatross wins).*

L. Spencer



—continued from page 26

an invited talk at the Public Participation in Scientific Research Symposium of the Ecological Society of America conference in August 2012. In her second role as “CFO,” Julia secured five major grants for COASST—the largest a \$300,000 award from the National Science Foundation to formally evaluate the COASST program’s methods and materials.

Interns

Like almost everything in COASST, the intern program continues to expand. This biennium, 42 interns received college credit for a total of 6259 hours (equivalent to another 3 full-time employees over the biennium). A lively and intrepid bunch, COASST interns span a diverse array of majors—communications to engineering—and interests—hula dancing to frisbee.

The “grease of our gears,” interns prepared kits, maps and contracts for volunteer trainings and entered 6224 data sheets into the COASST database. But that’s not all

—they archived about 20,000 digital photos (that’s over 300/week!). Whenever you receive a cheerful, handwritten note, see a fun story on Facebook, or get a supply refill in the mail, interns made it happen. Each quarter, interns get several opportunities to leave the office for all-day (or all-weekend!) COASSTing—this biennium, we made it to Ocean Shores, Neah Bay, Dungeness National Wildlife Refuge and Pacific Beach.

To meet the demands of a growing intern program, the COASST Senior Intern program expanded three-fold since the last biennium. Senior interns Matt Bessee, Stephanie Doyle, Lindsey Nelson, Zoe Vrieling, Monica White and Sam Zwicker mentored their peers during weekly intern meetings, jam-packed with career-finding tools, guest speakers and bird identification workshops. Thanks to them, COASST has its very own “triage” board to organize dozens of tasks and long-term projects, a tracking sheet for withdrawing volunteers, and an updated intern handbook. Go team! ■

COASST Interns Speak

Juggling daily intern tasks, assisting Jane in special technical projects and fulfilling Julia’s requests have given me a well-rounded understanding of COASST objectives and non-profit operations. The strong community of volunteers and volumes of scientific data make COASST a model for other citizen science groups. My two years of experience have given me a competitive edge to pursue my career in marine sciences and I hope to contribute what I learned to other organizations.

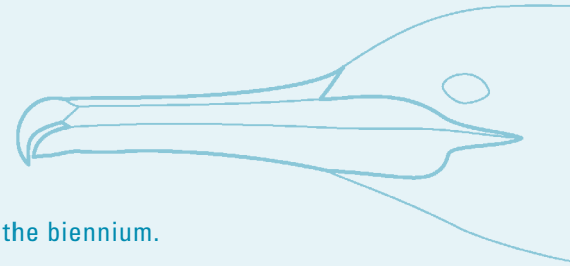
—Lindsey Nelson, Senior Intern

COASST has provided me with opportunities to make connections in both my professional and personal life. Interning created friendships and also opened doors for my career; it is an experience I will never forget.

—Clinton Stipek, Intern

*Opposite page: Hold on, hold on—let’s grab the bird for the photo, too.”
Spring 2013 interns, left to right: Shannon Serier, Scott Le, Stephanie Valdez,
Elizabeth Allen, Jessica Latimer, Hilary Standish, Chelsea Starr.*

COASST Interns



We recognize the following student interns who have helped in the office during the biennium.

Aquatic and Fishery Sciences

Sydni Baumgart
Ross Furbush
Rachelle Johnson

Biology

Elizabeth Allen
Peder Digre³
Stephanie Doyle²
Leslie Hubert¹
Jessamyn Johnson⁵
Jessica Latimer⁴
Nathan Lee
Drew Lyons
Rachael Murray⁴
Lindsey Nelson²
Jasmine Palmer²

Biology (continued)

Tom Pham³
Monisha Ray⁴
Luke Schaefer
Teresa Schaut⁴
Tor Shimizu⁴
Hilary Standish²
Chelsea Starr⁴
Stephanie Valdez⁴
Summer Wang
Karen Wu
Monica White²

Communication

Rosalind Huang³

Environmental Science & Resource Management

Shannon Serier
Jackie Walls²
Benedict Wong

Environmental Studies

Julie Denberger²
Scott Le
Rachel Mickey²
Erin Tomaras²
Zoe Vrieling²
Kifer Yang²
Sam Zwicker²

Human-centered Design and Engineering

Rose Beede⁴

International Exchange Student

Toshiyuki Masaki

Oceanography

Matt Bessee³
Erin Costello³
Logan Spencer³
Clinton Stipek

¹ Graduated 2011 ² Graduated 2012 ³ Graduated 2013

⁴ Graduated 2014 ⁵ Evergreen State College

L. Mack



COASST Talks, Fairs and Festivals

2011

July

Northwest Aquatic and Marine
Educators Conference,
Port Angeles, WA
COASST Social, Neah Bay Marina,
Neah Bay, WA
COASST Social, Westport Maritime
Museum, Westport, WA

August

Pacific Science Center's Science
Café, Seattle, WA
COASST Social, Quinault
Community Center, Taholah, WA

September

Whidbey Audubon, Coupeville, WA
Puget Sound BirdFest, Edmonds, WA
Elwha Restoration Science
Symposium, Port Angeles, WA
COASST Social, Olympic Natural
Resources Center, Forks, WA

October

Water Courses Connecting West
Sound, Keyport, WA
Washington Department of Fish
and Wildlife Talk, Olympia, WA
WSU Skagit Beach Watchers,
Mt. Vernon, WA
Padilla Bay National Estuarine
Research Conference,
Mt. Vernon, WA
Forks High School, Forks, WA

November

WSU Beach Watchers One-day
Communiversity, Everett, WA

December

COASST Social, Fort Worden
State Park, Port Townsend, WA

2012

January

Kitsap Audubon Meeting,
Poulsbo, WA

February

Seattle Aquarium's Career Day,
Seattle, WA
Highline Community College MaST
Center, Redondo Beach, WA
Alaska Forum on the Environment,
Anchorage, AK
Pacific Seabird Group Annual
Meeting, Portland, OR
Evergreen State College, Olympia, WA

March

Beachcombers' Fun Fair, Ocean
Shores, WA
Olympic Peninsula Audubon Society,
Sequim, WA
Pacific Science Center's Paws-On
Science Weekend, Seattle, WA
Informal Science Education Meeting,
Washington, DC

April

Kodiak Outdoor Film Fest,
Kodiak, AK
Island County Beach Watchers,
Camano, WA
COASST Social,
Port Angeles, WA

May

Grays Harbor Shorebird Festival,
Hoquiam, WA
Vashon-Maury Island Audubon
Society, Vashon, WA
Oregon State University,
Corvallis, OR

June

Leopold Leadership Fellow Meeting
San Jose, CA
Whidbey Island Audubon Bird-in-
hand program, Coupeville, WA
Ocean and River Resources Fair,
Forks, WA

August

BoyScout WashJam Session,
Tacoma, WA
Ecological Society of America,
Portland, OR

October

Humboldt State University,
Arcata, CA
WSU Beach Watchers One-day
Communiversity, Everett, WA

November

Olympic Peninsula Audubon Society,
Sequim, WA
Pacific Science Center's Discover
Science Weekend, Seattle, WA

2013

February

Alaska Forum on the Environment,
Anchorage, AK
Seattle Aquarium's Career Day,
Seattle, WA
Orca Bowl, Seattle, WA

March

Redwood Audubon Society Meeting,
Arcata, CA

April

Saltwater State Park Earth Day Fair,
Des Moines, WA
Grays Harbor Shorebird Festival,
Hoquiam, WA

Volunteer Effort, June 1, 2011–May 31, 2013

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Jeff Adams	7.8	3.4	16.1
Leslie Adams	15.4	29.3	10.6
Mary Adams	2.3	0.3	2
Michael Adams	26	4.6	24.5
Donna Aderhold	27.1	8.8	34
Wayne Aderhold	27.1	8.8	34
Jim Aho	20.1	20.1	28.8
Adrienne Akmajian	10.3	5	8.2
Carmela Alexander	2.2	0.7	4.4
Peter Alexander	3.7	1	6.6
Candace Allen	26.1	3.7	27.5
Kristie Allen	4.8	6.2	6.1
Ron Allmand	3.7	1	2.1
Dixie Alms	1.3	0.6	1
AMNWR Seasonal Staff	101.9	38.3	111.3
Doris Anderson	2.3	5	1.3
Jerry Anderson	3.2	6	1.6
Julie Anderson	3.3	4	6.3
Sherrri Anderson	2.8	0.2	1
Kelly Andrews	12.8	12.1	12
Ed Ansorg	17.2	27.8	19.5
Arne Apsens	25	15.2	10.4
Elizabeth Arch	50.7	7.7	39.1
Steve Arch	49.4	7.3	37.4
Stu Ashley	43.9	9.6	36.9
Mary Atherton	1.7	0.2	3.8
Dennis Axt	10.9	44	10.5
Kathy Bahnick	5.7	9	5.6
Michelle Bahnick	5.7	9	5.6
Christina Bailey	3.8	5.3	5.8
Johanna Bakker	1.3	0.6	1
Hugh Barrett	15.2	3.8	11.6
Russel Barsh	9	7	2.1
Joanne Bartlett	34.2	12	34.9
Jon Batcheller	1.7	4	1
Sue Baxter	6.3	1.1	1.3
Jo Beachy	23.9	21.5	47.5
Roger Beachy	17.4	13.2	36.3
Kelsey Beard	2.5	4	1.2
Karl Becker	3.1	0.8	2.1
Mary Jo Becker	1.5	4	1.8
Eric Beckley	4.2	2.3	7
Nancy Bell	7	6.7	6.6
Jack Bennetto	0.9	1.5	1.2
Elizabeth Berg	82.8	13.5	64.4
Pete Berg	57.8	7	50.2
Zinnia Berg	2	1	1.7
Linda Bierma	14	6.8	22.4
Dave Bilderback	46.9	4.7	23
Diane Bilderback	46.9	4.7	23
Nancy Bird	3.1	0.8	2.1
Barbara Blackie	7.4	0.8	8.5
Katie Blair	4.7	4	1.5
Max Blair	27.6	3.5	30.8

