Gordon Brent Ingram, Ph.D., side stream environmental design
321 Railway Street #108 Vancouver V6A 1A4 Canada
telephone 1 604 669 0422 email: gordon_brent_ingram@telus.net
& School of Environmental Studies, University of Victoria

International Conference on the Forest and Environmental History of the British Empire and Commonwealth, March 19-21st 2003 at the University of Sussex, Falmer, Brighton UK

February 2003

Fields or forest?

Aboriginal food production landscapes, unresolved legacies & contemporary ecosystem management of Garry oak woodlands in south-western British Columbia

How do unresolved social conflicts, from the colonial period, effect current perceptions of forest, habitat, disturbance and loss of biological diversity? How do unresolved social conflicts, embodied in institutional frameworks, compromise efforts to identify and protect ecosystems and species at risk of disappearance? Beginning with a social history of the mosaics of Garry oak meadows and woodlands and 'old-growth' Douglas fir forest, on the drier parts of the south coast of British Columbia (between the cities of Victoria and Vancouver) over the last two centuries, this discussion examines the legacies of the colonial and neocolonial period for a number a concepts central to environmental management. For this region, there was a colonial period from 1847 to 1871 and a neocolonial period until the 1982 repatriation and creation of the Canadian constitution. However, in this area only some First Nations were offered and agreed to treaties in the 1850s. The treaties that were forged were often poorly implemented. Aboriginal food gathering 'fields' were to be protected through the treaties but the concept was never applied consistently – and in ways uninfluenced from colonial and neocolonial pressures to alienate land for settler agriculture. Today, the region is increasingly urbanized and much of the remaining aboriginal 'field' landscapes (oak savannas and woodlands), that have supported numerous rare 'Mediterranean' species that occur patchily as far south as California, are becoming viewed as critical habitat. At the same time, First Nations remain engaged in treaty negotiations, land claims and assertion of rights to traditional resources. Contemporary notions of cultural landscapes, supposedly natural and ancient forests, 'biodiversity', genetic resources and ecosystems management, for this area, have relationships to, for example, an 'Indian War' of 1863. Today, certain elements of local biological diversity, at risk, are the focus of increasingly coordinated and expensive conservation programmes while other species, of great value to traditional aboriginal communities, are largely ignored. This discussion concludes with the construction of a 'postcolonial' framework for ecosystem management and conservation planning – one that tracks divergent priorities (between aboriginal and other groups) and unresolved contests and conflicts between stakeholders over particular aspects of local forest biological diversity.

 [1]

"[I]mperialism constructs particular kinds of knowledge and representations of land by means which colonial dispossessions proceed."
(Harris 2002: 48)

"Reality is not dialectical, colonialism is."
(Michael Hardt and Antonio Negri 2000: 128)

One of the growing areas of use of environmental and forest histories, especially ones that reconstruct the social and ecological shifts from the colonial and postcolonial periods, is for contributing to the development of conservation strategies. But methods for linking a host of (regional and site-specific) social processes, embodied in notions of the 'colonial' and the 'postcolonial', remain poorly described. Such science and art has been more the work of landscape ecology and environmental planning – fields that both tend to avoid exploration of historical nuance. For forest, woodland and grassland histories to be employed, credibly, in conservation and restoration strategies specific markers are necessary related to ecosystems, species and their critical habitats, and even genotypes and genetic resources. It is in this less charted, ecological realm of methods for making environmental histories that notions of 'natural' and 'cultural' ecosystems become regionally, site and socially specific. Different social groups, in the past and today, may view and value some landscapes more as 'fields' with forests while others may see forests with a few fields.

The 'fields' discussed in this essay were forms of agro-forestry, exploiting ecological edges between deep forest, woodland and grasslands, often carefully managed by aboriginal groups that often spoke Salish-related languages. What is left of northern Garry oak ecosystems, especially along shores and streams, constitute cultural landscapes, often related to management practices for food production, which remain poorly inventoried and understood.

