

level playing field for conservation on important old-growth forests otherwise destined for industrial-scale logging.

Continued old growth logging of the Tongass and Great Bear rainforests has global consequences because few such intact areas remain around the globe, and farther south, the rainforests of Clayoquot Sound and the Pacific Northwest are highly fragmented. Notably, Chapter 6 discusses the concept of a region-wide successional debt whereby intact rainforests are fragmented by industrial logging and then managed under short rotations that result in a bimodal distribution of forest age classes. For instance, logging on the Tongass began in earnest in 1954. Thus, forests are either old growth or plantations, and there are few intermediate-age forests except for the occasional blowdown that has aged over time.

Chapter 9 outlines an experimental approach to forestry largely on the Great Bear rainforest but to some degree on the Tongass, where forest management attempts to mimic natural disturbance processes (small-scale blowdowns and avalanches are the predominant disturbances; fire is rare). The tree retentions in forestry operations appear to benefit some species that use old-growth forests but not others that are dependent on intact areas with forest interior conditions. Although tree retentions in logging operations hold promise over industrial logging, the trees retained in clearcuts are generally low (15%–20%) and are influenced by edge effects, including blowdown. Moreover, it is not known whether this kind of experimental forestry can offset the successional debt noted in Chapter 6 and what sort of carbon dioxide emissions it will release compared to industrial logging and no logging.

Several places in the book identify gaps in rainforest ecology and management. In addition to the gaps noted by the authors, there is the need for basic inventory work on the region's rainforest canopies. The type of canopy biota found in these forests (e.g., small trees and shrubs growing on massive tree branches, arboreal lichens, mosses and liverworts, salamanders, small mammals, threatened species, and endemic invertebrates in rainforest canopies on the Olympic Peninsula and the redwoods) is unique to rainforests and serves to identify them worldwide. Many lichens, in particular, are highly sensitive to desiccation that might occur as a result of clearcuts or variable retention harvests.

In closing, *North Pacific Coastal Rainforests: Ecology & Conservation* is a reference textbook about these rainforests that builds on the seminal work of *The Rainforests of Home: Profile of a North American Bioregion* (Schoonmaker et al., 1997), *High-Latitude Rainforests and Associated Ecosystems of the West Coast of the Americas: Climate, Hydrology, Ecology, and Conservation* (Lawford et al., 1996), and *Temperate and Boreal Rainforests of the World: Ecology and Conservation* (DellaSala, 2011). Conservationists, managers, and students need to have each of these references to understand basic rainforest ecology and the demands now being placed on rainforests while there is still time to implement a grand vision of conservation and responsible stewardship. The book should also be

stocked in libraries and sold as a textbook for forest ecology classes.

## REFERENCES

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## THE CANADIAN RANGERS: A LIVING HISTORY.

By P. WHITNEY LACKENBAUER. Vancouver: UBC Press, 2013. ISBN 978-0-7748-2453-8 (Pb). xv + 618 p., maps, b&w and colour illus., notes, bib., index. Hardbound, Cdn\$95.00, US\$99.00; Softbound, Cdn\$34.95, US\$37.95.

*The Canadian Rangers* offers a detailed history of this unique quasi-militia group, from its origins to the much-publicized organization we know today. Despite their somewhat tenuous beginnings, followed by periods of disorganization and neglect, the Rangers in the last decade or so have finally become sufficiently established to assure a future role in the defence of the Canadian Arctic. This handsome volume is well organized into multiple chapters and subheadings; it has more than 480 pages of text, supported by another 121 pages of endnotes and bibliography, plus an excellent index. While a weighty tome and occasionally repetitious, it is filled with a super-abundance of photographs, maps, and graphs. For this reason alone, the book will be of particular interest to those who were directly or indirectly involved in the Ranger organization—perhaps the only ones who can fully attest to its accuracy. For scholars, this important addition to the history of the Canadian Arctic provides a virtual encyclopedia of new information.

Whitney Lackenbauer's passion and enthusiasm for the subject are self-evident throughout. His personal interest in the Canadian Rangers began over 25 years ago when he was working as an undergraduate co-op student for the Director of Aboriginal Affairs, Department of National Defence. Subsequent years of intensive study and archival research were accompanied by many firsthand experiences with

individual patrol units. His purpose in writing the book was to explain “how and why the Canadian Rangers took shape, how cycles of waxing and waning support influenced the form and pace of their development during the Cold War, and how the organization has grown and gained national recognition over the last three decades” (p. 7). In doing so, he adeptly weaves a tale of how the Rangers would survive several threats of disbandment and instead grow to an entity with almost 5000 active members and 178 Patrol Units scattered throughout northern Canada (p. 449). In the remote Arctic communities, in particular, the Rangers also succeeded in creating a cross-cultural bridge of mutual respect between the Canadian Armed Forces and the Inuit—a point the author emphasizes on numerous occasions.