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Paul Blake	27.1	0	36.8
Ann Blakley	24.8	38.1	10.8
Nigel Blakley	15.6	22	6.9
Alice Blandin	44.5	4	31.2
Bill Blandin	38.3	3.5	27.3
Barbara Block	1.5	0.2	0.8
Jodi Bluhm	11.1	1.6	10
Les Blumenthal	12	6.8	7.3
Sue Blumenthal	17.1	8.8	9.2
Miriam Bobkoff	36.9	49.2	25.5
Courtney Bobsin	0.5	1.4	1.5
Heath Bohlmann	10.7	4.3	14.6
Mary Bond	35.8	17.9	40.1
Betty Bookheim	1.9	15	2.8
Anna Bost	14.3	10.2	14.4
Jacob Bost	1.6	1	1.6
Lee Bowen	20.4	0	32
Cindy Bower	0.5	0.5	0.3
Angela Bowers	2.7	0.5	1.5
Sarah Bowers	4.2	4	2.1
Jane Boyden	20.4	7.4	17.6
Lauren Brady	8.8	0.5	2.1
Stefan Bräger	3.5	12	1.7
Mary Sue Brancato	14.3	19	8
Wayne Branum	16.8	8.8	10.5
Phyllis Bravinder	9.6	4.3	8
Jake Bredl	2.1	1.3	2.3
Reid Brewer	6.4	4.3	7.6
Bill Bridgeland	3.5	0.3	2
Gillian Brightwater	3	0.2	1.1
Barbara Brock	1.2	0.2	0.8
Ernie Brooks	11.2	8.3	3.5
Laure Brooks	8.1	16	6.4
Patti Brooks	4.2	2.7	1.2
Chris Brown	14.5	10.4	17
Angus Bruce	15.5	0.6	5.2
Keith Bruce	13.4	0.4	3.9
Sara Bruce	17.9	1.6	7.1
Janet Bruening	24.2	15	21.5
David Bruncke	16.9	14	10.7
Grace Bruncke	1	1	1.1
Diane Burke	2	0.5	1.6
Cindy Burns	49.5	11.8	27.2
Heather Burns	5.3	10	1.7
Sara Burns	11.7	2.5	6.8
Sean Burns	49.5	11.6	27.2
Ken Burton	7.8	5.7	8
Gerry Busch	16.6	3.5	25.2
Lindsay Busch	16.6	3.5	25.2
Kathy Bush	62.1	9.6	39.8
Rick Bush	62.1	9.6	39.8
Coleman Byrnes	132.9	152.3	149.6
BJ Byron	8.6	2.5	8
Araceli Cabarcas	2	1.7	0.6

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Ben Cahill	0.6	0	0.8
Dennis Cahill	16.3	11.8	11.2
Pamela Cahill	12.9	9.3	8.8
Claire Calderon	3.5	4.2	3.2
Mauricio Calderon	3.5	4.2	3.2
Fred Caldwell	3.2	0.5	1.1
Venita Caldwell	3.2	0.5	1.1
Allison Camp	6.5	5.8	6.4
Bob Campbell	3.8	4.5	2
Johnathan Campbell	1.1	1.2	1
Ken Campbell	59.7	108.6	47
Marianne Campbell	59.7	108.6	47
Karen Candelario	1.2	0.2	1.1
Anne Caples	48.2	12.3	27.2
Laura Cardillo	4.1	0.3	4.8
Larry Carlson	1.3	0.3	1.7
Mary Carlson	3.8	3	1.6
Ricki Carlson	18.5	2	24
Natasha Casciano	6.6	2.2	4.8
Ann Casey	20.4	4.5	30.4
Kathryn Cavin	12.9	7	10.7
Jennifer Cedarleaf	2.2	0.8	2
Bob Celentano	4.9	7.7	3.3
Sherry Celentano	8.7	15.3	6.6
Joe Ceriani	42.2	23.2	24
Jerry Chadwick	35.5	36.6	28.8
Anthony Chavez	2.3	0.5	2
Lee Chavez	19.8	16.1	26.6
Dean Childs	6.5	3.3	2.4
Diana Childs	4.5	1.3	1.6
Dorothy Chisholm	43.9	11	22
Sue Christiansen	11.8	6.9	16
Joan Christy	30.1	4	33.6
Diana Clapper	5.6	14.7	11
Elizabeth Clark	3.4	0	2
Janet Clark	16.3	2.3	7.5
Susan Clark	6.6	3.8	11.2
Amanda Clausen	3.8	1.2	3.6
Debra Clausen	8.3	1	19.2
Patricia Clausenius	8	2.5	6.4
Lisa Climo	66.1	38.9	86
Jess Cochran	12.7	17.7	12.8
Marjorie Cochrane	9	4.5	14.4
Michael Cofer	0.4	0.1	0.7
Morty Cohen	18.5	10.4	14.8
Heather Colleti	2.5	10	3.2
Barbara Collins	6.8	5.4	5.2
Betty Connor	15.3	4.8	15.2
Bill Connor	11.5	3.6	11.2
Melinda Conti	1.5	0.5	1.6
Roger Contor	29.3	21.5	28
Susan Contor	29.3	21.5	28
Blake Conway	0.7	0.1	0.5
Jadine Cook	3	3	2
Nancy Cooper	2.3	0.5	1.7
Stephen Corcoran	11.8	12.4	10.5
Russ Cordiner	8.1	1.6	4
Sherry Cordiner	24.8	5.3	15
Carla Corin	13.9	3	19.8
Lenny Corin	11	2.3	15.4

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Matt Cottingham	2.3	2	1.6
Zoe Cottingham	2.3	2	1.6
Mike Courtney	22.5	30	16.7
Sarah Cowell	0.7	0	0.7
Tim Cowell	1	1	1.2
Tamara Cowles	5.2	4.3	2.2
Karen Cradler	8.5	2.5	9.8
Ollie Crew	3.5	10.8	4.9
Paula Crockett	3.2	6	2.7
Chelsea Crooks	2.3	2	6.4
Gaby Crooks	0.9	0.1	1.6
Summer Cross	6	2.5	3.9
Rex Crouch	21.9	36.4	25.8
Doug Croucher	23.8	3.7	15.2
Mariann Croucher	23.8	3.7	15.2
William Cumming	2	0.2	1.7
Jennifer Curl	1.5	3.8	2.5
Anne Curtis	18.7	51.5	18.6
Carol Cwiklinski	2.3	1.3	2
Bev Dage	50.8	68	22.8
Kellie Dalrymple	3.4	0.5	2.7
Jim Dancey	5	0.3	1.2
Mary Daniels-Lee	1.7	0.5	1.1
Dick Dapceвич	8.8	13	8.8
Rhonda Dapceвич	8.8	13	8.8
Jim Dau	27.4	10.1	14.9
Bobbee Davidson	30.1	11.3	8.6
Jessica Davila	5	2.5	13
Catherine Davis	13.1	2.7	10.5
Juana Del Handy	3.5	1.3	2
Sarah Deleiris	16.3	17.3	10.4
Bill Dengler	43	32.8	13.2
Sandy Dengler	43	32.8	13.2
Cathy Denton	2	0.4	1.7
Kenneth Denton	2	0.4	1.7
Dorothea Derickson	23.2	8.9	5.7
Kim Des Rochers	21.9	8.6	17
Genie Devine	35	39.7	19.5
Robert DeWeese	6.3	0.7	8
Michael Dick	2.5	0.7	0.6
Pam Dick	37.5	31.6	10.8
Jeff Dietrich	0.7	1.5	2.1
Cyndy Dillon	25.5	10.4	39.3
Chuck DiMarzio	8	5.7	1.2
Tasha DiMarzio	22.4	16.5	5.9
Paul Dinnel	27.8	15.4	55.4
Rob DiPerna	2.4	1.8	2
Judy Dixon	23.3	6.9	30.8
Linda Doerflinger	39.3	23	35.6
Krystal Donnell	9.1	4.9	8.5
Vashina Donnell	10.1	9.6	9.8
Paul Donnelly	7	0.7	2.3
Robin Donnelly	48.9	25.9	30.8
Tom Donnelly	6.3	6	3.6
Leslie Dougherty	2.8	0.8	3.5
Amy Douglas	15.2	32.8	16.8
Jack Douglas	19.7	44.5	22.4
Marillyn Douglas	0.8	1.6	2.9
Shanisa Dove	2.3	0.5	2
Laura Doyle	20	8.8	12

