

A Review Essay

FOREST\$USTAINABILITY:

*A Ruminations on the Once and
Future Forests of British Columbia,
Provoked by Five Books and a Screenplay*

GRAEME WYNN

FACED WITH THE TASK of reviewing several recent books in forest history, I make a preliminary inventory of the stand before me. Not all of these books are focused on British Columbia. Individually and collectively, however, they offer new insights into the past and present of forests and forestry in this province. Yet, in the words of Henry Graves's 1906 book on forest mensuration, just as forests have value "not merely in the trees standing at any given time, but in their power by growth to produce wood and timber in the future," so books on forests have value not merely for what they tell us about the specifics of their topic but also to the extent that they encourage us to ponder future uses and management of our forest endowment in the face of pressing concerns about climate change and the economic, social, and ecological sustainability of local, national, and global communities.¹ How, I ask, does this thicket of books contribute in this regard? To calibrate and measure these works, and to contextualize and focus my ruminations upon them, I first take up – as a metaphorical Biltmore Stick – the text of a proposed screenplay.²

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In the fall of 1980, an article in *ForesTalk*, a "Resource Magazine" published by British Columbia's Ministry of Forests, imagined a big-budget movie telling the epic story of provincial forestry.³ The screenplay,

¹ Henry Solon Graves, *Forest Mensuration* (New York: John Wiley and Sons, 1906), 2.

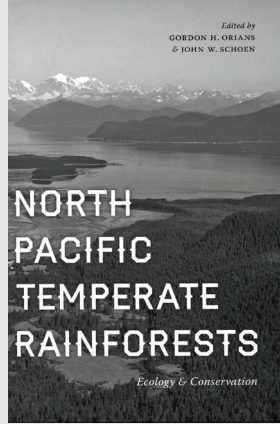
² The Biltmore Stick was developed by American forester Carl A. Schenck to aid in the measurement of tree dimensions; today it is considered only marginally accurate.

³ Gord Price, "Will BC's Forests Become Victims to History?" *ForesTalk*, 4, 3 (1980): 10-15. Available at <https://www.for.gov.bc.ca/hfd/library/forestalk.htm>.



Policies for Sustainably Managing
**Canada's
Forests**

Tenure, Stumpage Fees, and Forest Practices
Martin K. Luckert, David Haley, and George Hoberg



Edited by
GORDON H. ORLIANS
& JOHN W. SCHOEN

**NORTH
PACIFIC
TEMPERATE
RAINFORESTS**

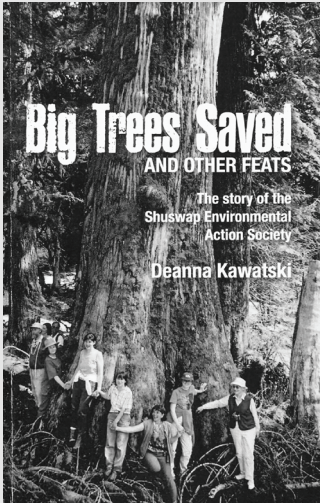
Ecology & Conservation

EMILY K. BROCK



Money Trees

The Douglas Fir and American Forestry, 1900-1944



Big Trees Saved
AND OTHER FEATS

The story of the
Shuswap Environmental
Action Society

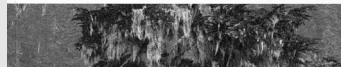
Deanna Kawatski



**GROUND
TRUTHING**

REIMAGINING THE INDIGENOUS
RAINFORESTS OF BC'S NORTH COAST

DERRICK STACEY DENHOLM



sketched in a few pages, dealt with the local manifestation of a drama “as old as the earth itself” and found its climax in “the forest ministry’s recently released Resource Analysis and Five Year Program.”

In the opening scene of this great story, the camera was to pull back from a spectacular view of forested mountain slopes to reveal an employee of the Ministry of Forests standing atop the Marine Building in downtown Vancouver. “We are the inheritors of the efforts of loggers and entrepreneurs, of merchants and millmen,” he would intone. “In less than a single century they built an industrial society more dependent on forestry than anywhere else in the world. But today, British Columbians are faced with the challenges of discarding our roles as pioneers of the frontier and exploiters of a raw resource – to become tree farmers.” Change had to come quickly. “Otherwise, we are doomed to repeat the mistakes of civilizations thousands of years before us.”