Following a brief but ample introduction, the author quickly moves on to the origins of the Pacific Coast Militia Rangers during the Second World War, which ultimately led to the establishment of the Canadian Ranger organization in 1947. In spite of considerable opposition to the idea, the winning argument was a somewhat reluctant admission that the cost of “a rifle, two hundred rounds of ammunition per man annually, and an armband” was by far the least expensive means to acquire intelligence (p. 74).

Although off to a tenuous start, the Rangers gained credibility at the onset of the Cold War because of the need for local surveillance in the Far North and along the Pacific and Atlantic coasts. Numbering over 2600 by the late 1950s, the organization was described by the Canadian government as “a shadowy band of volunteers who patrol Canada’s remotest areas on lookout for any enemy landings” (p. 195). Yet without centralized training or direction and given the lack of communication between the local groups, the patrol units became isolated—some flourished, but others became inactive. Their importance also declined with the advent of long-range bombers, mid-air refueling, nuclear submarines and ballistic missiles. With growing emphasis on strategic deterrence, radar detection, and missile retaliation to a potential invasion over the pole, support for the Rangers dwindled, leading one officer to suggest that they were now obsolete (p. 191). By 1969, their decline into oblivion was all too apparent in a speech made by former Prime Minister John Diefenbaker, which suggested that he was unaware the Rangers even existed (p. 227).

As expected, a study on the Canadian Rangers commissioned by the Department of National Defence (DND) in January 1970 reported that the active units were in disarray, disorganized, and lacking any direction from headquarters. As a consequence, it was recommended that the entire organization be disbanded. Unwilling to take that step in light of Prime Minister Trudeau’s commitment to establish a military presence in the far North, a second study was commissioned. This time the recommendations suggested reorganization and improved training (p. 244). By the end of the decade, however, concerns about northern security or sovereignty had faded and because of cutbacks in the defence budget, “proposals to redefine, restructure and better equip the Rangers in the North fell on deaf ears”

(p. 269). As a consequence, patrol units were eventually disbanded in northern Alberta, Saskatchewan, Ontario, and British Columbia. Only those in the Yukon, Northwest Territories, Labrador, and along the northern coast of Quebec survived.

By the 1980s, the composition of the surviving patrol units differed greatly from the original Pacific Coast Military Rangers. In 1986, for example, the northern region had a total of 647 Rangers, of which 87% were Inuit and 12% First Nations. Only 41% spoke English (p. 289). Popularity of the Rangers among the indigenous peoples arose from pride in being able to serve their country without leaving their homes—an opportunity not offered by the regular forces. Yet in the 1987 White Paper on Defence, which called for more funding to build a greater military presence in the North, the reference to expansion of the Canadian Rangers seemed almost an afterthought. Ironically, their low cost not only guaranteed their survival, but gave impetus for their growth. For example, when military budgets suffered further cuts in 1991, the Canadian Rangers managed to expand over the next two years in both the northern and Atlantic regions.

During the 1990s, the role of the Rangers took on new meaning with increasing references to their role as “an instrument of internal cohesion and capacity building” (p. 335). In this context, Canadian Ranger Patrols were revived in northern Ontario and Quebec in response to growing tension in First Nation communities “North of 50.” An Enhanced Program was introduced for more successful units, and in 1996, Rangers were issued standardized red sweatshirts with hoods, T-shirts, and toques bearing a Ranger crest. Now easily recognized in their new uniforms, they soon became media favourites for photo-ops, which in turn increased public awareness throughout Canada. A Junior Ranger training program was also established and rapidly gained popularity among young people, both boys and girls. By 1999, there were 41 junior patrol groups in the Territories, northern Quebec, and Ontario (p. 371), compared to 140 Canadian Ranger patrol units (p. 380).

At the turn of the century, another formal review again affirmed the Rangers as “a valuable, inexpensive operational resource” (p. 386). As their numbers increased, so did their budgets, with promises of new boots and more equipment. Although surveillance was still considered central to their mandate, the men themselves had become role models within their respective communities, largely because of their active roles in local emergencies and in training the Junior Rangers. Inevitably, their role took on a socio-political dimension that served to reduce Native mistrust of the Canadian Armed Forces. Whereas the future of the Rangers seemed secure as the most cost-efficient means to ensure a quasi-military presence throughout the Arctic, bringing national cohesion to a well-established, decentralized organization still presented a major challenge for the Department of National Defence. In a sense, the task of unifying the Canadian Rangers mirrored the same tensions experienced by the federal government in dealing with the

diverse regional needs and cultural influences of ten provinces and three territories.