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Bev Dresen	4	3	3.2
Abbey Drury	7	2	10.4
Sandy Dubpernell	37.9	21.7	19.4
Dini Duclos	32.7	4.8	23.8
Max Dunn	2.4	0.7	1
Linda Dwight	50.7	11.9	44.6
Dennis Early	1	0.2	1.5
Sharon Early	2.1	0.3	3
Katherine East	1.5	0.7	2
Dave Easton	39.5	33.5	28.5
Timothy Easton	15.1	7.4	9.6
Lena Easton-Calabria	6.1	10.5	2
Dave Eckwert	0.8	0.2	1
Dalene Edgar	30.4	6.1	19.8
Don Edgar	28.7	5.6	18.7
Catherine Edwards	2.1	0.5	1
Sue Ehler	1	0.2	0.3
Jan Eisele	105.1	16.1	91.9
Dixon Elder	37.2	10.1	71.9
Sheryl Eldridge	2	0.5	0.9
Mark Elliott	47.6	6.8	27.9
Liz Ellis	15	21	10.7
Linda Ellsworth	4	7.5	1.2
Martha Ellul	29	0	38.4
Margaret Elphick	5.2	2.3	5
John Emig	21.1	12	16
Tammy Ennen	1.2	1.2	0.9
Jac Entringer	28.2	5.7	26
John Epler	31.8	34.7	125.8
Joyce Epler	30.6	33.2	120.4
Frances Eshorn-Arzadon	7.5	6.3	1.8
Tom Fahey	26.8	8.4	19.8
Tim Federal	1	2	1.6
Shirley Fedora	1	1	0.4
Samantha Ferber	1	0.7	2
Meghan Feuk	1.2	0.6	0.7
Jeanne Finke	55.4	7.2	25.3
Nancy Fischer	54.1	33.6	31.3
Cindy Flanagan	4.3	2.3	1.1
Katie Fleming	15	5.8	16.3
Keith Fleming	15	5.8	16.3
Burton Foote	34.8	47.5	29.7
Rose Forbes	22.9	5.1	30.4
Hazel Ford	3.2	1	5.3
John Forsythe	3.4	1.5	4.8
Katherine Forsythe	3.4	1.5	4.8
Pat Foss	7.2	0.8	4
John Foster	8.1	3.7	14
Rick Foster	59.6	40	40
Jerry Fredericks	59.3	11.8	38.5
Linda Freed	14	5.3	7.6
Gary Freitag	21.3	11.4	16.6
Joe Freitas	5.7	0.2	3
Kathryn Freitas	8.3	0.3	4.5
Larry Frickel	8.5	9	4.6
Lorna Frickel	8.5	9	4.6
Judy Friedberg-Nerf	14.1	5.6	9.8
Marilyn Friedrich	65.4	8.9	112.5
Ron Frisch	38.4	0.4	52.5
Nadine Fuller	40.5	44.3	54.7

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Travis Fulton	1.8	4	2.3
Sue Gabriel	25.4	2.2	20.8
Varian Gacek	20.8	4.5	21.6
Austin Galea	1.8	0.7	1
Frank Galea	2.3	0.7	1
Garrett Galea	1.8	0.7	1
Lauren Galea	6.9	2	3
Robin Galea	10.3	2.7	5
Donna Galich	5	1.5	3.3
Pepper Gamroth	4.8	8	9.6
Finn Gatewood	47.7	26	75.9
Beth Geever	1	0.8	2.1
Tina Genoff	1	2	1.6
Robert Gentz	15.1	12	13
Edge Gerring	40.9	9.1	15
Joan Gerteis	19.2	25.2	9.9
Sarah Gielgens	8.3	3.8	2.7
Helen Gilbert	10.1	3.7	6
Axel Gillam	1.4	0.8	2
Sue Gilleland	19.2	0	30
Dave Gittleman	40.6	73	45.6
Karen Gittleman	56.2	85	65.3
Anne Goetzman	4.8	8	9.6
Phoebe Goit	45.4	31.4	24.5
Gretchen Goodson	10.6	2	10.8
Pat Goodwin	0.6	0.8	1
Andrew Graham	1.8	2	1.9
Sharese Graham	26.9	28	16.7
Sharman Graham	4.5	4	1.6
Sylvia Graham	6.4	16.1	9.6
Matt Gray	2.1	0.8	1.9
Doug Greaves	43.4	3.6	48.4
Barbara Green	1.5	1	0.8
John Green	11.7	0	17.6
Margaret Green	11.7	0	17.6
Phil Green	19.6	0	19.2
Julie Greene	16.3	5	11.7
Karin Grimlund	2.4	1.5	3.3
Jonathan Grimm	3.4	0.5	2
Carol Griswold	14.7	9.6	11.5
Leona Groesbeck	17.6	19.5	19.1
Richard Groesbeck	27	33	30.9
Keri Hahn	3.4	0.5	2
Michelle Hahn-Oleary	14	0.8	7
April Hale	11.6	4.2	7.5
Janet Hall	1	0.8	1.4
Karen Halliday	58.3	44.5	19.2
Mary Hamann	33.5	61.2	28.6
Michelle Hameed	10.4	10.5	14
Jamie Hamilton	2.8	1.8	1.6
Pete Hansen	3.2	3.2	5
Carol Harding	20.6	17.5	15.6
Ann Harding-Solberg	16.8	1.5	10
Birgit Harmon	10.7	11	13.6
Gary Harmon	3.7	4	4.8
Katrina Harmon	11.2	11.3	12.8
Sandra Harold	0.9	0.7	0.7
Mary Harp	23.4	32.1	24.8
Rod Harp	23.4	32.1	24.8
Christopher Harper	1.5	0.3	1.8

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Meagan Harris	6.3	18.3	9.2
Pete Harris	8.6	3.2	5
Scott Harris	3.8	6	1.6
Clare Hatler	15.3	15.8	16.3
Janice Havrilak	139.7	21.5	104.9
Carl Haynie	49.5	132	59.2
Jim Hazel	3.7	3.7	4.8
Roberta Heath	17	16	2.2
Teresa Hedges	9	10	7.8
Caleb Hedrick	2	1.5	2.4
Clarence Hein	21.3	5.5	11.2
Jill Hein	44.1	13.3	23.5
Jan Henault	18	2.4	10
Loren Henry	3.8	1	2
Andrea Hepburn	15.8	4.7	7
Maggy Herbelin	6.3	0.8	1.6
Gretchen Hermey	2.5	0.3	1.2
Alysia Herr	7.4	3	5.5
Katie Herr	0.3	0.8	1
Connie Herzig	29.4	108.5	36.3
Tom Herzig	29.4	108.5	36.3
Jim Heuring	39.2	19.7	38.4
Kathy Heuring	14.6	12.8	11.3
Michael High	2	1	2.4
Lynn Highland	1	0	1.5
Michael Hilsen	1.7	4	1
Arielle Himelbloom	10.5	1.9	11.2
Linda Himelbloom	10.5	1.9	11.2
Solomon Himelbloom	9.4	1.7	9.6
Rebecca Himschoot	7.3	1.1	7
John Hinds	8.1	15	7.2
BJ Hitchcock	21.7	8.4	17
John Hitchcock	1.4	0.4	1
Sally Hodson	3.9	3.2	1.8
Barb Holler	16	4.4	11.9
Carson Hollingsworth	21.2	50.4	26.4
Russ Holmes	17	6	12
Rayna Holtz	69.8	3.2	28.5
Sara Honnold	1.6	2.5	1.8
Steve Honnold	4	4.7	3.6
Shelley Horn	10.4	8.5	6.4
Scott Horton	41.4	24	46.4
Christine Houts	23.6	38.4	30.7
Kerry Howard	3.2	0.5	4.5
Dolly Howe	16	2.8	11
Stephen Howe	16	2.8	11
Mary Huff	2.3	1.8	1.8
Will Hughes	4.3	0.7	2.2
Kristine Huiskens	5.6	5.5	3
Daniel Hull	2	2	1.4
Frankie Humason	6.3	2.3	7.2
Vanessa Hunt	7.7	7.5	4
John Hunter	9.1	10.2	8.3
Pamela Hunter	6.5	7.5	7.5
Signe Hurd	16.8	8.8	10.5
Jack Hurt	1.3	0.3	1.6
Sonia Hurt	4.9	0.5	4.8
Pattie Hutchins	26.2	7.3	15
Dallas Huth	16	20.4	7.9
Mitchel Incarnato	4.3	1	4

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Meg Inokuma	2.3	2.2	1.2
Kevin Isett	66.5	81.5	53.9
Jeanne Iversen	35	29.1	10.2
Robert Ivey	65	5.7	12.4
Tyna Ivey	65	5.7	12.4
JoAnn Jackson	20.1	3.7	21.6
Janet Jacobson	3.9	3.2	1.8
Deborah Jacques	4	0.3	1.8
Andrea James	6.3	0.5	2.9
Merrill Jensen	34.2	3.3	32.5
Anita Johanson	14.3	5	16
Keith Johanson	48.8	16.2	49.4
Rick Johns	7.8	9.8	7.2
Brenda Johnson	9.6	4	4.3
Ingri Johnson	26.3	6.5	14.3
Kara Johnson	1.5	0.2	0.7
Lurie Johnson	17.5	12.7	23.3
Natalie Johnson	1.3	0.7	5
Phillip Johnston	7.3	1.5	2
Bert Johnstone	96.4	16.6	76.8
Diane Jones	15	35.5	18.4
Dustin Jones	5.9	0.6	11
Kieran Jones	1.2	0.1	0.8
Marilyn Jones	36.9	8.6	30.8
Jackie Judd	4.3	8.3	7.6
Penny Juttner	3.8	5.1	8.5
Mike Kaill	15.9	18.2	16.5
Carl Kalb	49	16	39.8
Michael Kaniecki	10.3	7.3	8.7
Mark Kansteiner	12.5	6.5	9.7
Nancy Karle	3.3	4	2.6
Pat Karman	27.6	11.5	17
Michael Karp	9.7	3	18.9
Melanie Kasek	40.9	9.1	15
Pat Kasnan	2	0.7	1
Elizabeth Keddy	17	1.8	13.2
Veronica Keenan	2.9	6.2	2.5
Sue Keilman	85.7	43	86.4
Barbara Keithly	7	7	2.9
Barbara Keller	20.5	2.2	16.2
Colleen Kelly	13.4	4.8	9.5
Lynne Kelly	4.7	1.7	3.9
Debaran Kelso	41.8	13.8	25.5
Nancy Kemp	8.9	3.3	4.7
Kenai Fjords Glacier Lodge	1.1	0	0.7
Adam Kenyon	3.1	0.8	2.1
Bonnie Kerschbaum	19.7	20	40
Matt Kerschbaum	23	25	50
Addi Kessler	12.8	6	21
Max Kessler	9.5	4.5	14.9
Shaun Kessler	0.7	0.1	0.4
Sharon Kim	4.1	19	3.9
Phyllis Kind	46.5	25.5	74.6
Matt Kizer	2.5	5	1.1
Alexander Klatt	9.9	13.5	7.2
Dana Klatt	9.9	13.5	7.2
Kathy Klee	30.5	13.2	23.7
Dorothy Klein	2	1	1.6
Janet Klein	20.6	17.5	15.6
Kim Klocker	1	0	1.6