Then, in the manner of Hollywood epics, the film script reprised the long history of interaction between humans and forests in a series of cameos stitched together with commentary from the historically minded narrator: a Phoenician merchant trading lumber for grain, yet aware that “we leave the desert in our footprints”; Plato in once-fertile Attica comparing the stony slopes to “the skeleton of a sick man”; King Henry VIII of England signing “The Bill for the Preservation of the Woods”; Martin Allerdale Grainger, British Columbia’s second chief forester, “telling what it was like in ... [the] early days of timber speculation”; and, improbably, Frederick J. Fulton, Gordon Sloan, and Peter Pearse, the authors of four Royal Commission reports on the state of provincial forests (produced in 1910, 1945, 1956, and 1976, respectively) comparing their contributions in the Library of the BC Legislature. In sum, the commissioners were seen to have produced, successively, a call for less avaricious exploitation; an embrace of sustained yield policies to produce a continuing, steady supply of timber; economic prosperity; and a more flexible approach to management that saw the forest as more than a source of fibre. This was a story of progress, in which growing wisdom allowed new technologies to be harnessed for public benefit.

In this vein, the script had Fulton admitting that, in 1910, “we did not even know how much timber we had”; seventy years later, however, Pearse’s call to harvest “the highest possible returns for all forest values” was well within grasp. To make the point, the camera would cut quickly from the old library of the Legislature to a room in which “lights blink, reels whirl, [and] printers clack out reams of paper” as computers project scenarios that allow managers to see “what a future forest might look

like.” Here, huge amounts of complex data on reforestation and growth rates, market forecasts, and non-market considerations such as recreational values were “spun out” in “elegant curves which forecast the future as lines on a graph.” Under the provisions of the Ministry of Forests Act, 1978, provincial foresters were required to use such information to assess the state of the province’s forests and to present alternative programs for their management.⁴ The first of these appeared in March 1980. It projected strong markets but, unless changes were made, looming wood-supply problems.

That, as revealed by the regional manager, down from his perch on the Marine Building to stand in “a classic old-growth forest” with three colleagues, basically meant getting “into silviculture in a big way” – “more fertilization, more root-rot control and juvenile spacing” as well as basic reforestation. But the other foresters were somewhat circumspect. Although the industrial forester in the group applauded more and better silviculture, he doubted that it would “knock off the backlog of forest lands that have been inadequately reforested.” Unfazed, the regional manager declared this the responsibility of the industry: it was up to the companies to address the timber supply problem through “better utilization.” The university forester in the group was not convinced: he grumbled that plans only envisaged improvements in “extensive silviculture” when an immediate shift to “the intensive management of good sites” was required. According to the third forester, in the employ of an environmental organization, none of this was sufficient. Maintaining present harvesting rates was a mistake: the ministry’s “own figures suggest[ed] the need for an orderly transition to a lower level of harvesting.”

Debate ensued.⁵ Industry’s representative insisted that “the hook must be baited” to encourage improvement; companies needed to be able to harvest “extra volumes now in anticipation of improved future yields.” But this would lead only to “earlier and larger timber-supply deficits,”

⁴ The Ministry of Forests Act (Bill 12) established and defined the functions of a new, separate ministry of forests; provided for some reorganization of the Forest Service; and required regular reporting on the status of forest resources in order to facilitate implementation of the Forest Act (Bill 14). For more detail, see R. Schwindt, with the assistance of Adrienne Wanstall, “The Pearse Commission and the Industrial Organization of the British Columbia Forest Industry,” *BC Studies* 41 (Spring 1979): 3–35.

⁵ More systematic analysis of the issues debated here can be found in M. Patricia Marchak, Scott Lewis Aycock, Deborah M. Herbert, *Falldown: Forest Policy in British Columbia* (Vancouver: David Suzuki Foundation, Ecotrust Canada, 1999). Patricia Marchak’s *Green Gold: The Forest Industry in British Columbia* (Vancouver: UBC Press, 1983) offers a comprehensive analysis of the social, political, and economic role of forests as one of the principal single-staple industries in British Columbia.

protested the environmental forester. No matter, said the university voice, repeating himself, “the relatively small amounts of money available for forestry should be directed to growing the most wood in the shortest time” as this offered “the only hope of meeting timber supply shortfalls within the next 20 to 30 years.” Then, the Pollyanna-ish script would have us believe, consensus emerged. People were “starting to see the forest for the trees,” and this would legitimate the leadership of the ministry as it recognized “the importance of economics and public values.” Because “improvements in the mill and the woods ... [were, obviously,] functions of the market” and the industry was prospering, good things could be expected there. With better information, better science, and the ability to analyze problems earlier, it would be possible to take corrective action against past failings and to engage in long-term planning.

