

SPRINGS

THE RACHEL CARSON CENTER REVIEW

Issue #8 | 2025

November



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EAGLES, MARMOTS, HUMANS: KNOWING WILDLIFE THROUGH FIELDWORK

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Springs
The Rachel Carson Center Review

8 • 2025

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Katya Karabanina climbed steadily, clinging to a long, straight pine trunk, her safety ropes tight around her waist. Near the top, the nest came into view: a mass of sticks balanced far out on a spindly branch. A golden-eagle chick—or baby, as Katya called her—shivered and gaped, wings stretched wide, not yet knowing how to fly.



Golden-eagle chick. © Katya Karabanina. All rights reserved.

Katya spoke to her in Russian, her voice low and steady—sounds that are known to be reassuring. But the nest was awkwardly placed, too far from the trunk. To ring the chick—attaching a small, numbered band to its leg—Katya would have to venture along the branch.¹ It looked risky. The chick teetered near the edge, one panic-flap away from a fall. Katya hesitated.

From the ground, I looked up at her. Pine sap streaked her yellowish canvas suit, her green cap tugged low over green-dyed hair. An orange belt cinched her waist, and heavy metal climbing spikes strapped to her rubber boots were stuck into the bark. The long, curved spike that helped her grip the trunk would make balancing on a branch nearly impossible.

“What do I do?” she called down.

“Maybe... come down?” I suggested, trying not to sound too discouraging.

"But Kalevi ringed chicks in this nest before," she argued. "How did he do it? I'll call him." She fumbled for her phone, talking half in Finnish, half in English.

Kalevi Tunturi, now nearly 80, is an old-school birder. He ringed and monitored golden eagles for decades, in territories assigned to him by the wildlife branch of the Finnish Forest Service (Metsähallitus). Over the years, he passed some sites on to his son and others to Katya. Unlike Kalevi, Katya is a trained biologist, who works at the Ecology and Genetics Unit at the University of Oulu. She is the only woman registered to ring golden eagles in Finland.

Perched up in the tree, shifting her weight, she sounded frustrated. The phone call was not enlightening, leaving Katya to decide whether to take the risk of trying to ring the chick.

If she backed down, she knew what would follow. "They'll say I can't do it because I'm a woman," she said.

High above the bog, on one of the last pines spared by logging, Katya stared out at the nest, the chick trembling in the wind. For a moment, she weighed her options, then started back down. I exhaled. Relief.

We slogged through the spongy, golden bog back to the car and drove to the next site. The forest service had tipped Katya off to another chick they had spotted during helicopter patrols. From the ground, ringing this one looked easier. The nest sat close to the trunk. Katya climbed again, more confident this time. But as she reached the top of the trunk, I heard her groan. "It's too high! I can't even see the baby. It's at least two meters above me, an old nest!"

She scratched her head. How to reach the nest? How to anchor her ropes, climb higher, without risking a fall? It didn't look good. She stretched her hand up and snapped a photo. The chick stared back, wide-eyed and



Katya doing her work. Photo by Monica Vasile.
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gaping, wings splayed, frozen in the same startled pose as the previous one.

It was June 2025. I had just started a new job with the University of Oulu. Part of my work was to connect the work of humanities scholars, like me, with that of natural scientists. To do that, I needed to know their research, their species, and their landscapes, to join them in the field whenever I could. And so I accompanied Katya to Lapland, to a boreal forest bright with the Arctic summer. The pines and the mosses felt familiar—I had grown up among conifer forests in the Romanian Carpathians—but the eagles were new to me.

Working alongside Katya, I learned that the majority of data on golden eagles (*Aquila chrysaetos*) in Finland comes from the efforts of ringers like herself and Kalevi. Ringing has a long history in Finland, with 3,865 golden eagles ringed since 1913.² The practice became increasingly salient in the 1960s and 1970s, when golden eagles appeared to be in decline (although reliable data would only be gathered later).