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Susan Kloeppe	55.4	7.2	25.3
Melissa Knight	3.2	8	2.5
Valerie Knox	54.9	13.3	30.6
Mandy Knudtson	31.6	15.6	7.6
Erik Kokborg	5	0.3	7.3
Kristin Kokborg	5	0.3	7.3
Emily Kolkemo	1.3	0.5	0.3
Art Kolter	9.6	4	4.3
Gary Korb	28.3	6.4	9.2
Stephanie Korvell	2.7	12	1
Bradley Krall	24.8	31.3	38.4
Tamara Krall	12.9	15.3	20.4
Brad Kriekhaus	6.1	0.8	6
Christina Kriedeman	1	0	1.6
Ward Krkoska	6.5	3.1	6.3
Roz Krumm	6.8	3.7	2.9
Jan Kummet	40	77.1	40.3
Nancy Kunce	2.3	0.3	1.2
Yvonne Kuperberg	67.1	3	27
Lisa LaBudde	3.3	23.1	4.4
Char LaCoursiere	1	0	0.4
Kathryn Ladig	2	0	1.8
Dow Lambert	37.7	35.4	45.9
Jim Lamont	5.9	13	3.4
Audrey Lara	12.6	34	9
Frank Lara	12.6	34	9
Alexis Larsen	29.8	1.1	21.9
Benjamin Larson-Alexander	1.1	0.3	2.2
Bonnie LaTendresse	2.7	0.1	0.4
Patty Lavallee	18.7	2.5	7.3
Kathy Layton	39.1	20.6	22
Don Leak	2.5	0.8	2
Joyce Leak	9.8	3.5	8.4
Jim Lennon	36.5	10.9	12.2
Pamela Lestenkof	7.8	6.9	12
Amy Lester	52.8	11	54.7
Gary Lester	108.5	22	80.2
Lauren Lester	54	10.1	23.3
Sharon Levy	19.5	5.7	10.8
Jane Lewinski	9.8	10.7	18.9
Bev Leyman	14.8	27.5	9.4
Larry Leyman	14.8	27.5	9.4
Justine Liebenson	4.4	12.1	3.7
Dan Lieberman	57.1	19.1	33.2
JoAnn Lincoln	6.6	9	3.6
Laurie Lindeman	50.8	68	22.8
Brian Linnell	25.5	68.3	16.3
Kathy Linnell	34.4	92.3	21.1
Peter Linton	11.6	5.8	10.5
Tina Lipman	3	9	2.2
Laura Lippman	20	20.2	15.6
Drew Little	2.2	1	1.1
Linda Livingston	11.9	25	5.7
Sky Lloyd	41.5	4.2	32.5
Kris Loeppky	2.5	0.8	6.4
Betty Long	3	5	2.9
Antonio Lopez	4	2.6	2
Adam Lorio	14.6	2.1	12.7
Camilla Loyd	4.5	0.7	4
David Loyd	6	1.3	8.4

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Nicole Luce	23.9	17.3	32.2
Jann Luesse	43	7.4	35.2
Leslie Lynam	25.7	22.8	14.4
Joanna Lynch	28.2	7.7	13.6
Debbie Maas	8.6	1.7	15.2
Kathy Maas	23.6	23.5	9.7
Judith MacKenzie McCuin	6.8	2.7	5.1
Pat MacRobbie	15.3	15.8	16.3
Ami Magisos	58.5	79.3	47.2
Roslyn Magnuson	5	5	6
Chris Maguire	36.1	48	17
Eugene Makela	3.7	0.9	2.9
Chris Malone	7.8	1.9	8.3
Scott Manning	7.8	1.9	8.3
Tim Manns	20.7	41.8	26.3
Vicki Mansfield	63.2	11.5	108
John Maré	1.5	0.3	1.6
Jane Marks	36.9	8.6	30.8
Allen Marquette	12.4	2.2	9
Susanna Marquette	22.7	4	17
Jerry Marsh	22.6	6	18
Bob Marshall	31.2	22.2	30.9
Joanne Martin	1	0.3	0.9
Laura Martin	0.7	0.3	1
Linda Martin	35.2	9.3	36.8
Louise Martin	4	2.1	4.4
Melissa Martin	0.4	1	1
Connie Martinez	1.1	1.3	0.4
Radames Martinez	25.8	20.5	26
Sarka Martinez	16.1	8.5	4.4
Tony Martinez	14	5.6	3.7
Val Martinson	7	10	7
Deb Martyn	3.5	2.1	3.3
Diana Masolini	0.9	0	0.7
Sharon Massey	17.2	9.3	31.6
Joan Masterson	8.8	2.2	5.4
Stephen Mathis	10.6	1.3	5
Susan Mathis	10.6	0.5	5
Karen Matsumoto	18.3	10.6	23.6
Annie Matsumoto-Grah	3.7	1	5.9
Irene Matsuoka	0.4	0.5	0.4
Barb Matter	24.5	11.3	21
Barbara Maxwell	14.5	43.6	10.8
Pamelia Maxwell	4.3	2	1.3
Heather May	11	8.8	12.4
Geoffrey Mayhew	4.5	16.1	6.9
George Mazeika	1.9	0.5	0.6
Aliya McCarthy	3.5	1.3	0.8
Dan McCroskey	11.7	13.3	12.5
David McCroskey	8.8	12	9.5
Bruce McDanold	4.2	3.8	3
Kathleen McDanold	4.2	3.8	3
Melissa McDowell	64.3	7	41.8
Jerry McElyea	11	4.3	5
Pat McGuire	19.1	9.8	22.1
Casey McHugh	3	4.5	5.2
Kim McLJury	1.1	1	1.4
Mysti McKeegan	15.6	0	16.8
Noel McKeegan	7.4	0	8.4
Kayla McLaughlin	13.2	5.3	7.2

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Joanne McMillen	3.8	2	3
Sydney McMuldloch	4.7	3.6	5.5
Vicki McNeil	24.3	11.7	49.2
Carol McPherson	3.8	1.5	1.2
Avery Meeker	7.4	12.7	2.6
Malcolm Meierbachtol	3.8	1.5	1.2
Paul Melovidov	33.3	25.9	56
Linda Mendenhall	1.5	4	0.9
Elisabeth Mention	1.9	0.3	2.7
Aaron Mercurief	7.9	5.9	11.7
Piper Mertle	29.5	5.1	21.4
Nancy Messmer	111.8	32.2	118.2
Sharon Metcalf	8.2	2.6	15.8
Annie Meyer	28.8	9.7	15.5
Randy Meyers	43.8	18.5	26.8
Michelle Michaud	50.3	50	37.8
Andrew Micks	4.8	2.8	12.8
Carrie Miller	2.6	3.7	3.6
Ian Miller	1.5	0.7	1
Marilyn Miller	5.3	8.8	2.2
Bryna Mills	4.1	0.8	2.3
Ben Millstein	1.5	1.3	1.1
Karen Millstein	11	9.8	5.9
Jasmine Mimms	1	0.7	0.3
Barbara Miño	5.3	2.8	7
Julia Mira	131.8	27	164.8
Virginia Molenaar	4.2	0.7	1.9
Eric Moll	1	2	1.6
Viv Morgan	19.6	11.7	10.6
Wade Morgan	19.6	11.7	10.6
Daphne Morris	14.5	3.7	3.1
Joan Morris	13	5.3	9.1
Tara Morrow	6.1	5.5	3.4
Cindy Moyer	56.7	40	52
Michael Mueller	7.5	31.5	4.4
Janet Mullen	36.3	9.1	45.9
Robert Mullen	36.3	9.1	45.9
Michael Mungoven	20	12.7	28
Carolyn Murphy	16.5	5	38
Kerrie Murphy	30	22.7	15.1
Madrona Murphy	15.4	10.7	11.1
Michael Murphy	32.3	18.4	39.4
Sue Murphy	49.5	24.1	63.2
Tom Murphy	30	22.7	15.1
Cailan Murray	6.1	28	9.2
Erin Murray	4.8	8	4
Henry Mustin	18.5	18.9	14.8
Linda Myers	1.7	0.2	1.6
Ian Napier	15	11	14
Rosalie Napier	2	1.5	2
Lucia Napolitano	3.8	7.3	1.7
Anson Nash	5.8	7	2.8
Ken Nash	0.4	1	0.4
Sue Nattinger	157.3	205.3	186.5
Meghan Nedwick	7.2	6.3	3.7
Barb Nelson	23	13.3	28.3
Lyn Nelson	30.5	13.2	23.7
Sharon Nelson	50.3	1	75
Vic Nelson	129.9	1.5	195
Pat Ness	3	8	2.2

