



Unsung seabirds could help track Puget Sound health

Pigeon guillemot taking flight over water. Photo: Patty McGann (CC BY-NC 2.0) <https://flic.kr/p/opywhG>
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Pigeon guillemots have attracted relatively little scientific attention compared to other seabirds in Puget Sound. That may be because their population is generally stable, but a group of citizen scientists is helping to put guillemots on the conservation radar. They hope the birds can be used as an indicator of Puget Sound health.

In the complicated annals of the Endangered Species Act, the bald eagle counts as one of a few relatively unvarnished success stories. Habitat loss, illegal shooting and the consequences of DDT had led to fewer than five hundred pairs breeding in the lower 48 states by the early 1960s, but after the eagle was listed as endangered, its circumstances steadily improved. When the eagle was delisted in 2007, it was a sign that the ESA could work as intended. “The eagle has returned,” then-Secretary of the Interior Dirk Kempthorne said at the time. “Today is an opportunity to celebrate and draw inspiration.”

All of which is to say that, while Frances Wood does not begrudge the eagle its good fortune, she does sometimes feel a touch ambivalent when she sees one. Such as now. “There’s an adult perched in that tree,” she says as we get out of her car, and indeed, an eagle is perched regally at the top of an evergreen, its white head a gleam. Wood sighs as she closes her door. “So the guillemots might be a bit quiet today.”

Wood is the director and co-founder of the Guillemot Research Group, a citizen science project run through the Whidbey Audubon Society. This morning we are at Mutiny Bay on Whidbey Island, and sure enough, while a turbulence of gulls and rhinoceros auklets are busy in the nearshore under the eagle’s watchful eye, thirty or so guillemots are strung in a silent row of black dots one hundred yards away.

The ubiquity of pigeon guillemots makes them useful as an indicator species, a vital sign of Puget Sound’s health. Being almost everywhere, they could potentially be affected by almost anything.

Both the silence and distance of the guillemots are uncharacteristic. “Usually by now they’d be hopping on the rocks and chattering and being social and just behaving,” Wood says. “But because of the eagle” — she shoots another neutral look at it — “we might have to be a little patient.”

A happy generalist

Pigeon guillemots range throughout the Salish Sea, from southern Puget Sound up to the Strait of Georgia and along the outer coast. (More generally, the species is found from California to Alaska, and across the Bering Sea into northern Russia.) They nest in rocky crevices or in burrows dug into sandstone cliffs; their tunnels might be up to five feet deep. Rare among the region's alcids, they lay two eggs. Their chicks hatch after about thirty days, and the adults feed them at the burrow for the next five weeks or so. Chicks leave their burrows before they can fly, tumbling down to the sea under cover of darkness. (Eagles and other predators would make a meal of them otherwise). Out on the water, they feed for the next couple of weeks until they grow their flight feathers and leave to forage elsewhere.



Two pigeon guillemot chicks in a nesting crevice with egg shell remains. Photo: Sabine's Sunbird (CC BY-SA 4.0 (<https://creativecommons.org/licenses/by-sa/4.0>))

As their name would indicate, guillemots are pigeon-sized, with a short tail and stubby wings. These they use to propel them through air and water both as they pursue their preferred meal — fish such as sculpin and gunnels, primarily. During the non-breeding season their black-and-white plumage has been described as “variable” and “smudgy,” but when breeding they are

much more visually definitive. The black and white that intermingled during the winter months coalesces so that the bird's body is almost entirely the color of coal, save for a white wing patch and bright red feet.



Pigeon guillemots with nonbreeding plumage (left) and plumage during breeding season (right). Photos: Derek Keats (CC BY 2.0 (<https://creativecommons.org/licenses/by/2.0/>)) and Jacob McGinnis (CC BY-NC-ND 2.0 (<https://creativecommons.org/licenses/by-nc-nd/2.0/>))

Over and above their vivid plumage, guillemots are not at all shy when breeding. The *behaving* that Wood wishes I could see is varied and conspicuous. Wood describes some of it: The pattering on the shore and hopping over one another, the squabbles and bill duels, pecking and nipping, all the while the air filled with their calls — a varied repertoire of high-register *squeeeeeees*, *te-te-te-teeteeteeteetes*, *ziiiiiiiiiings*, and perhaps other noises only dogs can hear.