For much of the twentieth century, raptors in Finland were systematically persecuted, regarded as pests due to their propensity to prey on reindeer calves. Greater spotted eagles (*Clanga clanga*) were extirpated by the 1920s. White-tailed eagles (*Haliaeetus albicilla*) almost followed.³ Golden eagles survived, though barely. They had disappeared from southern Finland by 1900, though they remained relatively common in the northern part of Finland, Lapland. A bounty scheme was in place until the 1960s. In 1962, eagles were granted full legal protection, which meant a ban on harm. Some estimated that, at that time, only 20 to 50 breeding pairs remained,⁴ and according to Katya, the lowest point was 200 birds. But, sheltered by a "care protection" attitude—as Finnish historian Tuomas Räsänen puts it—their numbers started to slowly increase.⁵

However, local herders' attitudes toward them remain negative, and despite sanctions, eagles' nests have been repeatedly disturbed. Today, 90 percent of eagle territories in Finland are in reindeer-herding areas. Studies have shown that, on average, two to five percent of all calves born fall prey to eagles.⁶ To mitigate conflicts, the government instituted an incentive compensation scheme, based on the headcount of eagles in known nesting territories. This means that today herders are paid a sum of money not when an eagle takes their animals but when an eagle nests within their territories. In this way, the herders have an interest in the eagles' presence.⁷

In total, 733 species are now threatened by forestry-driven habitat loss, and for more than half the primary cause is the decline of old-growth stands and large trees.

Unlike most European eagles, the Finnish population nests primarily in trees: Over 90 percent of known nests have been built in Scots pine (*Pinus sylvestris*), with a few in aspen or spruce. Cliff nests are rare, found only in parts of northern Lapland. Golden eagles are fiercely territorial and loyal to their nesting sites, often returning to the same tree year after year and maintaining multiple alternate nests within their territory. But clear-cutting has made such trees increasingly rare. As elsewhere, forest clearing in Finland has been intense. Today, only about two percent of the country's original old-growth forests remain. In total, 733 species are now threatened by forestry-driven habitat loss, and for more than half the primary cause is the decline of old-growth stands and large trees.⁸



Clear-cut area in Finland. Photo by Monica Vasile. [CC BY-NC-ND 4.0](#).

In the 1960s and 1970s, in response to the twin pressures of culling and logging, volunteers like Kalevi began ringing birds and building nesting platforms in the remaining tall trees. As the environmental movement gathered pace, a network of volunteer ringers took shape, and the Forestry Service assigned known bird territories to individuals for ringing and monitoring. In 2024, 362 to 496 breeding pairs were estimated. Each pair might raise one or two chicks. Of those, 113 chicks were ringed in 2024 and 171 the previous year.⁹ By the early 2000s, about 40 ringers remained active, continuing the slow, often solitary work of monitoring an elusive species, scattered across vast territories and sensitive to humans.¹⁰

Ringing makes it possible to identify and track a bird's movements in the wild. Yet only one or two ringed adults are ever seen a second time each year, alive or dead. These rare "recoveries" trickle into a slow-growing database kept by the Natural History Museum in Helsinki.¹¹ But ringing is not significant only when recoveries happen; it is part of a broader system of eagle monitoring, largely volunteer-driven, which resembles a grassroots citizen-science form of "big data."¹²

"Is it worth it?," I asked Katya. She did not hesitate. "Yes. The little we know about these eagles, we know because of ringing." For instance, ringing allows us to know the migratory routes and the life spans of birds; in 2019, a ring recovery revealed that the eagles can live up to 34 years.¹³ To ring a bird is to tether it, lightly, to human knowledge, to care. It is science. It is intrusion. And sometimes, it is a form of love.

As a historian researching wildlife biologists, I often find myself asking: Can we really know animals? Are they not too alien for us to understand? And what does our knowledge bring, to them and to

us? Does knowledge make us more reasonable toward animals? Do we need to know them to stall their decline, to avert their extinction, and ours?

I wondered what it takes to truly understand another species. What kind of intimacy, attention, and commitment is required? And how do these embodied ways of knowing, learning through our bodies, through climbing trees, handling birds, and watching them closely, contribute to mending broken relationships with wildlife in the Anthropocene?



Eagle chicks. © Katya Karabanina. All rights reserved.

That June day in the forest, Katya left the eaglets unringed. But later that week, we returned to the field. She climbed to two other nests, ringing two siblings in one, a single chick in the other. At the second site, the adult eagles were still on the nest when we approached. They took off, soaring high above. Golden eagles do not attack to protect their chicks. But Katya worried the eagles might abandon the nest and their chicks if humans lingered too long, or came back. She worried about the uncertain effects of human intrusion on wild birds in general. Would our presence stress them to the point of critical harm? Would chicks fledge too soon in panic?