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Jane Neubauer	4.5	1.1	0.8
Alec Nevalainen	6.5	2.1	7.9
Wade Newbegin	42.6	4.2	38.4
Nancy Newman	34	15.1	28
Alex Newton	1.8	1.1	1.7
Scott Newton	1.8	1.1	1.7
Mary Neyhart	15	3.5	6.3
Mary Jo Nichols	0.8	0.5	1.2
Deb Nickerson	13.2	11.8	8
Hayley Norris	13.1	4.4	16.1
Juel Ann North	18.2	5.8	13.6
Kay Norton	6.7	23.8	13
Rod Norvell	54.8	45	68
Paul Norwood	9.7	42.8	5.3
Lydia Nygren	4.8	2.7	6.8
Chuck O'Clair	34.3	53.3	15.8
Bill O'Neill	26.7	81	20.4
Carla O'Reilly	14.4	0.6	9.1
Clarice Odell	6.7	0.1	5
Rollin Odell	6.7	0.1	5
Chet Ogan	11	2.1	4
Parker Ogburn	1.2	0.2	1.1
Susan Ogle	8.8	1.7	7.5
Janet Oja	22.4	13.3	20.1
Carolyn Ollikainen	48.6	14.2	43.6
Robert Ollikainen	89.8	29.8	86.1
Eric Olsen	6.8	0.5	2.9
Karen Olsen	42.6	36.1	48
Nancy Olsen	25.3	4.3	12.5
Heather Olson	30.9	4.1	14.3
Heidi Olson	49.4	54.3	48
Tim Olson	49.4	54.3	48
Mariya Osipchuk	3	1	3.6
Connie Owston	17	2.9	17.6
Pete Owston	17	2.9	17.6
Eric Page	138.4	141.8	109.9
Erin Page	1.7	3	4.2
Krista Pagel	2.5	0	1.5
Raul Pagura	2.2	2.7	4
Gloria Pardo	5.3	1.3	4
Dave Parent	2.5	2.3	3.8
Christy Paris	1.5	1	1.1
Brianna Parke	21.1	65	16.1
Paul Parker	65.5	17.8	47.4
Sally Parker	148.2	38.4	94.8
Doug Parkinson	5	1.9	4.2
Monika Parsons	3.5	2.3	3.2
Kathy Patch	9.6	4.7	13.2
Dean Patrick	2.5	4.5	2.4
Barbara Patton	29.5	2	25
Michael Patton	29.5	2	25
Barbara Paul	12	4	12.8
Lexi Paul	8.1	0.4	1.6
Paula Payne	2.4	0.8	1.3
Lisa Pedersen	24.8	17	20
Cherry Pedrick	14.6	25	9.6
Jim Pedrick	14.6	25	9.6
Sheila Pera	17.9	4.1	23.8
Lori Perkins	1.7	4	1
Betsy Pernotto	33.1	23.8	33.3

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Sara Persselin	7.1	8.3	6.6
Scott Petersen	3.5	0.8	2.2
Ashley Peterson	1.5	1.2	1
Dan Phillips	11.6	4	9.3
Laura Phillips	11.1	17	11.6
Lynda Phillips	11.6	4	9.3
Enid Phreaner	6	5.8	10.2
Robert Phreaner	6	5.8	10.2
Bryce Pierce	4.6	6.5	2.7
Andy Pippel	26.9	23	23
Bob Pippel	26.9	23	23
Demetrias Pittman	2.3	0.5	2
Kimberly Pittman-Schulz	70.4	8.9	39.5
Bryan Pledger	8.5	1.8	8.5
Virginia Pledger	8.5	1.8	8.5
Carol Plunkett	11.6	2.3	16
Tom Pogson	1.6	1.5	0.9
Sandra Pollard-Snowberger	24.5	11	26
Valerie Pollet	38.3	49.4	41
Corinne Poole	30.7	12.8	19
Sarah Elizabeth Pope	4	1.5	2.9
Bill Poppe	25.3	39.2	30.4
Jolene Poppe	12.5	21.9	17.6
Corbin Powell	1.4	5	2.9
Rose Power	35.8	8	43.2
Aidan Priestley	2.2	4	2.5
James Priestley	2.2	4	2.5
Jaci Pumphrey	11.9	10	6
Linda Purlee	32.7	4.8	23.8
Niki Quester	26.2	7.7	23
Cayenne Quinn	3	5	2
Katie Quinn	4.6	0.4	1.8
Drew Raffensperger	1	2.5	1.6
Paul Raffensperger	6.8	3	6.4
Alastair Ramsay	9	11.8	11.2
Calen Randall	4.3	2.3	1.1
Carley Randall	2.3	1.3	0.7
Leslie Raphael	50	13.7	50.2
Gary Rassner-Donovan	10.3	11.3	13.6
Robin Rauch	15	1.4	8
Daniel Ravenel	15	5.8	14.5
Lani Raymond	36.5	7.3	41.7
Dick Reese	35	13.2	16.2
Melisse Reichman	0.8	0.2	1
Mary Ann Rempel-Hester	26.9	21.2	22.9
John Renner	10	10	6.3
Marge Renner	10	10	6.3
Liz Reutlinger	6.6	4	9.2
Julie Reynolds	1.3	0.2	0.7
Lori Reynolds	49.5	63.6	38.7
Patrick Reynolds	49.5	63.6	38.7
Elizabeth Richards	31	12.2	28.1
Tom Richards	31	12.2	28.1
Rich Ridenhour	48.8	27	41.9
Terrie Ridenhour	7.5	3	4.7
Ashli Ringgold	2	1.5	2.4
Ginger Rinckenberger	22.3	4.5	15.4
Terry Risdon	41.8	108	48.4
Kimberly Rivera	1.1	1	1
Tracy Rivera	1.1	1	1

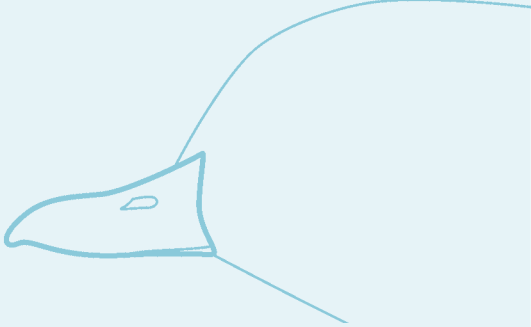
VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Dallas Roberts	7.1	6.3	12
Jim Roberts	39.7	103	11.9
Jo Ann Roberts	41.1	109.7	12.6
Linda Robertson	26.6	25.9	9
Bruce Robinson	1.3	0.2	1.6
Holly Robinson	2	0.2	6.4
Jim Roche	46.3	48	33.2
Sharon Rockstad	7	2.8	3.2
Carrie Rogers	43.6	13.1	18.1
Jim Rogers	43.6	13.1	18.1
Kim Rose	1.1	1	0.4
Govinda Rosling	4.9	4.8	10
Tom Rosmond	3.5	6.3	4
Judy Rost	31	64	30.9
Judy Roth	1	1	0.8
Meg Ruby	23.9	28.3	31.7
Mark Rukovichnikoff	26.9	29.9	57
Janet Runger	54	9.5	36.1
Brian Rutzer	0.4	0.3	0.3
Vera Rutzer	4.7	1.3	2.3
Karla Sabin	0.4	0.5	0.2
Monica Salas	2.8	0.7	1
Carol Salin	3.2	0.3	0.9
Sue Salvesson	8.1	4.1	8.8
Frances Samuelson	1.7	0.3	1.2
Carol Sanders	35.5	36.6	28.8
Lisa Sassi	6.8	6	3.9
Kathleen Sayce	1.8	1	1.8
Donald Scanlon	3.2	0.7	0.9
Russell Schmidt	3.3	1	4.3
Alan Schmitt	0.4	0.7	0.2
Margaret Schmitt	0.4	0.7	0.2
Pat Schoen	14.4	8.7	11.6
Allison Schoening	3.1	5	3.6
Leo Schreiner	5.2	4.5	3.6
Janis Schroeder	5.7	4.9	3.4
Jody Schroeder	5.7	4.9	3.4
Art Schultz	1	1	1.6
Kay Schultz	15.8	16.8	12
Terry Schulz	70.4	8.9	39.6
Kip Schwarzmiller	3	0.3	5
Jon Scordino	7.5	0.7	4
Michael Scrivner	6.3	6.2	5.7
Ruth Scrivner	18.1	11.3	12.6
Tillie Scruton	2.5	0.3	2
Bette Seaman	13.6	1.1	19.2
Patty Sebelky	9.7	1.4	2.6
Scott Sebelky	9.7	1.4	2.6
Kim Secunda	13.9	3.8	6
Katharine Sell	9.2	2.7	13.9
Mary Shackelford	2.7	0.2	1.5
Sue Shane	13.7	6	10.4
Mike Sharar	18.1	1.4	12.5
Andrea Sharman	10.6	8	8
Eric Sharman	9.8	7.8	8
Brian Shea	3.8	0.7	1.8
Tara Shea	6.2	1	2.7
Kimberly Shepard	9.6	5.1	9
Julia Shipley	6.3	11.3	4
Ken Shipley	6.3	11.3	4