In this essay, I explore some dilemmas in developing environmental histories from the vantage point of such uses in ecosystem management, conservation and restoration. With efforts to conserve and restore complex and dynamic mosaics (Ingram 2002) of forests, woodlands and grasslands, competing interpretations of environmental

and colonial histories invariably come into play. One example of the contentiousness of environmental history, in strategies for biodiversity conservation, is the unresolved role of indigenous people in the northern range of ecosystems dominated by Garry oak, *Quercus garryana,* that extend up from northern California into the extreme corner of south-western Canada near the cities of Victoria and Vancouver. As these ecosystems have dwindled, two divergent viewpoints on the drier areas around the Strait of Georgia have begun to emerge. A dominant view, somewhat neocolonial in origins, is of relatively static sets of woodland, forest and grassland with aboriginal impacts being relatively superfluous and limited to a small number of sites. A second more postcolonial view is holding increasing currency. This second perspective emphasizes more dynamic notions of landscape ecology and oak grassland and woodland along with Douglas fir (*Pseudotsuga menziesii*) forests (which are coniferous and darker) as part of dynamic mosaics that have, for the last several thousand years been very much the product of human forces.

Paradoxically, the battleground for these competing modes of ecosystem management lies in interpretations of conditions in the eighteen and nineteenth centuries – and the shifts from European 'exploration', colonial settlement to Canada's particularly long neocolonial era that many argue has not entirely ended on its Pacific coast. In the emerging postcolonial view, these woodlands, forests and grasslands comprised (and continue to comprise) various kinds of 'fields' of aboriginal food production. In a region where claims over land and natural resources remains unresolved, conceptualization of these ecosystems as either primarily forests or largely part of (aboriginal) fields has direct implications for who may well control and manage respective lands in coming decades. Certainly, these divergent viewpoints result in contrasting strategies for conservation and restoration of local biological resources (extending to questions of programme development, funding, employment and administration). The static and dynamic views described above are based on divergent interpretations of local forest histories. Untangling the biases and blinders behind these two views of the same landscapes might be conceived as simply separating two distinct modes of investigations into ecological and historical processes. But as I illustrate in this essay from Pacific Canada, much of our thinking, and our knowledge bases, remain mired in the tight contradictions, between the colonial and the postcolonial, that remain distinctly neocolonial.

In the supposedly postcolonial present, unresolved colonial legacies have direct and indirect impacts on particular kinds of perceptions, realities, scientific research (including hypothesis development, analysis and conclusions), funding programmes, and even the paradigms on which ecosystem management and land use planning are based. But exactly how do unresolved social conflicts, from the colonial period, effect current perceptions of forest, habitat, disturbance and loss of biological diversity? How do colonial legacies embodied in institutional frameworks for environmental research and land management compromise (if at all) efforts to identify and protect ecosystems and species at risk of disappearance? How are practices for objectivity in development of environmental histories impoverished and enriched by particular subjectivities? How can didactic notions be expanded such as natural (biophysical) versus social sciences, objective versus subjective, effective conservation and ecosystem management versus ineffective practices, and even the colonial and postcolonial?

I chose this example to present, at a conference on forest and environmental histories of the British Empire and Commonwealth in 2003, for a number of reasons. Critical histories, involving complex sets of social and biophysical indicators, are increasingly central to development of strategies for conservation of ecosystems and biological resources. The links between the burgeoning field of landscape ecology, which expressly recognized the interplay of natural and anthropogenic factors, and scholarship in environmental history remain underdeveloped. This example illustrates one of the more compelling reasons for the expansion of the field of environmental history. In the coming decade, interpretations of events from the mid-eighteenth century to the mid-nineteenth century, with the years of 1850 to 1870 particularly important, may well have a direct bearing on important policy and land use decisions, in the same region, for the coming half century. In addition, this example from the Pacific coast of British North America illustrates some of the regional-specific tensions in the colonial and imperial project, especially between London, Victoria and later Ottawa, which have 'sculpted' the landscapes of today. It is with better illumination of the contrasts between the local (indigenous) and imperial (metropolitan) dynamics of a century and a half ago that today's processes of globalisation and resistance to certain forms of domination can be further understood.

I also bring this example because it eschews the simplistic paradigm of past decades. A previous wave of analysis of the environmental impacts of colonialism emphasized the loss of forests with the destruction of associated canopies being a central factor in modern environmental degradation (Williams 1997). In this example from the drier parts of coastal British Columbia, it has been the disruption (and subsequent simplification) of the complexity of forest, woodland and grassland, through displacement of aboriginal land use central to the colonial and neocolonial projects, which today is the legacy that poses the most severe cumulative threat to these particular ecosystems and associated species. Moving from an emphasis on forests, as in denser canopies, to a focus on the complexity of mosaics of successional phases and associated woodlands, fields and other relatively diverse and functioning ecosystems, amounts to a paradigm shift. While this movement in understanding people and forests has been going on well before such well-celebrated works as

Fields or forests?:
The politics of divergent strategies for regional ecosystem management