When Katya ringed the siblings, she lowered them with a rope from the nest one at a time, bundled in a cloth bag. I took each chick in my arms, covered their eyes to keep them calm. I thought if they could hear my heart beating, they would feel reassured. But maybe that instinct was deeply mammalian, not avian. Then I held them steadily, gloved hands firm around their bodies, careful to avoid their claws. Katya worked quickly. She needed one kind of pliers to fit the rings and another to close them—the second was more brutal: a heavy, staple-gun-like tool that demanded full force. It looked clumsy in her grip, designed for larger hands. Male hands. She managed anyway. Then she had to pluck a small feather from the chick's back for a DNA sample. She paused, squeezed her eyes shut for a second, as if bracing herself. "We don't know how much this hurts them," she said. She dropped the feather into a paper envelope and sealed it.

We handle wildness, quite literally, in order to know it and safeguard it. The ringers' relationship with the eagles is one of intimacy and intrusion: They climb to their nests, tag their young, track

their flights. Data becomes a proxy for care. But it is a fragile pact. Like so much of our interaction with wildlife in the Anthropocene, it balances on a tightrope between care and interference, knowledge and the violence of knowing too much. “Understanding” often means surveillance, tagging, mapping. This can justify intrusion and can sometimes reduce complex life to measurable abstract units.

What kind of understanding, then, might repair our fractured relationship with wildlife? The kind that does not reduce the bird to a datapoint. For the scientist, the datapoint holds real value; it feeds models, tracks trends. But the knowledge that a wildlife biologist develops through years of climbing trees, holding eaglets, is not just analytical. It is also embodied and experiential. A lived familiarity. It grows into an understanding of a way of life, of another species’ needs, habits, and vulnerabilities.

The knowledge that a wildlife biologist develops through the years is not just analytical. It grows into an understanding of a way of life, of another species’ needs, habits, and vulnerabilities.

This kind of knowledge does not always register as “science.” But it often drives protection. It leads someone to notice when something is wrong, to advocate for coexistence with reindeer herders, to build new nesting platforms in logged landscapes. It is rooted in care and in place. Sometimes these small situated interventions can make the difference between life and loss.

In my research, I have often seen how such grounded acts of care intersect with scientific ones, moments when the survival of a species depends as much on field instinct as on formal expertise. The following story traces one such encounter.

In the winter of 1987, Andrew Bryant, a young Canadian biologist, was sinking into depression. His master’s project—tracking inbreeding in grizzly bears—was going nowhere. He needed to capture the bears, tranquilize them, and draw blood samples. But helicopter captures were expensive and exhausting; in two years, he had barely collected any samples.

Just before Christmas, he found himself venting to Bill Munro, an endangered-species officer in Victoria, British Columbia. Munro had a suggestion: Forget the grizzlies, why not study the Vancouver Island marmot (*Marmota vancouverensis*)? These animals, rodents in the squirrel family, the size of a large house cat, chocolate-brown with a white nose and an earnest face, were endangered, and possibly declining due to inbreeding. They were easier to catch and badly in need of study. Bryant agreed, not realizing at the time that this decision would change his life.

But marmots turned out not to be that much easier to sample than grizzly bears. Years later, in 2022, chatting in his living room in Powell River on a late morning in May, he told me, laughing, “I stopped working with grizzly bears, because it would have taken me 10 years, and a million dollars. So I worked on the Vancouver Island marmots. And that took me 20 years and 7 million dollars. And that is the story of my life.”¹⁴



Andrew Bryant. Westland, season 21, episode 3, "Back from the Brink: The Efforts to Save Vancouver Island Marmots from Extinction" (2004), University of British Columbia. Archives, Halleran Video Collection, UBC VT 2160.1/184.

Andrew Bryant began fieldwork with 5,000 US dollars from the World Wildlife Fund. He drove a battered red Land Cruiser into the scenic mountains of Vancouver Island. The marmot colonies he needed to study were high on the mountain, on the meadows sloping downward toward the forest ridge. Some were in clear-cut areas on private logging land, belonging to the giant forestry company MacMillan Bloedel. The areas logged once had coniferous forests of Douglas fir (*Pseudotsuga menziesii*) and hemlock.