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Terry Shumaker	24.9	6	21.6
Ginny Sickles	1.2	0.5	1.3
Betty Siegel	20.4	4.3	16.3
Bernadette Silang	1.4	5	2.9
Laurie Skinner	53.8	40.5	17.6
Lenora Sliman	5.2	4.5	3.6
Jon Sloan	2.2	4	2.5
Taylor Sloan	2.2	4	2.5
Mark Smaalders	19.1	9.2	14
Steve Small	2.2	1.3	2
Andrew Smallwood	3	0.1	1.4
Gerald Smallwood	1.6	0.1	0.7
Patrick Smit	27.2	12	22.3
Roberta Smit	27.2	12	22.3
Bradford Smith	7.1	3	3.2
Jan Smith	26.2	3.6	30.9
Karl Smith	26.2	3.6	30.9
Randy Smith	7.3	2	13.2
Richard Smith	50.3	41.9	57.5
Sandy Smith	23.2	40.5	17.6
Trina Smith	9.8	2.5	6.8
Clayton Snider	3.6	4.2	2.4
Jeriel Snider	4.9	6.3	4.4
Linda Snider	7.5	9.5	6.4
Dustin Solberg	4.5	0.4	2.8
Fran Songer	18.3	15.2	23.6
Linda Songer	18.3	15.2	23.6
Wally Soroka	0.5	0	2.5
Rick Spaulding	8.1	4.7	9.1
Peggy Speer	80.8	14.1	67.2
Caroline Spehar	4.2	4.5	1.6
Michael Spencer	10.7	9	19.2
Lisa Spittler	6.5	0	6.9
Marsha Squires	3.1	1.1	0.8
Owen Squires	3.1	1.1	0.8
Corinne Srsen	17.9	46.8	21.7
Lauren Srsen	1.9	5	1.7
Nurith St Pierre	13.1	3	10.5
COASST Staff	215.9	313.2	148.2
John Stange	3.5	1.9	5.4
Suzanne Staples	1.7	1.4	3.2
Latresha Starling	22.4	2.7	19
Sumer Starling	22.4	2.7	19
Peter Starr	93.7	19.2	108.3
Sara Starr	93.7	19.2	108.3
Gayle Stebbings	2.7	1.1	2.4
Arlene Stebbins	29	10	32
Carol Steele	24.6	2.2	20.8
Margaret Steele	7	0.7	6.4
Satchel Steele	7.3	2.3	7.2
Wendy Steffensen	9.4	6.8	11.2
Ken Stenek	3.6	0	11.5
Darlene Stevens	1.2	0.8	1.1
Kate Stevenson	3.3	10.2	5.6
Laura Stichert	7	2.6	7.3
John Stockman	6	1.3	2.8
Chiggers Stokes	56.2	99.7	54.2
Barbara Stone	38.8	15.9	51
Linda Stonehocker	3.3	1.3	2.2
Courtney Straight	1.8	0.8	1.6

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Eftin Strong	14.5	28.1	13.3
Ingrid Strong	14.5	28.1	13.3
COASST Students	267	506.4	184.9
Dave Sturdevant	6.3	1.1	1.3
Riley Sump	1	1	0.7
Kimbal Sundberg	4	0.4	9.6
Carol Sunde	2.7	0.4	1.3
Zuiko Swann	11.9	10.1	13.7
Anna Swartz	8.5	4.8	8
Pat Szabo	15.2	4.9	8.1
Nanako Tanimoto	0.4	1	1
Mike Tanner	10.1	4.1	6.5
Terry Tavel	5.8	9	7.2
Brenda Taylor	27.7	8	22.9
Kelsea Taylor	3.5	4.8	4
Phil Taylor	27.7	8	22.9
June Tennyson	4.9	1.3	4.2
David Tessler	5	0	0.7
Michael Tetreau	55.3	87.5	43.7
Theresa Tetreau	28.3	42.7	18.6
Ashley Thackrah	8	0.5	2.1
Jeanene Tharp	30.1	11.3	8.6
Dennis Therry	26.7	10	9.6
Jim Thomas	11.8	7.3	6.4
Kathy Thomas	5.5	1	6
Nikki Thomas	22.3	9.9	14.9
Mary Thompson	0.8	0.8	1.2
Jamie Thornton	1.8	0.5	1.4
Annie Thorp	22.5	30	16.7
William Tiederman	0.2	0.7	0.3
Peg Tillery	15.1	5.4	15.1
Bob Toby	5.5	2	7
Marcie Toby	9.3	3.5	12.2
Jim Todd	39.5	46.9	61.4
Stacey Torigoe	1	2	1.6
Field Trip	75.1	93.9	40.6
Pamela Trout	5.8	1.5	2.4
Cindy Trussell	1.8	1.2	1.5
Rose Lew Tsa-Lei Whitson	5.1	26	7.9
Carissa Turner	7.6	3.6	5
Kelley Turner	10.7	4.3	14.6
David Turnoy	5.5	6.3	1.4
Geri Turnoy	5.5	6.3	1.4
Seth Tuttle	2	1.3	1.6
Sadie Ulman	11.3	9.5	5.7
Fredericka Umstead	10.3	7.3	8.7
Dan Urban	9.7	4.6	11.3
Hank Vail	25.2	17.6	17.6
Linda Vail	25.2	17.6	17.6
Adam Van Buskirk	5	0	4.8
Anneke van Doornick	22.8	0	28.8
Wolter van Doornick	96.3	0	129.6
Joshua VanAalst	0.7	0	0.7
Darrel Vaughan	1.7	4	1
Jill Vaughan	1.7	4	1
Nicole Vaught	0.7	0	0.7
Michel Vekved	0.3	0.1	0.1
Nathan Vekved	0.3	0.1	0.1
Litzy Venturi	31.9	5.5	16
Madeleine Venturi	42.1	11	22

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
Debbie Villines	34.5	44.6	37
Chet Vincent	13	11	16.5
Don Vitale	14.8	14	3
Olivia Vitale	14.8	14	3
Dee Vixie	9.3	18.1	7.6
Sally Vogel	12.6	9.9	4.4
Carol Volk	29.5	6.7	9.6
Frank Vondersaar	19.6	8.3	20.4
Mark Vrieling	2.2	0.8	2.8
Chad Wadsworth	2.3	0.5	2
Gretchen Wagner	0.5	0.3	0.2
Neil Wagner	17.6	6.9	19.2
Stan Wagner	24.8	9.4	19
Marv Wallace	2.3	0.8	0.4
Caroline Walls	2.4	1.3	1.8
Shirley Walters	1.8	0.3	1
Anne Wang	8.9	18.7	9.7
Becky Wanless	34.2	14.7	74.8
Chase Warren	12.1	4.1	14.7
Hank Warren	39	30	38
Raedell Warren	39	30	38
Larry Warwick	15.3	3.6	12.7
Markus Warwick	1.6	0.3	2.3
Patti Warwick	2	0.5	1.2
David Waters	3.3	6	4.8
Greg Waters	8.1	5.3	9.6
Liam Waters	7.1	4.6	7.6
Janet Waterstrat	42.1	4.2	29.1
Paul Waterstrat	42.1	4.2	29.1
Elizabeth Watkins	2	1	2.4
Kelley Weaverling	1	0.3	0.7
Connie Webster	26.8	4.7	31.6
Mark Webster	2.8	0.7	3.5
Regan Weeks	3.5	0.8	2.2
Dick Weisbrod	2.2	5.3	2.4
Rita Weisbrod	1.7	4.7	2.1
Abby Welch	0.7	0.5	0.9
Ian Welch	0.7	0.5	0.9
Don Weldon	4.6	1.9	3.2
Jo Weldon	5.9	3.9	4.1
Erin Welker	9.5	1.8	7.1
Scott Welker	38.2	8.2	33.8
Alan Welsheimer	14.8	17.6	11.5
Byron Wenning	10	7	7.8
Burt Went	5	0.5	4.8
Patricia Went	32.8	2.9	28.8
Charlotte Westing	17.9	3.3	19.4
Lance Westing	3	0.4	3.2
Katy Wetzel	7	9.8	12
Chelsey Wheeler	0.5	1.4	1.5
Don Wheeler	63.5	15.5	26.4
Grace Wheeler	63.5	15.5	26.4
Janet Wheeler	28.3	24	13.9
Max Whetstine	4	5.2	2.8
Anne Whirledge-Karp	13	3.8	25.2
Anna Wiancko	5.3	0	2.8
Andrea Wieland	15.1	7.4	9.6
Monika Wieland	11	12.6	10
Rainer Wieland	32.8	94.5	22.5
Vera Wieland	16.2	49.3	12

VOLUNTEER	SURVEY HRS	TRAVEL HRS	KM
John Wiles	10	11	7.9
Cassandra Williams	7.5	21	11.5
John Williams	37	3	14.7
Kathy Williams	37	3	14.7
Rachel Williams	11.1	10.1	13.2
Wendy Williams	104.8	43.7	38.5
Caren Willoughby	20	8.8	12
Cathy Wilson	9.8	2	2.1
Lou Winkler	78	24.8	78.9
Diane Winterboer	37.6	68	17.9
Mike Winterboer	4.2	4	3.3
Bob Witt	12.3	1.3	4.6
Sue Witt	3	0.3	1.2
James Witte	59	79.8	39.6
Kent Wohl	34.1	8.3	39.6
Priscilla Wohl	0.5	0	0.2
Beth Wolgemuth	14.3	3.2	7.6
Kathleen Wolgemuth	86.4	13.9	46.9
Bonnie Wood	44.8	40.5	21.9
Addison Woolsey	0.8	2.6	0.8
Ami Wright	2.1	0.8	1.9
Andrea Wuenschel	12.3	10	14
Lauren Wustenberg	4.1	3.2	4
Jacqueline Wyland	11.8	12.4	10.5
Tyler Yasenak	5.1	2.6	8
Jeff Yerger	1.4	2.4	1.5
Suellen Yerger	1.4	2.4	1.5
JoAnne Yorkston	1.3	0.2	0.8
Mark Youdall	28.2	7.7	13.6
Christopher Young	2.2	0.3	0.8
Steve Young	42.6	25.1	25.8
Jon Ziady	44.5	19.5	42.6
Merrie Ziady	40.5	18.6	39.3
Bill Zielinski	9.2	3.7	7.3
Melissa Zielinski	9.2	3.7	7.3
George Ziminsky	50.9	13	29.9
Kelly Zupich	16.3	7.5	13
Matthew Zupich	11	4.7	10.5
Heidi Zwicker	5.1	0.7	5.4
Kelly Zwicker	5.1	0.7	5.4
Guests	356.9	368	315.7
TOTALS	18,757	12,702	16,247



Volunteer Spotlight

Paul Melovidov

Polovina, Lukanin South, Benson North and North Beach, St Paul Island, Bering Sea, Alaska

“The middle of nowhere”—that’s how many people would describe Alaska’s Pribilof Islands, smack-dab in the middle of the Bering Sea, hundreds of miles from land. But not Paul Melovidov, Lead Tanam Amgignaa (Island Sentinel). He sees it as “the center of everything, where it’s all happening. You have all these marine mammals and wildlife, the fishing industry, migrating birds, a native Aleut community—such a variety of stuff that makes this area unique.”