From the author's perspective, the Rangers' ultimate achievement was their success in fostering acceptance of the Canadian military among Inuit and First Nations communities. As described in the final paragraph (p. 481):

The Canadian Rangers are not an anachronism; nor are they broken and in need of retooling. Sometimes, in unexpected places, and in unexpected ways, the most successful of relationships take shape—at their own pace and in unique forms that both reflect and shape the world in which we live.

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THE REINDEER BOTANIST: ALF ERLING PORSILD, 1901–1977. By WENDY DATHAN. Calgary, Alberta: The University of Calgary Press and the Arctic Institute of North America, 2012. Northern Lights Series No. 14. ISBN 978-1-44238-586-9. xxii + 726 p., map, b&w illus., notes, selected references, index. Softbound. Cdn\$44.95. Also available as a free, open access e-book from [www.uofcpress.com](http://www.uofcpress.com).

There is a general tendency to distinguish between the bygone age of Arctic exploration and the more modern era of Arctic science. Yet often, quite a bit of science took place on early expeditions to the Arctic, and many scientists working in remote regions and habitats still do a fair bit of exploration to this day (think seafloor vents and sub-glacial lakes). In the first half of the 20th century, these two vocations were joined seamlessly in the person of Alf Erling Porsild, one of history's premier Arctic scientists, whose life and times are captured in colourful and gripping detail in this long overdue biography by Wendy Dathan. The book provides front-row insights into a nearly forgotten world in which researchers interacting between Europe and North America crossed the Atlantic by steamer, vast stretches of the Canadian Arctic were traversed by dog sled, by riverboat or on foot, and the flora and phytogeography of the region were still poorly understood.

As a Master's student botanizing in interior Alaska in the mid-1980s, I began coming across the name of A.E. Porsild, who was known among his contemporaries as Erling. I was lugging around the massive tome *Flora of Alaska and Neighboring Territories*, by Erling's erstwhile Nordic colleague and occasional sparring partner Eric Hultén (Hultén, 1968). Within its 1008 pages, Porsild's key works on the botany of the Canadian Arctic were cited liberally. The next year, when I was an incoming doctoral student in

biogeography planning fieldwork in the High Arctic, my mentor at McGill University recommended the *Illustrated Flora of the Canadian Arctic Archipelago* (Porsild, 1964), which had already been out of print for many years. I easily picked up a crisp, virtually new copy in a Montreal used bookstore. Spending the next few summers huddled in a tent and filling plant presses while consulting this Porsild classic and his posthumously published masterwork *Vascular Plants of Continental Northwest Territories* (Porsild and Cody, 1980), I became familiar with the breadth and depth of Porsild's contribution to Arctic botany. Yet I had no idea about the strong personality of the man who braved considerable hardship and privation over many years to bring this knowledge to the wider public. I got a hint that his background went beyond mere "hay gathering" when I came across a reference to his work on reindeer grazing in northwestern Canada (Porsild, 1929). The latter report was cited in the masterwork of yet another botanical colleague and occasional competitor, Nicholas Polunin, who gave the first detailed description of the flora and vegetation of Clyde River (Kanngiqtugaapik), Baffin Island (Polunin, 1948), my main study site. Intriguingly, many of the vascular floras and atlases treating the North American Arctic were written by Europeans such as Hultén (Swedish), Porsild (Danish), and Polunin (British) (Forbes, 2013). All of these people and many more from Alaska to Ottawa, Boston, and Fennoscandia come vividly alive in this volume, which tracks closely some of the most challenging decades of Arctic research in the Western Hemisphere through the keen and discerning eyes of one of its central participants.

Erling was raised in and around Qeqertarsuaq (formerly Godhavn, 69° N) on Disko Island, Greenland, where his father, Morten—an eminent and internationally known Danish botanist himself—ran the first permanent Arctic research station. Erling and his older brother Bob were both well schooled in the fundamentals of plant taxonomy, field collecting, and herbarium protocols, even if Erling (in his father's assessment) was apparently the keener of the two from an early age. Equally important was his total immersion in all aspects of life on the land and sea: hunting, fishing, dog-mushing, capricious weather, and long, dark winters. In the process he became fluent in the Greenlandic language and intimately familiar with the indigenous Inuit and their culture. One could presume, given this pedigree and background, that he was destined to make a big splash in the relatively small pond of Arctic botany as it was practiced in the early to mid 1900s. Yet such an assessment would be unfair. By the time he turned 21, Erling yearned for an education and life beyond what Greenland could offer, but he saw few options on the horizon and began to despair. While he certainly gained a toehold a few years later because of his father's friendship with Chief Botanist Oscar Malte at the National Herbarium of Canada, his navigation of a somewhat tortured career pathway and his ultimate success at the herbarium were in fact due to his personal skill, charm, dedication, grit, and patience. Despite his obvious scientific talent and administrative and