Because the marmots hibernate, Bryant could only do fieldwork between late May and October. To access them, with the approval of the company, he secured keys to the steel gates that barred the road and signed in and out on a board: "Bryant, going up to D13 at 3 a.m., out at 5 p.m." Loggers started asking, "Who's this guy?," and he was soon known as the marmot guy.

To collect blood samples, Bryant needed to trap marmots, but the creatures refused to cooperate. Advice from another marmot biologist working in Colorado, had proved useless; the baits that worked there on yellow-bellied marmots and prairie dogs failed here. The traps sat untouched. As with the grizzlies, Bryant's sample size was close to nil.

Then he started to improvise. He laid out a buffet: apples, jam, bananas. The evident favorite was Skippy peanut butter by Super Chunk. Using only this brand, from then on, Bryant was able to successfully trap the marmots. He sedated them, drew blood, and tagged their ears with numbered metal clips visible through binoculars. It was not an easy operation and Bryant watched out for any effects of such invasive handling, comparing the survival rates of colonies of tagged marmots with those of untagged colonies. The rates being more or less the same, everything seemed to be fine, and fieldwork finally moved forward. He finished his master's thesis, but his results showed that marmots did *not* have an inbreeding problem.¹⁵



Contemporary marmots. © Adam Taylor. All rights reserved. Courtesy of Marmot Recovery Foundation.

Yet, he found something else. Bryant had noticed a pattern. Marmots were settling in freshly logged sites. These were areas that, stripped of trees, resembled alpine meadows. The marmots could dig burrows, find grasses and flowers to eat, and perch on stumps. But these colonies did not last. They vanished within a few years. Bryant suspected the clear-cuts acted as population sinks—habitats that appeared suitable but where more animals died than were born.¹⁶ But here, he was entering the realm of uncertainty. The problem with ear-tagging was that he could not prove they were dying. All he could say for sure was that marmots in logged areas vanished from human visibility more often than those in established meadows.

To track their fates, in 1993, Bryant began implanting radio transmitters into marmots with the help of a veterinarian. It was time-consuming, expensive work, involving long hours in rough terrain. The results came in: Transmitters recovered from the field bore predator tooth marks. Marmots were being preyed on at unsustainable rates. The open, logged terrain offered easy movement and clear sightlines to predators—wolves, cougars, and golden eagles. As saplings began to grow, they could also hide stalking predators.

When Bryant first began his fieldwork in the Vancouver Island mountains, the situation of the marmots was uncertain. They had been listed as endangered largely on the basis of anecdotal rarity. Canada, like many countries in the 1970s, was scrambling to respond to the emerging “endangerment zeitgeist.” After the US passed its Endangered Species Act in 1973, Canada followed suit, compiling its own lists.

Yet, throughout the 1980s, annual marmot counts by the Fish and Wildlife Branch found more and more animals each year. Some officials concluded the population was rising; others suspected this was just the effect of better search efforts. The numbers hovered around 200. Was that small? Was it stable? Little was understood, or asked, about what such numbers meant. In a 1983 report, provincial wildlife officers concluded that “a population of approximately 200 animals, distributed within 10 distinct populations... will be sufficient.”¹⁷ By the decade’s end, the government stopped counting, and it was assumed that some colonies might exist high up in the mountains, yet undiscovered.¹⁸ The prevailing mood became: Let’s take marmots off the endangered list—there is no problem.¹⁹ But not everyone agreed. Munro, for instance, although reserved in his declarations,

was among the pessimists. Citizen naturalists also voiced growing alarm. Bryant sided with them. He did not see a population recovering. He saw a species slipping through the cracks of premature reassurance.

Bryant worked largely alone. He was not employed by the university or by any government agency but survived on short-term contracts. His independence, while precarious, allowed him to stay focused on the marmots. A few senior scientists offered guidance under the loose framework of a marmot-recovery team, but field support was minimal. He was trying to understand how population dynamics shifted in a transformed landscape, one shaped by logging and by the complex interactions of multiple species on Vancouver Island. By 1995, he had been working with marmots for eight years. He had amassed significant scientific data to back up his analyses.