Paul joined COASST in 2008 as part of his work at the Ecosystem Conservation Office of the Aleut Community of St. Paul Island. He said, “I enjoy the beaches and getting outdoors—having this as part of my position is a bonus.” Paul and his team survey four remote beaches on St. Paul where they often find beached marine mammals in addition to birds. The Pribilof Islands are very unique for COASST because they are located so far off the continent out in the open ocean. They are important areas for migrating birds as well as marine mammals. Their coolest finds so far—a Parakeet Auklet, Fork-tailed Storm-Petrel, several Horned Puffins; oh! and what about the walrus, fur seals and orca calf? Paul and his team have completed 224 surveys and documented 53 birds, braving rain, sleet, snow, wind and temperatures you wouldn’t wish on any COASSTer. In addition to their COASST surveys, the team counts live



J. Christy

Max Blair, ready to head out for a survey of Garth Beach.

marine mammals, surveys live birds and collects data on tar-balls and oil. Paul said, “I spend about 80% of my time in the field.”

For Paul and his community of just over 400 people, seabirds are more than an aesthetic pleasure. They have been part of the Aleut culture for generations. Historically, kittiwakes, murrens and eiders were hunted for subsistence. Nowadays, only a handful of community members still carry on the tradition. Paul grew up on St. Paul Island and has a deep connection with this place. For this outdoor lover, COASST provides an opportunity to learn more about seabirds and spend time on his favorite beaches. Living on an island that is small enough “to look in any direction and see the water” might be hard for some, but Paul knows better, “it’s small and it’s big... everyone knows everyone, it’s family.”

Paul is completely at home on the beaches of St. Paul Island in the middle of the Bering Sea.



D. Jones

Max Blair and Joan Christy

Garth Beach, Humboldt, California

Northern California (Humboldt) became an official COASST region in 2006, with the inaugural training in Crescent City. After learning about COASST from an article in *EcoNews* (a publication of the Northcoast Environmental Center), Max Blair showed up. “I enjoyed the training and met a lot of like-minded people,” explained Max, a lab technician at Sutter Coast Hospital. After the training, he settled on surveying Garth Beach with Joan Christy, who also attended the training. Six years and more than 300 birds (!) later, the pair hardly misses a month.

Finding a bird on Garth Beach is no surprise (over 90% of surveys see at least one find), but some finds are more memorable than others. “We were very surprised to find our first Brown Pelican,” remarked Joan, although they have now gone on to find about a dozen. “Each month we hope to find very few, but like to learn from what we do find,” she added. Other interesting finds (and learning opportunities) from Garth Beach include: a Ring-necked Pheasant (one of only nine found by COASST), a Barred Owl (also quite rare for COASST), and several Tufted Puffins during the spring 2012 puffin wreck. This team often shares stories of their finds with friends, coworkers and the many passers-by on the beach. “They are amazed at the variety of birds we find,” added the pair.

These self-described nature lovers are drawn to their beach like a magnet. “The best thing about living near the coast is the abundance of life and the room to roam. We also see remarkable seasonal changes,” said Max. With more than half a decade under their belts, long-term change—like erosion of the sea cliff—is also apparent. The combination of wildlife, the ever-changing beach and an opportunity to be involved in meaningful research keeps them coming back for more.

Olivia Vitale

Hawley Cove Park, Puget Sound, Washington

“Surveying the beach for dead birds” is not something you would find on many teenagers’ to-do lists, but for Olivia Vitale it is, right next to ballet lessons and practicing piano. At the age of 12, Olivia learned about COASST from her local Kitsap Audubon chapter. “My dad explained to me what it was and I thought it would be a good experience to volunteer and help the community,” she explained. At the training she was hooked: “I was really surprised how all these people are trying to make a positive impact, and we didn’t even realize it.”

Olivia doesn’t just fill out a survey sheet and photograph her findings; she and her dad Don also decided to film her surveys and post them online to share with friends and family. You can check out Olivia using the wing table to identify a Bald Eagle on youtube (http://www.youtube.com/watch?v=HT9fOzIT_og&feature=em-share_video_user&noembed=1). “We thought it would be good for other people to see what we’re doing,” she said. And what exactly do her friends think? “They’re not surprised at all that I would be doing this because they know how much I like birds,” said Olivia. And this bird lover has perseverance; it was almost two years before Olivia found her first bird, a Surf Scoter. “It looked like it had been eaten by something; it was really cool,” she recalls.

Olivia hopes to go into a career in renewable energies one day, but she’ll always be drawn to learn more about biology. As Olivia describes it, COASST helps her “get a base in biology.” In the meantime, she keeps her eyes peeled for a loon or raptor, two birds she’d really like to find. In addition to preparing her for a future in the sciences, COASST has given her an appreciation for volunteer work. She explained, “I learned that doing one small thing that you might not think would make a big difference can actually be a big help.”



D. Vitale

Olivia, budding young scientist, shows off her COASST field guide.



left: Courtesy COASST; right: J. Boyden

Left: Even with 139 surveys under their belt, Pete, Connie, Jane, and Sue aren't slowing down any time soon. Right: This toothy Pacific Lancetfish which washed ashore in April 2012 stands out to the team as one of their more memorable finds.

Jane Boyden, Sue Gabriel, and Connie and Pete Owston

OR Mile 254, Oregon North, Oregon

COASST has seen many volunteers come and go since our first recruits in 1999, but some—like the Oregon Mile 254 team—have real staying power. Jane, Sue, Connie, and Pete are decadal COASSTers! At first, Connie and Pete surveyed Mile 255 while Jane and Sue “owned” Mile 254. Connie and Pete both have backgrounds in biological sciences, which drew them to the program. The four had all been involved in the CoastWatch program together and attended the same COASST training back in 2001. Living in a small rural setting, they often ran into each other and compared notes from their COASST surveys.

Back in July of 2004, Sue, a retired medical records administrator, participated in a COASST special project. Jane, her usual survey partner, was unable to make the daily surveys so Sue headed out solo. After finding 32 birds on day 3 she “placed a frantic call to Pete and Connie for help.” It was a summertime wreck of juvenile Common Murres that could try even the most dedicated of volunteers. “The only blessing—it didn’t rain,” remembers Sue. The often long and birdy surveys of Oregon were starting to take a toll on the two teams. As they got older and their schedules got busier, the four decided to join forces and share Mile 254, alternating months. Since their start in 2001, these COASSTers have completed 139 surveys of Mile 254! In addition to lots of murres, gulls and fulmars, the team has also found a rare Parasitic Jaeger (December 2002), two Horned Puffins (January 2005 and March 2007), and a

Pacific Lancetfish (April 2012) that Jane described as having “amazing fangs coming out of the top of its mouth.”

A decade of surveying can really give you perspective. “Our beach has experienced significant erosion during the winters. The south end of our mile is often under water now,” mused Sue. The team has also watched COASST change through the years. “COASST certainly has grown up...more people, improving and streamlining data reporting. But the thing that doesn’t change is COASST’s relationship with its volunteers,” said Sue. “Citizen science at its best!” added Jane. Pete and Connie agreed, “We like being part of an ecological program that has global impact.”

When not teaching science to high schoolers, Ken is busy collecting science data at some of COASST’s most northern beaches.



E. Weyouanama

Ken Stenek

Sarichef Island East and West, Chukchi, Alaska

If you look through COASST records for Sarichef Island East and West, you will only find surveys for June, July and August. But Ken Stenek, the COASSTer in charge of these beaches, is no slacker—these are the only months of the year without sea ice! “I remember one of the COASST interns sending me an e-mail asking if I had been able to do any observations and I had to reply that I had no beach due to the snow and ice,” recalled Ken. North of Nome, Sarichef is a barrier island along the Alaska coast just above the Arctic Circle, and home to COASST’s first two beaches in the Chukchi region.

Originally from Washington State, Ken moved to the Iñupiaq village of Shishmaref to teach science. He uses COASST “as a means to teach students how taking data can be more than doing an experiment for a science fair. My students have been surprised to see how many different species of birds there are here,” explains Ken. His list of finds includes birds COASSTers farther south will probably never see on a beach: Sabine’s Gull (one of Ken’s favorite birds), Arctic Tern, Common Eider, and Pomarine Jaeger. And every find is beautifully documented; Ken is a superlative photographer.

Life in the Arctic can be challenging at times. Winters —“not that bad” according to Ken, “only minus 20°F.” Groceries are very expensive, making a subsistence lifestyle

a must. Serious erosion due to earlier sea ice break-up has already condemned several buildings, and the entire village may have to relocate. But for Ken, Shishmaref is a great place to live and work. Ken explained, “I married into the village. I’m raising my children here. The people are very tied to the land and the marine environment. Traditional knowledge is immense. Scientists have learned that people here along the Arctic have a vast knowledge base and COASST is providing a way for citizens to share their important observations.”

Eric Page, Ami Magisos and Kevin Isett

Wedding Rocks, Sand Point North, Beach 3, Dungeness Spit, North Coast and Strait, Washington

For many in COASST, completing a survey involves walking or driving to a beach near their home, but for Eric, Ami, and Kevin, a COASST survey is an adventure. Eric and Ami first got connected with COASST in 2011 through their involvement with the Dungeness National Wildlife Refuge. “My first impression was of a couple of energetic fellows hoofing it down to Dungeness Spit,” laughed Eric, a graduate student in environmental science and natural resources at Washington State University. “My second impression was that this was an incredibly slow way to cover miles on a beach!” Ami, a friend of Eric’s, was responsible for recruiting Kevin, who joined the team after hearing about COASST from his wife Jan who worked with Ami at Peninsula College.