That was 1980. Within a few short months, the economic bubble upon which so much was predicated burst. The economies of British Columbia and Canada plunged into deep recession. Thirty years on, the early 1980s were recognized as a “paradigmatic turning point” for the province’s forest industries. Canadian forest companies were caught up in an emerging, rapidly changing, and highly competitive global market for wood products as shifting exchange rates, a trade war with the United States, environmental and cultural conflicts over the resource, and a mountain pine beetle irruption heightened the volatility of the forest sector. New regulatory regimes were introduced, harvest levels declined, and the rationalization and consolidation of logging and milling operations resulted in closures, job losses (direct employment in the industry fell by half in three decades), and a radical restructuring.⁶

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In *Money Trees*, Emily Brock focuses on “the struggles to possess – intellectually, governmentally, and economically – the Douglas fir and

⁶ The paradigmatic turning point is identified in Klaus M. Edenhoffer, “Recession, Restructuring and Routine: The Case of BC’s Forest Industries 1980–2008” (PhD diss., Simon Fraser University, 2012). For other commentaries on adjustments since 1980, see Jeremy Wilson, *Talk and Log: Wilderness Politics in British Columbia* (Vancouver: UBC Press, 1998); T.J. Barnes and R. Hayter, “The Restructuring of British Columbia’s Coastal Forest Sector: Flexibility Perspectives,” *BC Studies* 113 (Spring 1997): 7–33; R. Hayter, “The War in the Woods: Post-Fordist Restructuring, Globalization and the Contested Remapping of British Columbia’s Forest Economy,” *Annals of the Association of American Geographers*, 93, 3 (2003): 706–29; R. Hayter, *Flexible Crossroads: The Restructuring of British Columbia’s Forest Economy* (Vancouver: UBC Press, 2000); and T.J. Barnes and R. Hayter, eds., *Troubles in the Rainforest: British Columbia’s Forest Economy in Transition*. Canadian Western Geographical Series no. 33 (Victoria: Western Geographical Studies, 1997).

the forestlands it populates” in the American Pacific Northwest during the first forty years of the twentieth century (200). Derived from a Princeton University dissertation, this fine and probing analysis rests upon Brock’s training in both ecology and history and is framed by perspectives broadly associated with work on the history of science. It is, most fundamentally, concerned with “how those charged with making decisions about Douglas fir have understood and evaluated both the forests and the motives underlying forest management” (190). Although Brock’s interest stops at the 49th parallel, both the forest of which she writes and the ideas and influences that shaped the practice of foresters from coastal northern California through Washington State crossed the international boundary, and this renders her book of uncommon interest to students of British Columbia – although, as Brock points out, contexts and ecosystems, and thus the challenges facing foresters and industry, differ in time and space.

At one level, *Money Trees* is a sustained argument for better understanding of the challenges foresters face in going about their professional business. Forestry is no “narrow discipline.” Perched between understanding the forest and accommodating its utilization, foresters work “within an intellectual community of scientists and government employees” subject to the desires of “forest owners, lumber industry managers, and loggers” (and, one might add, in Canada particularly, the state) that set land management agendas. Indeed the book begins by deconstructing American environmentalist Aldo Leopold’s famous distinction (in his “Land Ethic” essay) between those who regard the land as soil and its purpose as commodity production, and those who understand the land as something broader, a biotic community.⁷ The former, says Leopold, are “quite content to grow trees like cabbages, with cellulose as the basic forest commodity,” while the latter show the stirrings of an ecological conscience in worrying about “wildlife, recreation, watersheds, wilderness areas.”

In Brock’s view, this distinction – which echoes to some degree through the *ForesTalk* screenplay discussion of the Pearse Commission recommendations – was far more “messy, contentious and incomplete” than the cleavage identified by Leopold. His portrayal of warring factions “reflected not only ... divisions within the field but his own cynicism” about the practice of forestry in his day (13), and it ignored the fact that debate over these issues changed the views of both sides. Students of the

⁷ Aldo Leopold, “The Land Ethic,” in *A Sand County Almanac and Sketches Here and There*, 201–26 (New York: Oxford University Press, 1949).

BC scene can find a useful reminder, in all of this, that a common, and unjustified, trope of mainstream environmentalism depicts professional foresters as “intransigently conservative and anti-ecological” (14); it is more accurate, Brock would insist, to recognize that foresters walked a difficult path “along the front lines of lumber extraction,” where the immense power of industrial capital shaped both possibilities for action and introspection about its consequences.

On another level, Brock’s work offers a strong case for considering the “Cascadia context” in tracing British Columbia’s move from “devastation logging” through the first Sloan Commission to the adoption of sustained yield policies.⁸ Standard accounts of these developments tend to focus on the views of the province’s chief foresters, E.C. Manning and C.D. Orchard, and F.D. Mulholland’s 1937 report suggesting that British Columbia’s accessible coastal forests were being cut at twice the rate necessary to assure a continuing supply.⁹ But British Columbians surely did not operate in an intellectual vacuum. Reading Brock reminds us of the role of Portland-based forestry consultant David T. Mason in forwarding the idea of sustained yield forest management in the 1920s, recognizing the need to establish public-private sustained yield working circles and developing plans for a Weyerhaeuser subsidiary to implement such a scheme in Idaho. Continuing to turn the pages of *Money Trees* further reveals how the Weyerhaeuser Company used the idea that “timber is a crop” as the centre of a public relations campaign to push back against New Deal criticisms of big business and capitalism: because everyone understood where crops grew, such rhetoric led directly to the notion of tree farms (often, as was the case with Weyerhaeuser’s Clemons operation, a mix of private and public land). Part of Weyerhaeuser’s purpose in developing tree farms was to show “that federal regulation of private forestry was unnecessary” (180), and many professional foresters reacted negatively to the initiative; however, north of the border forested Crown land was added to privately owned timber to create private