A central question, that remains difficult to resolve, for regional ecosystem management and restoration of northern Garry oak woodlands and grasslands is the extent of the ecological impacts of aboriginal communities. This becomes the problem statement, the point of departure, of this essay. The question can also be reconceived as what is the importance of traditional knowledge, perspectives, and practices in maintaining the habitat conditions necessary for all elements of local biological diversity, the species at least, to persist? While these questions have only begun to be researched, current initiatives to conserve these communities, aboriginal communities and governments continue to be marginalized. The central argument in this essay is that the initiatives for more comprehensive protection and restoration of Garry oak ecosystems in Canada are impaired by neocolonial blinders. This lack of clarity is very much rooted in

an avoidance of social and specifically inter-cultural relationships, and history in general, and an over-emphasis on biophysical descriptors. Today, these neocolonial perspectives based nearly solely on the perspectives of non-aboriginal scientists, technicians and bureaucrats, are being challenged. As more First Nations in British Columbia are taking an interest in their traditional relationships to Garry oak ecosystems, the politics of ecosystem management become increasingly volatile and could change quickly.

In the following sections, I explore some of key historic and contemporary discourses around the drier ecosystems of the extreme south-western corner of Canada along the Strait of Georgia. In these ecosystems, with pronounced summer droughts, oak savannah and woodland dominated by one species, *Quercus garryana,* have tended to predominate – rather than coniferous forest dominated by Douglas fir. In these drier areas, often on better drained sites with south-west aspects, aboriginal burning was a regular, though spotty, ecological factor. Many sites were managed carefully for food with digging, planting and gathering of scores of tree, shrub and tuber foods. With removal of aboriginals and fire suppression, much of these grasslands and woodlands have converted to Douglas fir forest. Remaining areas have often been degraded by both invasive plant and animal species and urbanization. Today as remaining sites with this ecosystem have dwindled, there are roughly one hundred species at risk.[2]

In British Columbia, there was a colonial period from 1847 to 1871 and a neocolonial period until the 1982 repatriation (and creation) of the Canadian constitution. Throughout the colonial and neocolonial periods the aboriginal communities and governments of the British Columbia coast were denied opportunities to negotiate treaties. There were a small number of key exceptions. In the areas of Garry oak ecosystems around the colonial capital of Victoria (with the most favourable climate on the Pacific coast of British North America and thus early pressures for colonial settlement), some First Nations were offered and agreed to treaties. These 1850 - 1854 documents are often referred to as the 'Douglas Treaties' (Harris 2002: 17 – 64) -- named for the first Governor of the Crown Colony of Vancouver Island (which was later the amalgamated Crown Colony of British Columbia)[3]. The treaties that were forged were often poorly implemented. Because growth in the colony was slow, financial constraints severe, no treaties were negotiated after 1854. A series of Indian Reserves were subsequently established (involving varying forms of cooperation and resistance from respective aboriginal communities). Under the colonial guidelines, aboriginal food gathering 'fields' (typically dominated by Garry oak and associated grassland) were to be protected and to recognized as aboriginal territory (Harris 2002: 18). But in the last period of the colonial period, in the eighteen sixties, aboriginal rights around their food gathering landscapes were increasingly ignored with little mention after British Columbia's entry into Canadian Confederation in 1871.

Today, First Nations are again increasingly engaged in treaty negotiations and assertion of rights over traditional resources. In this context, there is increasingly a tension between (neocolonial) science-based and traditional and postcolonial knowledge-based forms of ecosystem management and conservation. These tensions go well beyond critiques of romantic notions of 'the ecological Indian' (Krech 1999), where supposedly 'noble savages' were necessary in harmony with their ecosystems.[4] But this dichotomy of ecological versus `unecological' Indian has become untenable as First Nations have

shown themselves just as able to express a diverse range of environmental relationships as other communities and layers of layers of government in Canada. In response, the shift from the neocolonial to the postcolonial in British Columbia has seen a push for more critical forms of analysis of both stakeholders and social conflicts. British Columbia's ecosystems remain, very much, part of landscapes of (un)lawful conflict (Ingram 1995A) often with as many groups benefiting by prolonged legal contests and uncertainties than those other groups needing resolutions. Another set of questions centres on the extent to which the difficulties of government institutions in conservation biological resources and related ecosystems has been due, in no small part, to the blinders and biases, in viewing the land, established in the neocolonial period (Ingram 1995B). But, so far, around the urbanizing parts of the Strait of Georgia, that include Vancouver and Victoria, the movement for joint management, which we have seen in more remote areas, such as Haida Gwaii (Ingram 1995C), has been muted.