Eric enjoys the Olympic Coast, from the shore to the mountains, including this hike at Deer Park.

“Up there,” Kevin points out to Charlie, “is where the Bald Eagles nest,” on Beach 4, North Coast of Washington.



Courtesy of E. Page



J. Dolliner

From Dungeness Spit to Wedding Rocks, this tireless threesome has spent countless hours traveling the Olympic Peninsula surveying remote areas, sometimes as a team, sometimes solo. Their site list includes 11 COASST beaches! And their list of COASST finds is impressive: 21 species, including Tufted and Horned Puffins, a Sanderling and a Red-necked Phalarope.

In early 2012, COASST decided to open more survey beaches on the north coast that could be maintained by seasonal rangers at Olympic National Park. We needed a team to do the leg work of scouting and surveying. Eric, Kevin and Ami were up for the job! After loading up their gear, the team headed to Kalaloch for a weekend of camping, hiking and setting up new COASST sites. "I've never been on beaches that were so full of life," exclaims Eric. And that wildlife isn't limited to just beached birds. Eric and Ami spent one survey following tracks and scat from several bears and a cougar!

In addition to wildlife, the team regularly interacts with other beach-goers. On the more remote beaches, the team finds that people are usually intrigued. Closer to town, people tend to be a bit more concerned that something is amiss. "When people approach to see what we're doing, the discussion sometimes begins with quizzical expressions, wrinkled noses, or queries as to whether we're 'going to eat that for supper,'" recalls Eric. The team has yet to recruit any new COASSTers, but does its best to spread the word. "I have not met anyone who hasn't found it interesting," explains Kevin.

Travel time—hours, hiking in—hours, surveying—hours; what keeps this team motivated? "Guilt and Janet Lamont," joked Eric. He continued, "Seriously, the surveys are the catalyst for getting us out and visiting places we might otherwise neglect when the business of life gets in the way." Kevin agreed, "Being on the coast really recharges my battery." A sentiment many COASSTers can relate to. ■



COASSTers at a Glance 2011-2013

Longest travel to a survey: 12 hours
(*Paul Norwood, Shelikof Beach*)

Longest survey: 8 hours 39 minutes
(*Wendy Williams, Agate Beach*)

Honorable mentions:

7 hours 42 minutes
(*Randy Meyers and Jim Dau, Church Rock*)

6 hours 50 minutes
(*George Ziminsky, Clam Beach North*)

6 hours 40 minutes
(*Laurie Skinner and Karen Halliday, OR Mile 309*)

Most people seen on one survey: 500
(*Allison Camp, Golden Gardens*)

Most dogs seen on one survey: 60
(*Carla O'Reily and Alexis Larsen, Haystack Rock South and Tolovana Beach*)

Most horses seen on one survey: 25
(*Elizabeth and Steve Arch, Nehalem Bay State Park*)

Most vehicles seen on one survey: 83
(*Shelley Horn, Salt Aire North*)

Most surveys: 130
(*Vic Nelson, Point No Point*)

Most birds in one survey: 174
(*David Tessler, Head of Passage Canal*)

Honorable mentions:

101 (*Ashley Thackrah, Heather Olson and Lauren Brady, Nye Beach*)

91 (*Wendy Williams, Agate Beach*)



A. Woods

Caption: Lisa, Courtney and Shayla (left to right) of the Washington Department of Ecology Puget Sound Corps work on a gull wing at the COASST training at Carkeek Park, March 2012.

COASST Trainings & Refreshers

Okay, we admit it, we're based in Washington and most of our trainings are closer to home. Even given the stunning number of COASST trainings in the Evergreen State (25!) this biennium, we still managed to get to the "hinterlands" 22 times, including expanding our range north to Kotzebue, Alaska, and bolstering sites in Oregon South. Part of this "training madness" was due to a special grant from the National Science Foundation to examine how and why COASST is a successful example of citizen science. Remember those surveys you newly minted COASSTers got to fill out during and after your trainings? They were paralleled by surveys of seasoned COASSTers throughout our range.

Alaska (6)

Cordova (Apr 2012)
 Homer (May 2012)
 Juneau (Feb 2013)
 Kodiak (Apr 2012)
 Kotzebue (Aug 2011)
 Sitka (Sep 2012)

California (2)

Arcata (Feb 2012)
 Crescent City (Jun 2011)

Oregon (14)

Astoria (Dec 2011, Mar 2013)
 Bandon (June 2012)
 Brookings (Feb & Aug 2012)
 Cannon Beach (Jul 2012)
 Florence (May 2012)
 Gold Beach (Jun 2011)
 Lincoln City (Jul 2012)
 Nehalem (May 2013)
 Newport (May 2012, May 2013)
 Pacific City (Feb 2013)
 Port Orford (Aug 2012)

Washington (25)

Aberdeen (May 2012)
 Bellingham (Nov 2011)
 Bremerton (Jul 2011)
 Forks (Oct 2011)
 Long Beach (Dec 2011, Sep 2012)
 Lopez Island (Feb 2012)
 Ocean Park (Feb 2013)
 Ocean Shores (Oct 2011)
 Olympia (Dec 2012)
 Orcas Island (Feb 2012)
 Pacific Beach (Aug 2011, May & Nov 2012)
 Port Angeles (Mar 2012)
 Port Townsend (Dec 2011, Jan 2013)
 Poulsbo (Feb 2012)
 San Juan Island (Feb 2012)
 Seattle (Mar 2012, Mar 2013)
 Stanwood (Apr 2012)
 Westport (Jul 2011)
 Whidbey Island (Sep 2011, Aug 2012)

In addition...

11 on-the-beach trainings led by Annie, Liz, Charlie, Jane and COASST interns

24 on-the-beach trainings at Hobuck (Neah Bay, Washington) led by Janet Lamont and/or Heidi Pedersen.

Partner Profile

NOAA Alaska Fisheries Science Center

Central to one of the world's most productive fishing areas is the North Pacific Groundfish Observer Program. Healthy stocks mean healthy fisheries. And fisheries observers are on board sampling the catch, taking measurements and collecting specimens to make sure Alaska marine ecosystems and fisheries stay healthy.

As part of their duties, observers record non-target species, or bycatch, including birds. Species with federal status, like the endangered Short-tailed Albatross, are a particular concern. As surface feeders with an exquisite sense of smell, the tubenoses—albatrosses, shearwaters and fulmars—are particularly attracted to fishing vessels and can become inadvertently tangled in the gear.

Turns out, a bird on the beach doesn't look all that different from one that comes up on a longline or in a trawl net. Enter COASST. Since 2008, COASST has partnered with Seabird Program Coordinator Shannon Fitzgerald, at the Alaska Fisheries Science Center, to conduct seabird identification training. Accordingly to Shannon, "Observers have a lot on their minds: 100 fish species, 20 crab species, octopus, marine mammals, sea corals, you name it. We needed a simple, user-friendly way to get the nuts and bolts of seabird identification across, so we looked to COASST." Shannon knows exactly the types of materials and trainings observers require—he was one once. "I started

as a tuna porpoise program observer out of San Diego, California, in 1982, doing trips in the Eastern Tropical Pacific. Of course, that was before satellite phones and Epirbs," he said.

In addition to live bird identification training, our own Jane and Charlie teach observers how to use the *Beached Birds-Alaska* field guide to identify seabirds-in-hand. Four years and 96 trainings later, COASST has prepared hundreds of new and returning observers.

Besides their "regular" duties (think cold and wet!), observers participate in special projects designed to provide crucial answers to questions about ecosystem structure and function that would be impossible to answer any other way: What do seabirds eat in the middle of winter? Are Short-tailed Albatross expanding their range?

Making sure observers are well prepared to provide the Center with high-quality data ensures that Shannon and partners at the U.S. Fish and Wildlife Service can effectively co-manage the ocean for fisheries and seabirds. "The COASST-Alaska Fisheries Science Center partnership supports the management of marine resources in Alaska," said Shannon. COASST is happy to help!

For more information about this and other COASST partners visit: <http://depts.washington.edu/coasst/what/sponsors.html> ■

Fishing vessel in Kachemak Bay near Homer, Alaska. Michele Cornelius/photos.com



COASST Funding

This biennium, we grew to 1054 volunteers and 579 beaches, and peaked at 120 hours of COASST staff time weekly among Julia, Jane, Annie, Liz, Charlie, and Janet. It takes more than \$250,000 to sustain all of COASST's activities annually. Still, COASST is a good investment: for every \$1 spent, \$2.5 are returned through donated survey and travel time by COASSTers and hours in the COASST office by students.

COASST would like to thank the sponsors who provided support during 2011–2013:

Operational Support

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UW College of the Environment

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Advancing Informal STEM Learning
NOAA Fisheries
North Pacific Groundfish and Halibut Fisheries
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Washington Department of Fish and Wildlife
ALEA Volunteer Cooperative Grant Program
Washington Department of Fish and Wildlife
Improving Community Oil Spill Prevention
Preparedness and Response
Washington Sea Grant

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June 2011–May 2013

FUNDING SOURCES

Agency	76%
In-Kind	22%
Earned Income	1%
Private/Corporate Donations	1%

EXPENSES

Volunteer Training, Communication & Outreach	45%
Special Projects	11%
Data Verification & Analysis	9%
Program Management & Evaluation	30%
Fundraising	5%



Coastal Observation and Seabird Survey Team
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COASST Mission

The Coastal Observation and Seabird Survey Team (COASST) is a citizen science project focused on the coastal areas of the North Pacific. COASST believes citizens of coastal communities are essential scientific partners in monitoring marine ecosystem health. By collaborating with citizens, natural resource management agencies and environmental organizations, COASST works to translate long-term monitoring into effective marine conservation solutions.

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