By that same year, the estimate had dropped to just one hundred surviving marmots. The controversy was over. Bryant's warnings that marmots in clear-cut habitats would not last had been right. The collapse was now undeniable. His fieldwork had made the decline legible. And in the conservation climate of the 1990s, driven by scientific data and crisis response, this mattered. His research gave him the green light to intervene, and to ask for serious funding. Together with an advisory recovery team (composed of other scientists), Bryant now proposed drastic intervention: to capture some of the wild marmots and breed them in captivity with a view to releasing the offspring back onto the alpine meadows. Bryant approached MacMillan Bloedel with an ambitious request: 150,000 US dollars annually, for at least 10 years, to start a program of breeding in captivity.



Blockade of logging road at Clayoquot Sound, 1993. Photo by paul_defelice. [Flickr](#). CC BY 2.0.

The marmots were in free fall due to multiple pressures, but he argued that his long-term data showed that industrial logging was the most destructive factor. Therefore, the company bore responsibility. Bryant made the case forcefully, not just as a scientist, but as someone who had lived this story on the ground. And MacMillan Bloedel was already in the hot seat. Greenpeace had recently launched a full-scale protest campaign against them, catalyzing the largest act of civil

disobedience in Canadian history, with over 850 arrests during mass blockades of logging roads in Clayoquot Sound, on the western side of Vancouver Island.²⁰ In this atmosphere, Bryant's proposal landed not just as a plea for help, but as a chance for them to repair their reputation. Conservation funding often comes in a context of external pressure, and success may depend on whether scientific urgency coincides with public concern.

The funding came. "I'm sitting in Stan Coleman's office," Bryant recalled during our interview, "the vice president of the largest logging company in Canada, and he says: I'll give you a cheque for a million bucks, Andrew, and leave here today with it." The government matched these funds with an equal grant. The marmot now had attention and substantial finances. But this was not the end of the story. It was the start of something harder: figuring out how, exactly, to bring a species back from the brink.

For another decade, Bryant threw himself into this challenge. He helped establish the Marmot Recovery Foundation, continued working with the recovery team, and led the capture of wild marmots to start the captive-breeding program.²¹ The goal was reintroduction: to raise marmots and return them to the alpine meadows. By 2003, the wild population had crashed below 50. But with the releases from captivity, numbers began to climb again.²² Then, in 2007, Bryant was dismissed from the foundation. Some said he had become difficult to work with, others pointed to personal struggles that had begun to take a toll. He left Vancouver Island, brokenhearted. Yet the marmot work continues to this day.



Releasing a Vancouver Island marmot. © Adam Taylor. All rights reserved. Courtesy of Marmot Recovery Foundation.

When I met Bryant in 2022, he was living in Powell River, across the Strait of Georgia, where the island mountains still rose on the horizon, distant but familiar, the same peaks where he had once waited patiently for marmots to emerge and nibble at his peanut-butter bait. He spoke generously, at length, and let me into his basement workshop, full of written records and news clippings arranged chronologically. A personal archive of the marmot years. A couple of years later, when I finally finished writing up the marmot story and gathered the courage to send it to him, I found out he had passed away.

Still, the marmots endured. As of spring 2025, there are about 380 in the wild.²³

The power of conservation science has depended on the practice of fieldwork and the bonds this builds between people, species, and places.

Bryant and Katya are both biologists working in remote landscapes altered by logging, trying to understand species. Both look at species that seem adaptable: marmots colonizing clear-cuts, eagles still nesting in logged forests. Their work is hands-on, intimate. Fieldwork is slow, physical, and exacting. They return year after year to piece together survival. Both stories ask the question: What does it take to know a species well enough to protect it?

Katya's story is a close-up: a moment in the Arctic summertime, a few eaglets in their nests. It shows how knowledge is built through bodily presence and repetition. It is about practice, what it takes to be there, to see, to record. Bryant's story is the long view: a slow accumulation of data that only gains power when a species tips into crisis. It shows how fieldwork can become the basis for action if it endures. One story shows the *how*, the other shows the *why*.

The power of conservation science has never rested solely on numbers. It has also depended on the practice of fieldwork and the bonds this builds between people, species, and places. While the authority of conservation has often been framed through counts, models, and population estimates, these alone did not drive the expansion and success of species-focused recovery and protection over the past 50 years. Just as important was the intimate, interspecies labor behind them. Fieldwork fostered activism, forged attachments, and opened space for insight. The quest for data became a form of engagement, a deeper way of knowing and caring.