⁸ Richard Rajala, *Clearcutting the Pacific Rain Forest: Production, Science, and Regulation* (Vancouver: UBC Press, 1998), encompasses “Cascadia” but is heavily focused on technologies and managerial structures (and the role of government in regulating large companies) in its attempt to find the roots of late twentieth-century crises in the period between 1880 and 1965. Gordon H. Hak, *Turning Trees into Dollars: The British Columbia Coastal Lumber Industry, 1858-1913* (Toronto: University of Toronto Press, 2000) and Gordon H. Hak, *Capital and Labour in the British Columbia Forest Industry, 1934-74* (Vancouver: UBC Press, 2007) are considered to be the standard historical accounts for British Columbia.

⁹ Jeremy Wilson, “Forest Conservation in British Columbia, 1935-85: Reflections on a Barren Political Debate,” *BC Studies* 76 (Winter 1987-88), 3-32, offers a clear and useful summary. For Mulholland’s report, see British Columbia, Department of Lands, Forest Service, *The Forest Resources of British Columbia, 1937* (Victoria: Charles F. Banfield, 1937).

working circles known, in 1947, as forest management licences and, later, as tree farm licences.

There is much more for students of British Columbia's forest history to ponder in Brock's thoughtful, well-executed book, not least her brief concluding commentary on shifting conceptions of wilderness in the Pacific Northwest (and in the United States more generally) after 1944 and the role of ecology in changing both "the intellectual terrain of science" and "public discourse about environmental issues" in these years (195). In British Columbia, as in the Pacific Northwest, managing Douglas fir forests in the second decade of the new millennium revolves around two basic challenges: "The first is the struggle to find harmony with those holding different opinions" about how the forest should be managed, and the second is the struggle with the legacy of those "who practiced forestry in ways that sometimes fundamentally clashed with the science and values of the present day" (197).

These points are given particular cogency by Deanna Kawatski's short and unprepossessing account of the Shuswap Environmental Action Society (SEAS), entitled *Big Trees Saved and Other Feats*, although the big trees in question are cedars rather than Douglas firs.¹⁰ SEAS began with a few residents of North Shuswap who came together in 1989 to oppose burning in a local landfill and then joined others to protest government plans to facilitate exploitation of the forests surrounding Shuswap Lake. Their demands were many and varied: the devolution of management to local communities; more wilderness preservation; arrangements to "allow ... Native people to reclaim some of their lost heritage"; selective logging rather than clear-cutting; better nurturing of forests; improved reforestation; a change in policy to sustain the environment and employment; and a commitment to the people of the province rather than to multinational corporations (6, 7).

In little more than one hundred pages, Kawatski traces SEAS's activities, year by year through to 2001 and then through the two quinquennia between 2002 and 2013. This is a straightforward account of the work of engaged, activist citizens, written close to SEAS's voluminous records and the people who led its campaigns. Reporting rather than analyzing, the author, herself an environmentalist with roots deep in the Shuswap region, has produced an interesting document, replete with sketches, cartoons, illustrations, and extended quotations from the often impassioned speeches of campaigners. By making available such materials, usually ephemeral or difficult to locate, this little book provides valuable

¹⁰ The book is also reviewed by Erika Bland in *BC Studies* (forthcoming).

insight into the grassroots of late twentieth-century environmentalism in British Columbia and offers – as wilderness activist Joe Foy notes in his foreword – “an inspiring saga of regular people making a huge difference.” Among other feats, their efforts led, in 2001, to the creation of new provincial parks encompassing and protecting more than 120,000 hectares of the Okanagan/Shuswap region, including the “globally unique Upper Seymour rainforest” and Lake Hunakwa, probably “the last unroaded, low-elevation wilderness lake in the interior of North America” (89).

Yet the most surprising thing about this book may be its focus on the Shuswap. Most people reading of “big trees saved” in British Columbia are far more likely to think of one or another (or all) of the long series of efforts to protect the coastal rainforest from logging than they are of the Interior. Some might recall Colleen McCrory’s long struggle to save the Valhallas in the West Kootenays, but her characterization of British Columbia as the “Brazil of the North” gained particular traction in the long campaign against clear-cutting in old-growth Douglas fir and other coastal forests, a campaign measured and marked by the names and locations of celebrated struggles in which “regular people” came together to change land-use plans – and perhaps the course of history: Meares Island, South Moresby, the Carmanah, the Walbran, Clayoquot Sound, and the Great Bear Rainforest.