Despite this conspicuousness, guillemots have attracted comparatively little scientific attention compared to other alcid peers, like tufted puffins or marbled murrelets. One reason they are not of obvious management interest is their population seems to be stable. Also, they do not eat many forage fish, such as herring or sand lance, which are the favored food of Pacific salmon. Nor do they feed on salmon themselves. They are habitat generalists, happy everywhere from the most far-off of offshore islands to the nooks and crannies under the piers in downtown Seattle. But it is that very ubiquity, Wood argues, that makes them so useful as an indicator species, a vital sign of Puget Sound's health. Being almost everywhere, they could potentially be affected by almost anything.

Volunteers step up

From its sandy base, the main bluff at Mutiny Bay is a vertical wall of sloughing sandstone between forty and fifty feet tall. Here and there along its upper third are the dark recesses that might be guillemot burrows, but right now Wood can only speculate. “Guillemots use the same burrows year after year, so some of those are probably active,” she says. “We’re still pretty early, though.” Mid-May marks the start of the breeding season, but it is not until July that activity really picks up — the constant ferrying of small fish from the water to the holes in the walls.

Wood, who is soft-spoken and in her early seventies, has lived on Whidbey Island since 2000, although her family has had a summer cabin here since 1900. She became interested in birds after she took a course in ornithology as an undergraduate, before birdwatching, she says, “became the sort of thing it is today.” She has a graduate degree in fine arts, and when she moved to Whidbey, she began writing a regular column about birds and birdwatching for the local paper.



Guillemots lay eggs in burrows in a vertical wall of sloughing sandstone at Mutiny Bay. Photo: Eric Wagner.

One day in 2001, a reader got in touch and invited her to come to some bluffs to see the guillemots there. Wood had been volunteering with the Puget Sound Breeding Bird Atlas since the mid-1990s, so she knew what guillemots were even if she had not thought about them much. But that summer day, the woman took her to stand under the colony cliffs while dozens of adults busily attended to their chicks. “Guillemots were everywhere, flying in and out, swirling around,” Wood remembers. “It was just magical.”

From her work with the breeding bird survey, Wood also knew no one was paying attention to the guillemots beyond the occasional count. Soon after, at an Audubon meeting, she stood up and asked if anyone would be interested in going out to look for guillemot colonies. One woman raised her hand — Phyllis Kind, a retired microbiologist who had been a professor at George Washington University. (“I once went and counted the number of Ph.D.s among our volunteers,” Wood says. “It was a lot.”)

Wood and Kind kayaked all around Whidbey Island, noting guillemot colonies. They decided to enlist volunteers to monitor the colonies during the summer. With some help from area seabird biologists, they developed a protocol for what such watches would entail, so that the effort might reveal whether guillemots were successfully raising chicks, and with what food adults were provisioning them. “They were so helpful,” Wood says. “And it was neat to know they valued what we could do.”

Making use of the data

These days, Wood has between sixty and seventy volunteers each year monitoring about one thousand guillemots at some twenty-five colonies spread all around Whidbey (<http://www.pigeonguillemot.org/map-of-colonies.html>). (The Guillemot Research Group has recently expanded to four other sites, from South Sound to Clallam County.) Her requests of the volunteers’ time are modest — they are to spend one hour per week watching a colony for ten weeks. During that hour, they are asked to, as Wood says, “act like a piece of driftwood” so as not to disturb the guillemots. They also count the number of times guillemots fly to or exit from a burrow, and if possible identify the species of whatever prey the guillemot might be carrying. Should something disturb the guillemots — an eagle, a dog-walker — they note that, too, and the length of the disturbance.