What these stories reveal is that conservation has always been as much about how we come to know, as about what we know. And that *how* matters. Bryant's and Katya's field-based work, much like Jane Goodall's long witnessing of chimpanzees or Iain Douglas-Hamilton's tracking of elephants, has the capacity to shift public imaginaries and institutional priorities. Bryant's and Katya's research offers more than evidence. They model, however partially, what it might mean to rethink human-wildlife relations in an age of ecological disruption.

In memory of Andrew Bryant and Jane Goodall.

Acknowledgements

This article draws on research supported by the NWO Vici grant VI.C.181.010, Moving Animals: A History of Science, Media and Policy in the Twentieth Century, at Maastricht University. When I conducted fieldwork with Katya, I was employed at the University of Oulu within the Profi8 SAFIRE project, Safeguarding Biodiversity Through Interdisciplinary Research on Habitat Restoration.

Notes

¹ "Ringing" is the term commonly used in Finland, and Europe more broadly; in North America, the same practice is known as "banding."

² "Europe's Oldest Golden Eagle Is Finnish," News and Press Releases, University of Helsinki, 22 February, 2019, <https://www.helsinki.fi/en/news/life-sciences/europes-oldest-golden-eagle-finnish>. For more on golden-eagle monitoring, statistics, and trends in Finland, see: Tuomo Ollila, "The Monitoring Project of the Golden Eagle *Aquila chrysaetos* in Finland," *Status of Raptor Populations in Eastern Fennoscandia, Proceedings of the Workshop, Kostomuksha, Karelia, Russia, November 8–10, 2005* (Karelian Research Centre of the Russian Academy of Sciences ; Finnish-Russian Working Group on Nature Conservation, 2006), 114–16; Tuomo Ollila, "Suomen maakotkat vuonna 2018—Onko pesintämenestys huonontumassa?," *Linnut-Vuosikirja* 2018 (2019): 104–9.

³ For historical perspectives on white-tailed eagles in Finland, see: Tuomas Räsänen, “Transforming the Human-Eagle Relationship Through Conservation Technologies,” in *Sharing Spaces: Technology, Mediation, and Human-Animal Relationships*, ed. Finn Arne Jørgensen and Dolly Jørgensen (University of Pittsburgh Press, 2024), <https://doi.org/10.2307/jj.17102096>; “Does a Dead Wild Animal Have Agency? The White-Tailed Eagle as a Catalyst for an Ideational Revolution in Finland,” in *Shared Lives of Humans and Animals: Animal Agency in the Global North*, ed. Tuomas Räsänen and Taina Syrjämaa (Routledge, 2017), <https://doi.org/10.4324/9781315228761>; Hannu Salmi, “The White-Tailed Eagle on the Brink of Extinction in Twentieth-Century Finland: A Digital Approach to Emotional Responses in the Media,” in *Arrivals and Departures*, ed. Otto Latva, Heta Lähdesmäki, Kirski Sonck-Rautio, and Harri Uusitalo (De Gruyter, 2024), <https://doi.org/10.1515/9783111215273-007>.

⁴ Leila Suvantola, “The Golden Eagle Compensation Scheme in Finland as an Example of Incentive Measures: Potential for Conflict Management?,” in *Human-Wildlife Conflicts in Europe*, ed. Reinhard A. Klenke, Irene Ring, Andreas Kranz, Niels Jepsen, Felix Rauschmayer, and Klaus Henle, *Environmental Science and Engineering* (Springer, 2013), https://doi.org/10.1007/978-3-540-34789-7_10.

⁵ Räsänen, “Transforming the Human-Eagle Relationship.”

⁶ Suvantola, “The Golden Eagle Compensation Scheme in Finland,” 202.

⁷ *Ibid.*, 201–14.

⁸ Jan Kunnas and Timo Myllyntaus, “Lessons from the Past? A Survey of Finnish Forest Utilisation from the Mid-Eighteenth Century to the Present,” *Environment and History* 28, no. 4 (2022): 645–70, <https://doi.org/10.3197/096734020x15900760737121>; Timo Myllyntaus and Timo Mattila, “Decline or Increase? The Standing Timber Stock in Finland, 1800–1997,” *Ecological Economics* 41, no. 2 (2002): 271–88, [https://doi.org/10.1016/s0921-8009\(02\)00034-4](https://doi.org/10.1016/s0921-8009(02)00034-4).