Although local opposition to logging on Lyell Island stirred late in the 1970s, few anticipated the upsurge in environmental-wilderness sentiment in 1980 as the foresters in the *ForesTalk* article contemplated the future. Only a few years later, however, there was “war in the [BC] woods” as industry and the government, on the one hand, and environmentalists and Indigenous peoples, on the other, faced off over the fate of the forest.¹¹ Confrontation persisted for a decade and a half as rituals were enacted and those involved performed their ordained roles. Protesters, whose hope was that “not a tree shall fall,” would block access roads, chain themselves to equipment, give themselves up for arrest, and so on. Industry would seek – and usually get – injunctions against the obstruction of their business and the loss of their profits. Ensuing meetings between representatives of the two sides were usually acrimonious. Both sides figured they were in a zero-sum game, and neither believed it could suffer catastrophic defeat.¹²

¹¹ See, among other items, Nicholas Blomley, “‘Shut the Province Down’: First Nations Blockades in British Columbia,” *BC Studies* 111 (Autumn 1996): 5–35.

¹² For this and the following paragraph, see Tzeporah Berman with M. Leiren-Young, *This Crazy Time: Living Our Environmental Challenges* (Toronto: Knopf Canada, 2011).

Then conviction cracked in both camps. Environmentalists orchestrated consumer boycotts that posed serious threats to industry profitability. And Indigenous peoples – empowered by the declaration (in the Brundtland Commission Report) of their right to a decisive voice in matters pertaining to their traditional territories and emboldened by decisions of the Supreme Court of Canada – called into question the too-easily assumed congruity of Indigenous and environmental interests.¹³ These developments changed the views of all parties and brought them to compromise. New modes of coexistence were worked out: all the trees in some valleys were saved, others were given up to logging; a new forest practices code (FPC) imposed stringent regulations, intended to mitigate environmental damage, on woodland operations; government, industry, and Indigenous signed on to comanagement arrangements.¹⁴ Reflecting market pressures, industry adjusted production processes to meet environmental certification standards, and the state amended regulations to improve environmental stewardship of the forest.

Happy as these outcomes might seem, they did not go unchallenged. In 2002, the SEAS newsletter carried a blistering indictment of the new BC government and premier for their “misguided plans” to eviscerate the FPC and “to hand the keys of our forests over to company foresters” (94). A storm of similar opposition from other quarters and other parties failed to change the government’s course. In 2004, the Forest and Range Practices Act replaced the FPC. It reduced the burdens of compliance and gave forest licensees more flexibility in deciding on-the-ground practices.¹⁵ This was a pivotal moment in the management of British Columbia’s forests, and Martin Luckert, David Haley, and George Hoberg help to contextualize and account for it in their cumbersomely, but accurately, titled book *Policies for Sustainably Managing Canada’s Forests: Tenure, Stumpage Fees, and Forest Practices*, published in 2012.

¹³ World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987). For some further discussion of the broader point here, see L. Davis, “Home or Global Treasure? Understanding Relationships between the Heiltsuk Nation and Environmentalists,” *BC Studies* 171 (Autumn 2011): 9–36; and M. Low and K. Shaw, “Indigenous Rights and Environmental Governance: Lessons from the Great Bear Rainforest,” *BC Studies* 172 (Winter 2011–12): 9–33.

¹⁴ G. Hoberg, “The British Columbia Forest Practices Code: Formalization and Its Effects,” in *Canadian Forest Policy: Adapting to Change*, ed. M. Howlett, 348–77 (Toronto: University of Toronto Press, 2001).

¹⁵ This was one of many policy changes associated with the decisive move to deregulation (a.k.a. neoliberalism) in British Columbia (and elsewhere). For a useful introduction with particular relevance to the BC resource sector, see Jeremy Wilson, “For the Birds,” *BC Studies* (special issue on the environment), 142–43 (Summer/Autumn 2004): 241–77.

This book seeks to assess the effectiveness of provincial forest policies in enabling the sustainable management of a significant Canadian resource. As the authors point out, in 2006 the value of Canada's forest products exports exceeded \$38 billion, and the sector contributed over \$28 billion to the country's trade balance. By 2013, the latter figure had fallen below \$20 billion, but Canada's forest products trade balance remains the largest in the world by a considerable margin. Forest sector employment is vital to the well-being of thousands of rural districts across the country; in 2006, over three hundred communities drew more than half of their income from forest industries. Three years after the Brundtland Report, a House of Commons committee advised Canada's parliamentarians that, "if Canada were ever to practise sustainable development successfully," it would need to begin in the forest (10).