It might not sound like much, but a lot can happen even in an hour that can shed light on guillemot distribution and abundance, and foraging effort. The project is now more than a decade old, and the data was starting to pile up, reams and reams of it, until, a couple of years ago, Wood thought someone should make use of it. The scientific community had helped her before; here was her chance to return the favor, if they wanted.

When Sarah Converse, a quantitative ecologist at the University of Washington, approached Wood to see if she could use the data, Wood said yes. To ground truth her analysis, Converse came out to see the colonies with Wood. It turned out to be one of those magical days:

Guillemots everywhere doing interesting things, flying around, making lots of noise, seemingly untroubled by the presence of a couple of elated humans. “Sarah just got such a kick out of them,” Wood says. “She said it was the first citizen science project she felt she could use.”

Converse entrusted the analysis of Wood’s data to her Ph.D. student, Amanda Warlick. “What Frances is doing is really incredible,” Warlick says. “Without that kind of effort, these rigorous analyses wouldn’t be possible because the data wouldn’t exist.” More typically, she notes, citizen science projects are begun under the watchful eye of the scientists who will analyze the data, but that is not the case here. Guillemots present special challenges as well: they are not banded, no one can see inside their nests and their chicks fledge at night. “We’ve had to come up with some statistical work-arounds,” Warlick says.

Ultimately, Warlick wants to look for correlations between the guillemot’s population numbers and reproductive success and marine conditions, such as coastal upwelling or sea surface temperature. The challenge, she says, is that since pigeon guillemots are so cosmopolitan, and much more willing than other marine birds to nest in the vicinity of, say, a housing development, or near people who regularly walk their dogs, declines she detects could be due to any number of reasons. “They’re urban birds, so we can’t restrict our range of potential influences,” Warlick says. “We have to be thoughtful to the fact that what we really should be doing is paying attention to everything.”

Keeping an eye out

Wood and I walk the shore of Mutiny Bay for a little longer and then head to another colony just up the beach called Mutiny Sands, but the guillemots are quiet there, too. Wood is a little fretful on my behalf, but she need not be — it is nice to walk the beach, to see what birds there are, to watch them go about their business however discreetly.

“Yes, that’s one of the appeals, just being outside,” Wood says. “But you should come back in July. Then it will really be hopping — I promise.”

I tell her I will, and we say our farewells so I can catch the ferry back to the mainland at Clinton. “Oh, you should keep an eye out for guillemots,” Wood says. “They burrow right under the ferry dock.”

I get to the dock and take my place in the columns of cars. Having watched a ferry just depart, I have time to walk down to the small public beach nearby. A family is digging in the sand, a couple of people are walking a large happy dog. But out on the water, perhaps fifty yards from shore, a single guillemot is bobbing along with the ferry’s lingering chop. It makes no noise, and from where I am it is impossible to see anything more than its stubby black profile. Then a guillemot flies out from under the long ferry pier, where it must have been perched. It splashes down right next to the first guillemot, and the two mildly joust with their bills, whether in affection or competition it is difficult to say.

A couple of seconds later, two more guillemots fly out from under the pier to join the first pair, and seconds after them, two more. The six guillemots gather together in a little group. Even from this distance, even with everything else going on — the cars and trucks grumbling to their places, the children laughing in the surf, the dog barking at something — I soon can make out another set of sounds: the *te-te-te-teeteeteeteetes* and *sweeeeeeeees* and *ziiiiings* of gabby guillemots, before two of them lift off suddenly to chase each other around.


About the author: Eric Wagner writes about science and the environment from his home in Seattle, where he lives with his wife and daughter. His writing has appeared in Smithsonian, Orion, and High Country News, among other places. His most recent book is *Penguins in the Desert* published by Oregon State University Press. He is currently writing a book about Mount St. Helens.

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Pigeon Guillemot (*Cephus columba*) (</species/cepheus-columba/>)

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