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*Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse.* By Dean Bavington. (Vancouver: UBC Press, 2010. xxxii + 186 p., ill., maps. ISBN 978-0-7748-17486 \$32.95)

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Readers of *Scientia Canadensis* are likely to be most interested in the role of science and technology in the issues faced by Atlantic agriculture, but the essays have little to say on this theme. The volume does include articles on Management Intensive Grazing and the promise of plastic mulch for improving yields of fodder corn, and it reproduces excellent poster-displays on insect and plant biodiversity under various pasture-management schemes. Studies of this kind, however, appear extraneous to the volume's main emphasis on historical, cultural, and economic themes. Natasha Power and David Burton undertake a promising analysis of how climate change may affect agriculture in the region. The results are disappointingly inconclusive, but they do predict that the probable increase in weather variability is likely to offset any potential gains to the region from warming. Interestingly, none of the contributors identify technoscience as a threat to small farmers; in particular, genetic engineering and its products are never mentioned in the collection.

This is a handsome volume, and the studies it contains are consistently informative. The objection might legitimately be raised that the contributors never successfully integrate the three concepts central to their concerns: farming, rurality, and community. In a contemporary rural landscape in which most people may not be "farmers," and in which "farmer" is itself a contested identity, readers would like to know more about the political, social, and religious customs and institutions that link (or increasingly fail to link) the inhabitants of that landscape into a true community. But that may be the challenge that faces rural inhabitants themselves more directly than it faces the scholars and activists who speak for them. It is enough that this volume provides a useful and often moving evocation of rural life and the courage and ingenuity of rural Cape Bretoners determined to preserve and reinvigorate it.

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***Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse.* By Dean Bavington.** (Vancouver: UBC Press, 2010. xxxii + 186 p., ill., maps. ISBN 978-0-7748-17486 \$32.95).

Much has been written about the collapse of Newfoundland's cod stocks, and doubtless more insights will be gleaned from future studies of the decisions that fed this environmental and economic catastrophe. However, Dean Bavington's *Managed Annihilation: An Unnatural History of the Newfoundland Stock Collapse* passes up the chance to generate such

insights in favour of a rant against what Bavington imagines went wrong. This is unfortunate, as some of his prescriptions for improving the fisheries are thoughtful and deserve consideration.

Bavington is an environmental historian whose focus is equitable and just access to environmental resources versus their appropriation by the state and its capitalist cronies. As centralizing governments' fisheries managers and scientists failed to control fish stocks, he argues, their attention was diverted to managing and controlling fishermen themselves. Disenfranchised fishermen have become pawns for capitalists exploiting the fisheries for profit, as ownership of resources is licensed and the environment is privatised through fish farming.

While his passion is evident, his history lacks rigour. Scientists and governments, he says, problematized fluctuations in fish landings, while earlier fishermen accepted fisheries fluctuations as natural and beyond human control. This conflicts with his assertion that governments found themselves under pressure to find ways "to predict and control annual fluctuations in fish landings to guarantee profits" (p.15). He does not state where this "pressure" came from. He grossly mis-characterizes the beginnings of fisheries science as developing around the need to 'stabilize' the fisheries. In fact, it originated in scientists' desire to discover if overfishing was causing wild fluctuations in fish catches. Scientists did not hope to 'stabilize' the fisheries, but to tailor effort to supply. Furthermore, most North Atlantic governments had to be dragged into addressing fisheries problems by scientists and fishermen; the British Parliament controlling Newfoundland gave scant attention to fisheries policies.

I would like to appeal to historians and sociologists addressing Newfoundland fisheries to look beyond Newfoundland and its sea boundaries. The fisheries, like fisheries science, know no borders; both developed entirely within a transnational context. Brian Payne's recent *Fishing a Borderless Sea* (2010) illustrates this for the New England and Canadian Maritime fisheries. But no fishery exemplifies this more than the international offshore Newfoundland cod fishery. By ignoring and minimizing the earlier international context, inaccuracies flow into Bavington's brief history of fisheries science and his history generally. He completely ignores the seminal contribution to understanding fish population fluctuations, the age-class theory of Johan Hjort (who does not merit a mention). He incorrectly describes the paradigm-changing fisheries science of Beverton and Holt as being based on the idea that fish populations 'were reasonably stable over time'. In discussing fisheries science with Holt, I have learned that no mid-twentieth century fisheries scientist of any ability was ignorant of the sometimes severe fluctuations of fish populations. Nor did Beverton and Holt, as Bavington asserts, weave their equations around

the idea of maximum sustained yield. Bavington also claims that the International Commission for the Northwest Atlantic Fisheries established the boundaries for population-based management units in 1932; in fact ICNAF was founded in 1949. Its precursor, the North American Council on Fisheries Investigations, actually established these zones.

Beyond these omissions and mistakes, Bavington's history of the Newfoundland fisheries is weak. He describes Joey Smallwood's government, following Confederation, as intervening to industrialize and assist cod fisheries by any means possible. Whilst the Canadian government indeed sought to industrialize the Atlantic fisheries, Smallwood was notorious for trying to turn Newfoundland away from the fisheries towards a modern diversified economy. Bavington also writes that before confederation in 1949, Newfoundland had established a "number of fisheries colleges to transform fishermen into disciplined industrial workers for the offshore fishing fleets and to train fish plant managers and employees" (p.22), citing my own work and another source. This is simply untrue. He may have been referring to efforts to establish fisheries education programs in the 1950s; if so, then this is just one of many points rendered incorrect by inattention to dates and details. In a table on page 38 his historical timeline of Newfoundland's fisheries describes the period 1850-1992 as having a "Fordist order with factory production of frozen cod blocks and fish sticks for North American commodity markets." In fact frozen fish production was tried in Canada (not Newfoundland) on a small scale in the late 1920s and failed. Frozen fish and fish sticks became important products only around 1950, so he has mis-labelled an entire century of Newfoundland's fisheries production. In general, Bavington pays insufficient attention to technological change and especially the gains in efficiency that have driven over-fishing.