In general, Luckert et al. conclude that the "past several decades" have seen sustainable forest management emerge as the dominant policy paradigm, predicated upon important changes in forest sector governance. Conceding that stable equilibrium has yet to be achieved, they are nonetheless confident that "the business-government partnership that dominated the sustained yield era has given way to a multipartite, multi-stakeholder system involving a broader range of actors representing a broader mix of values, and a diffusion of power" (39). The SEAS protests of 2002 suggest that grassroots opinions about these things were not always so sanguine.

Still, Luckert and his co-authors are clear that sustainable forest management requires "vexing trade-offs" and that provincial governments have struggled to resolve these effectively (148). Most provincial administrations, they note, broadly followed the 1995 BC FPC model in adding new regulations to existing tenure arrangements in an effort to satisfy demands for non-timber products and services and in response to rising public concern for environmental protection. Taken as a whole, these efforts amounted to reasonably stringent attempts to protect environmental values. But they often constrained logging practices and imposed new compliance costs on operators, raising the cost of timber, reducing its competitiveness in international markets, and undermining the economic and social sustainability of the industry. When the BC industry pushed back against the prescriptive "command-and-control" approach embodied in the FPC, the provincial government eliminated the need for approval of site-level logging plans and adopted a results-based regulatory framework. In general, however, layer upon layer of regulations have been added to Canadian forest tenures over time. Complex, anach-

ronistic, hybrid arrangements have been the result. There is “a growing dissonance” between the tangled consequences of accumulated policies and the values of contemporary society, and governments, industry, and the public too often face confusion over “who has rights and who bears the responsibilities for what aspects of forest management” (149). For these authors it seems clear that, in order to achieve truly sustainable forest management, we need smarter policies than we now have.

Gordon Orians, John Schoen, and eighteen other scientists come independently to much the same conclusion in *North Pacific Temperate Rainforests: Ecology and Conservation*, but their emphasis is on “incorporating fundamental concepts of conservation biology into management strategies” rather than on adjusting forest property rights to facilitate integrative management, flexibility, and innovation (ix). Their book emerged from a workshop aimed at conserving the biodiversity and ecological integrity of Alaska’s Tongass National Forest. The purview of the project was then extended to review the key management and conservation issues facing the North Pacific temperate rainforests of British Columbia’s central coast (much of which is now designated part of the Great Bear Rainforest) and southeastern Alaska (of which the Tongass National Forest accounts for about 80 percent).¹⁶

Editors Orians and Schoen have conjured a detailed, valuable, and coherent volume. The book’s three opening chapters serve, above all, to provide a deep history of the complex coastal environment of the continent’s far northwest. The first of these is a biogeographical account of the plant and animal colonization of this fragmented region – well over one thousand islands, a long and sinuous coastline, and steep coastal mountains – through ten thousand years of glacial advance and retreat and sea level change. The second chapter explores the nexus of terrestrial and aquatic ecosystems in the region’s riparian zones (those areas adjacent to streams or rivers that are influenced by or influence stream processes), and the third deals with the effects of natural disturbance (by windstorms, fire, pests, landslides, etc.) on plant communities. Importantly (and secondarily), each of these contributions ends with a commentary on the particular management challenges associated with the intricate and interconnected natural dynamics of the region. Together they explain the current state of the region’s ecosystems and how recent management has influenced them.

¹⁶ Richard A. Rajala, *Up-Coast: Forests and Industry on British Columbia’s North Coast, 1870–2005* (Victoria: Royal BC Museum, 2006) offers a history of the BC section of the area covered by this volume.

The next section of *North Pacific Temperate Rainforests* explores “how humans have interacted with and changed the region’s rainforests” (16). One chapter describes Indigenous and commercial uses of the region’s forests and demonstrates how twentieth-century logging highly modified many habitats; another examines the direct and indirect consequences of road building and timber harvesting for forest succession and wildlife. Together these chapters illustrate “the importance of understanding economic and other drivers that have influenced how and why humans have used and continue to use the region” (254). Attention is then turned to new concepts and tools that might be used for more effective management of the forests: conservation biology, landscape and ecosystem (particularly watershed) ecology, and variable retention harvesting are to the fore here.

Not surprisingly, the chapters of most immediate relevance to this rumination are those by BC authors: Ken Lertzman of Simon Fraser University and Andy MacKinnon of the BC Forest Service (“Why Watersheds? Evaluating the Protection of Undeveloped Watersheds as a Conservation Strategy in Northwestern North America”) and William J. (Bill) Beese, now of Vancouver Island University (“Variable Retention Harvesting in North Pacific Temperate Rainforests”). The former use their long chapter to ask whether and why protection of whole watersheds might be better than similar investments protecting areas with other boundaries. They also “evaluate the role of ‘intact’ ... watersheds as elements of a regional conservation strategy” (192). Their analysis is methodical and they offer much that is useful for thinking about the challenges and benefits of protection at different scales, but, in the end, I find their conclusions both salutary and insipid: an ideal reserve network should be “based on a framework of priority watersheds that represent the best combination of capturing ecological diversity, evolutionary processes, and ecosystem functionality” (225). Beese is similarly helpful in outlining the issues associated with the practice of stand-level retention logging, but he likewise leaves readers with the sense that things are so complicated that it is impossible to speak assertively and generally about what is best: “Many factors need to be considered when choosing stand-level practices to meet social, biological, and economic goals. The final choice represents a balance among complementary and competing objectives” (249). “Vexing trade-offs” have to be made along both political and ecological paths on the way to sustainable forest management.