⁹ Eetu Sundvall, *Raportti maakotkan, muuttohaukan, tunturihaukan sekä poronhoitoalueen merikotkan pesinnöistä vuonna*, MH8078/2024 (Metsähallitus, 2024), 7–9.

¹⁰ On the boundaries between professional ornithologists and amateur birders, and ornithology’s enduring dependence on data provided by volunteers, see: Mark V. Barrow, *A Passion for Birds: American Ornithology after Audubon* (Princeton University Press, 1998); Etienne S. Benson, “A Centrifuge of Calculation: Managing Data and Enthusiasm in Early Twentieth-Century Bird Banding,” *Osiris* 32, no. 1 (2017): 286–306, <https://doi.org/10.1086/694172>. On banding, ringing, and birding, see also the excellent work of Nancy Jacobs and Libby Robin: Nancy Joy Jacobs, *Birders of Africa: History of a Network*, Yale Agrarian Studies Series (Yale University Press, 2016); Libby Robin, *What Birdo Is That? A Field Guide to Bird-People* (Melbourne University Publishing, 2024); Libby Robin, *The Flight of the Emu: A Hundred Years of Australian Ornithology, 1901–2001* (Melbourne University Press, 2001).

¹¹ The term recovery was used by Katya, and it is the term used as a translation in Finland for any sighting of a ringed bird, dead or alive. In North America, a few different terms were used: return, repeat, encounter; and recovery only for birds found dead. See C. Stuart Houston, Chandler S. Robbins, and M. Kathleen Klimkiewicz, “History of ‘Computerization’ of Bird-Banding Records,” *North American Bird Bander* 33, no. 2 (2008): 53–65.

¹² Benson, “A Centrifuge of Calculation.”

¹³ “Europe’s Oldest Golden Eagle Is Finnish.”

¹⁴ Andrew Bryant in conversation with the author, 18 May 2022.

¹⁵ Andrew A. Bryant, “Genetic Variability and Minimum Viable Populations in the Vancouver Island Marmot (*Marmota Vancouverensis*)” (master’s thesis, University of Calgary, 1990), <https://ucalgary.scholaris.ca/handle/1880/18059>.

¹⁶ Bryant, “Genetic Variability and Minimum Viable Populations.” See also Andrew A. Bryant and Doug W. Janz, “Distribution and Abundance of Vancouver Island Marmots (*Marmota Vancouverensis*),” *Canadian Journal of Zoology* 74, no. 4 (1996): 667–77, <https://doi.org/10.1139/z96-075>.

¹⁷ W. T. Munro, D. W. Janz, V. Heinsalu, and G. W. Smith, *Status and Management of the Vancouver Island Marmot* (Fish and Wildlife Branch, Ministry of Environment British Columbia, 1983), 37, Ecological Reserves Collection, Government of British Columbia, Victoria, BC, V8V 1X4.

¹⁸ K. S. Fry, J. A. Morgan, and G. W. Smith, *Vancouver Island Marmot Inventory–1986* (Fish and Wildlife, 1986), Ecological Reserves Collection, Government of British Columbia, Victoria, BC, V8V 1X4.

¹⁹ Andrew Bryant in conversation with the author.

²⁰ See David B. Tindall and Joanna L. Robinson, “Collective Action to Save the Ancient Temperate Rainforest: Social Networks and Environmental Activism in Clayoquot Sound,” *Ecology and Society* 22, no. 1 (2017): art40, <https://doi.org/10.5751/ES-09042-220140>.

²¹ The official website of the Marmot Recovery Foundation is www.marmots.org (accessed 13 July 2025).

²² The comeback was reflected in the news; e.g., “Vancouver Island’s Marmot Population Bouncing Back,” *Vancouver Sun*, 30 October 2010.

²³ Numbers are reported annually by the Marmot Recovery Foundation; see, “Current Status,” Marmot Recovery Foundation, <https://marmots.org/about-marmots/current-status-2/> (accessed 16 October 2025).



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Cite this article

Vasile, Monica. "Eagles, Marmots, Humans: Knowing Wildlife Through Fieldwork." *Springs: The Rachel Carson Center Review*, no. 8 (November 2025). <http://doi.org/10.5282/rcc-springs-18817>.

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ISSN 2751-9317

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