On a positive note, Bavington does a creditable job in addressing troubling recent issues regarding political management and changes that have seen emerging global corporations shut down local plants and sent fish processing jobs to China. He raises interesting questions about fishing cod for food versus commerce, the possibility of restorative fisheries, and whether inshore fishermen are correct in arguing for re-opening apparently recovering inshore fisheries, or if a complete moratorium remains essential, as scientists contend. Inshore fishermen want a return to baited hook and land line gear to support an equitable fishery; Bavington commendably recommends greater respect for fishermen and their ideas in fisheries management and a moral re-examination of the foundations of managerial ecologies. He lauds the idea of co-management, and is understandably appalled that individual fishermen have been loaded with responsibility without reward. Fishermen now must assist in 'fishing for science' in

sentinel fisheries to generate catch-related data that cash-starved scientific programs cannot otherwise obtain. He rightly complains that fishermen using different kinds of fishing gear in different kinds of location, with baited hooks, or cod traps, will generate only fragments of information. But few of their ideas are implemented, since the federal fisheries minister makes all final decisions; nor are fishermen given 'tenure' for fishing access or property rights in return.

Fisheries management models—especially the single-population models to project future fish populations—come in for much opprobrium. Of course, these models were wrong, and Bavington spares no breath in reiterating the impossibility of single population models ever capturing the chaos of interspecies competition, climate change, and habitat change. But he overstates fisheries scientists' belief that they controlled the fisheries; by the 1980s any certitude was fading. He fails to credit scientists for learning to look at past events and mistakes, although admittedly the Department of Fisheries and Oceans has been too slow to internalize its management failures (i.e. stock collapses). Let it not be forgotten that fishermen have some responsibility, too, for overfishing practices.

Another concern is that "fishermen have been encouraged to act more like corporate ranchers and farmers than hunters," harvesting and trading allotted quotas; the ocean has "become ever more like the land—enclosed as property with owners, laws, and limits" (p.89). It is pretty obvious that Bavington then objects to fish farms on the grounds of privatizing the oceans, as well as the need to harvest wild fish to feed farmed fish, and the deleterious effects fish farming may have on habitat, the genetic load of wild populations, and disease.

In his examination of recent attempts to embrace ecosystem-based fisheries management, Bavington provides interesting insights as to its shortcomings, but then calls for post-normal fisheries science. Unfortunately, with no clearly enunciated program, the reader remains in the dark about its methods and advantages. Indeed, I query this 'solution'. The need is not to subvert scientific practice (and in any case, no arguments for post-normal science I have seen have convinced me that science is under discussion—rather, the focus is on applied management). The need instead is to change foundational assumptions for using mathematical models of wild populations. While these tools emerged at a time when maximum utilization of resources was the driving ideal, even environmentalist regimes will require population sampling and modelling to monitor the effects of fishing, pollution and climate change on wild populations.

Since even ecosystem-based management is a failure, Bavington argues, managers now target "fishermen's activities, behaviours, values, and beliefs" (p.18). The science, he argues, has turned "from managing fish to

managing fishermen” (chapter 5). This burning assertion, however, ignores human nature and history. Since civilization began, bureaucrats have engaged in various forms of human management; and since the 1930s some leading fisheries scientists, including UK scientist Michael Graham, have wanted to restrict fishing effort through limiting ships’ tonnage or reducing fleet size, in part to increase fishermen’s income. The desire was always there, but was in tension with western democratic, laissez-faire traditions, and with post- Second World War government policies, not discussed by Bavington, that actively sponsored the intensification of fishing and fishing technologies to cheaply feed Europe during reconstruction. Furthermore he glosses over injustices of the Newfoundland truck system, which persisted into the 20th century and kept impoverished fishing families in a state of labour bondage to Newfoundland merchants.

Bavington romanticizes the past in portraying fishermen as autonomous hunters pursuing preferred fisheries, ignoring 19th-century trade restrictions that prevented fishermen from obtaining bait from nearby ports in foreign waters, or from discharging catches at foreign ports where they would fetch better prices. Fishing communities even controlled access to fishing grounds by restricting access to bait, or salt and shore space to cure catches, and in some cases violently punished trespassers on valued traditional fishing grounds. Bavington’s cause for outrage is weakened, then, by the historical contingencies he prefers to ignore. While *Managed Annihilation* does generate some insights into recent fisheries management problems, it cannot be recommended to anybody who wants to learn about Newfoundland fisheries history. Nor is it a reliable source for understanding the problems that developed in fisheries science.

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***Forêt et société en Mauricie. La formation d'une région (nouvelle édition).***

**Par René Hardy et Normand Séguin.** (Québec : Septentrion, 2011. 344 p., notes, ill., cartes, bibl., tab., index. ISBN 978-2-8944-8655-9 29,95 \$).

À la parution de la première édition en 1984, j’avais éprouvé un grand plaisir à parcourir cet ouvrage alors que je travaillais à compléter une thèse de doctorat sur l’exploitation forestière au Québec. Œuvre de deux historiens chevronnés rattachés à l’Université du Québec à Trois-Rivières, le texte est publié maintenant par Septentrion, une maison d’édition réputée qui se spécialise en histoire québécoise. Prévenons tout de suite les lecteurs qui ne connaissent pas ce texte: il ne s’agit pas d’une synthèse de l’histoire de la Mauricie. Les deux auteurs en ont produit une, en 2004,