For all that, Lertzman-MacKinnon and Beese help to make clear just how much forest management and forestry practices in British Columbia have changed since the *ForesTalk* script was written. Twenty years ago, only one in four (eleven of forty-six) of North America's large (>100,000 hectare) coastal temperate rainforest watersheds remained undeveloped. Five of these were in Alaska and six in central British Columbia. Today, more than twenty-one thousand square kilometres (about one-third of the land area) of British Columbia's central and northern coasts are protected under the Great Bear Rainforest Agreement of 2006; beyond this, industry, First Nations, and environmental groups have agreed to ecosystem-based logging management practices intended to meet goals of conservation and community stability at a regional scale.¹⁷ Students of social innovation describe these developments as breaking new ground in efforts to tackle "the highly complex and critical problems societies are increasingly coming to face around the globe" and suggest that they might light the way to success in many more such complex negotiations in the future.¹⁸ Variable retention logging, important for the conservation of biological diversity, has been deployed ever more widely in British Columbia since it was recommended by the Scientific Panel for Sustainable Forest Practices in Clayoquot Sound in 1995. In five years after 2004 "40% of the harvesting on public land in coastal BC" used this method. The once-prevalent practice of clear-cutting accounted for barely a quarter of the harvest. Another third came from clear-cuts with reserves (231).

Yet Orians and Schoen and their contributors are acutely conscious that "the future of forest conservation, ecological integrity, forest economics, and quality of human life" in the North Pacific rainforest all remain to be determined (279). Here, as elsewhere, balancing the long-term values of ecological services with short-term economic gains (to achieve healthy ecosystems and healthy communities) will depend upon many things, not all of them susceptible to local management or human control. Finding the appropriate temporal, spatial, and technological scales at which to act is critical. But inadequate data make it difficult to identify habitat supply thresholds with confidence. It is not easy to know which decisions to take when, while confronting the possibility of non-linear responses in dynamic complex systems. And all such challenges will be compounded by change; by the consequences of international economic perturbations;

¹⁷ Justin Page, *Tracking the Great Bear: How Environmentalists Recreated British Columbia's Coastal Rainforest* (Vancouver: UBC Press, 2014).

¹⁸ O. Tjornbo, F. Westley and D. Riddell (Social Innovation Generation@University of Waterloo), Case Study 003, "The Great Bear Rainforest Story" (January 2010) available at <http://sig.uwaterloo.ca/highlight/case-study-the-great-bear-rainforest-story>.

by the probable effects of global climate change on hydrology, nutrient cycling, and other ecological processes; and by changes in the value attributed to forests for fibre or carbon sequestration. For all their research, experience, special expertise, and serious engagement with the issues confronting Pacific coast forestry, contributors to this volume are left calling for more inventories, better data, greater interdisciplinary collaboration, new long-term monitoring programs, and “renewed emphasis on local environmental education” to produce “the informed cadre of future citizens who will care about, understand, and therefore support the broad vision for sustainable development of the region” (289–90).

These are all good and worthy objectives. Yet, for all the importance I grant to science and data for research and understanding, Derrick Stacey Denholm has me wondering whether they provide a sufficient foundation upon which to build the hugely desirable goal of an environmentally informed cadre of citizens. Denholm knows the forest, having spent two decades tree-planting, timber-cruising, marking cut-block boundaries, and so on, but he is a poet and writer with university degrees in literature. His *Ground-Truthing: Reimagining the Indigenous Rainforests of BC's North Coast*, traverses much of the geographical terrain encompassed in *North Pacific Temperate Rainforests*, but it is, *sui generis*, a work about wonder and the wild that (as Sarah de Leeuw notes in her blurb) “transects scientific taxonomy, narrative poetry, historical inquiry, creative essay, (post)colonial theory and grassroots ... demands for social and ecological justice.”

Denholm's title nicely encapsulates the ambitions of his book. Scientists “ground truth” their interpretations and theories by gathering field data to test the accuracy of inferences drawn from statistical analysis or laboratory investigations; cartographers ground truth maps based on remotely sensed data by checking whether they provide accurate representations of the earth. After years in the field, Denholm knows that ecological truths exist, but he adds to the kind of scientific verification that produces such conviction “various kinds of social, philosophical and literary ground-truthing” based on a sensitive appreciation of words, people, ideas, and histories in order to examine the tripartite relationship among the forests, the First Nations peoples upon whose traditional territories they stand, and newcomer members of industrial Canadian society (12). Characterizing the north Pacific rainforest as “Indigenous” has both ecological and social meaning. To be indigenous is to belong to a place or to occur naturally in a region, but rendered with an upper-case “I” the word signals that these forests have been shaped by

interactions, through millennia, between “human and wild communities” (17). Although Denholm derives the Indigenous rainforest phrase from a forester, he also connects it with poet Robert Bringhurst’s assertion that “any healthy and sustainable human culture in North America has to rest ... on indigenous foundations.”¹⁹ “Reimagining” also does signal work: Denholm challenges readers to rethink their attitudes towards the forest, nature, and earth. He has spent too many long days and nights in the bush to be romantic about it, but he makes a strong plea for the re-enchantment of the world – for recognizing the richly storied quality of these lands and the opportunities they provide for all of us to experience “the kinds of earthly realities” from which we are generally distanced by modern technologies and societal structures (35). Here we are reminded of the blinkers that professional vocational training can impose on the likes of those altogether technically minded protagonists in the *ForesTalk* script.

Though there is much to think about in Denholm’s pages, this book is by no means easy to summarize or digest. Its larger purpose – to stress the importance of accepting a biocentric world view – is clear, but the literary path towards it is at least as diverse, tangled, and difficult as are the countless trails through this forest that, Denholm admits, “can be a hellish kind of heaven on earth” (11). At times the author’s prose is as perfervid as the forest is perhumid: pages are saturated in detail and drip erudition, chapters display a range of narrative stances, arguments seem to be framed at various angles and to intersect as tangents. *Ground-Truthing* makes an important argument, but it takes time (and reflection) to assimilate Denholm’s message. This is a book to be turned over in one’s mind, to be savoured in its parts, to be pondered late into the day. It is not a manual to be followed step-by-step to preordained conclusion. And perhaps this is the point. Slow reading (of words and landscapes, dreams and stories, science and poetry) may be an essential component of any rethinking (reimagining) of human relations with the earth.

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Sustainability has appeared in many guises since foresters in the American northwest began to talk, a century or so ago, about sustained yield as a means of ensuring healthy forests, continuing lumber production, and stable human communities. Together, sophisticated science and wise

¹⁹ A.K. Hellum, *Listening to Trees* (Edmonton: Newest Press, 2008); Robert Bringhurst, “Foreword,” to Gary Snyder, *He Who Hunted Birds in His Father’s Village: The Dimensions of a Haida Myth* (San Francisco: Shoemaker and Hoard, 2007), xii.

policy promised, way back then, to balance ecological, economic, and social considerations. But in a world in which most influential eyes have been fixed, firmly, on the bottom line, and that bottom line has been measured, for the most part, by a single metric – profit/prosperity/the \$ – that balance has been hard to find and harder to sustain. Today, the power of science underpins rising appreciation of the need for action on the environmental front and holds many of the keys to the sorts of effective actions required to secure a better future. But the ogre of “vexing compromise” still bedevils the policy processes through which necessary actions might be implemented.

Several decades ago, Canadian philosopher Neil Evernden argued that modern Western society had developed a severely limited conception of “the multi-layered world of nature”; it was generally envisaged and referred to as “the environment” – which proved to be little more than a “spatial pancake” for human consumption or a machine to be “dissected, interpreted and manipulated” by scientists.²⁰ The time had come, he insisted, to challenge this assumption, and its corollaries, by affirming other values, recognizing limits, re-envisioning the earth as “a heterogeneous mosaic of places,” and accepting people as “place-limited participants” in a larger planetary order. These words continue to ring true. Denholm would steer newcomer Canadians (and perhaps the world) towards the truth they embody with his claim that “we would do better to slow down, to listen to and at the very least learn from the histories and cultures” of First Peoples and “the trees, plants, animals, mountains and rivers” (252). Importantly, however, Denholm also reminds us, in making this case, that science is not, in itself, enough. Poets and storytellers, philosophers and artists – the humanities in general – have vital roles to play in shaping the values and providing the inspiration necessary to produce the paradigmatic shift in societal attitudes that now seems necessary if we are, collectively, to unchain ourselves from the misleading assumptions that troubled Evernden and that shape so much of contemporary policy. Together, it seems to me, the handful of books considered here drive home the message that it is time to move beyond the technical utopianism on display in the *ForesTalk* screenplay to conjure another “inspiring saga of regular people making a huge difference” at a scale rather larger than the Shuswap. Otherwise, perhaps we, too, are doomed to repeat the mistakes of generations before us.

²⁰ Neil Evernden, *The Natural Alien: Humankind and the Environment* (Toronto: University of Toronto Press, 1985), esp. x, xii, 124, 140–45, 148, 152.

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