A set of knowledge-related obstacles have maintained the dominant programmes for research on and conservation and restoration of Garry oak ecosystems as both neocolonial and, not coincidentally, ineffective. To substantiate my position, I share personal recollections of some of the last efforts of aboriginals to manage these ecosystems. I cross-reference this knowledge with readings of a two books. Maori and Canadian researcher, Chris Arnett's 1999, *The Terror of the Coast: Land alienation and colonial war on Vancouver Island and the Gulf Islands, 1849-1863*, has some specific information on the Salt Spring Island case study. I then nest this discussion of history and ecosystem management in the book, *Empire,* the 2000 discussion by Michael Hardt and Antonio Negri of the not-so-completely-postcolonial, postcolonial world. I argue that contemporary notions of cultural landscapes, supposedly natural and ancient forests, 'biodiversity', genetic resources and ecosystems management, for this area, have relationships to, for example, the 'Indian War' of 1863. Today, certain elements of local biological diversity, at risk, are the focus of increasingly coordinated and expensive conservation programmes while other populations, of great value to traditional aboriginal communities, remain largely ignored. This discussion concludes with the construction of a 'postcolonial' framework for ecosystem management and conservation planning – one that tracks divergent priorities (between aboriginal and other groups) and unresolved contests and conflicts between stakeholders over particular aspects of local forest (woodland, grassland and field) biological diversity.

The northern margins of Garry oak ecosystems

The following section of this essay describes the ecological and aboriginal context of this ecosystem, which stretches from grassland to forest communities, in what is today British Columbia. The white oaks are some of the 15 species of *Quercus* confined to the intermountain region of the West Coast. In contrast to other North American oak species, this group has evolved with increasing (though fluctuating) summer drought. As the mountains have risen, over the last 40 million years, rain shadows have been formed and summer rainfall has tended to decline. Virtually all *Quercus* species are confined to drier areas, just inland from coastlines exposed to the Pacific, until central and southern California. While Garry oak occurs as far south as the northern side of the Los Angeles basin, there are little if any ecosystems with Garry oak as dominants south of north-

western California. At the northern margin of its range, Garry oak is largely confined to dry, southwest-facing slopes and flat, well-drained gravely sites. Virtually all sites are vulnerable to some summer deficit. In BC, Garry oak is an island species only occurring on two mainland locales.

Perhaps one of the best clues to the shifting nature of Garry oak ecosystems in Canada comes from pollen records (Pellat et al. 2001). After the melting of the last ice cap, 11,000 to 9,000 BP, things warmed up quickly. There was rapid colonization by pioneer vegetation species such as Lodgepole pine (which today persists in some of the wettest and driest sites of these dynamic mosaics). Garry oak re-colonized from the south. Throughout the glacial period, there remained Garry oak populations in lower elevations of Oregon and California. Probable centres of Garry oak ecosystem biodiversity were mountain ranges that were not glaciated and with considerable environmental heterogeneity (providing a diversity of selection factors): the Klamath Mountains in south-western Oregon and the Trinity Range in far north-western California.

By 7500 BP, Garry oak was established in the Georgia Basin and was thriving in a warmer climate than that of today. It probably took other species additional hundreds and thousands of years to colonize this far north. Garry oak has perhaps the heaviest seed of any species in the region and yet became established on islands that may well have been in isolation since soon after the last glacial retreat. That Garry oak is one of the few dominant trees in the region that also reproduces clonally has unexplored implications. Colonization of northern Garry oak ecosystem was not all from south to north. Grasses and forbs quickly re-established in the interior of BC and were soon moving into the drier parts of the coast So the Strait of Georgia was not just an impoverished copy of less glaciated, "Oregonia" but a rather a unique and queer combination of species that may have never evolved together before. Along its intermountain corridor, the Garry oak – Douglas fir – Arbutus – Big-leaved map complex comprises a kind of general template where the herbaceous layers are far more variable between latitudes, districts and neighbourhoods. Soon after Garry oak became established in its current northern margins, there was a cooling phase between 7040 and 5750 years BP and Douglas fir and Western hemlock increased. Curiously, the presence of Garry oak does not appear to have declined in cooler times 5750 – 3800 BP. Some new force intensified 3800 – 1050 BP. Oak appears to have increased as the climate cooled – and as fire, whether natural or aboriginal, increased.

The landscape changes that were figured in the pollen analyses suggest the emergence of a culture of heavy use of Garry oak meadows along with burning. This would have been consistent with the societies all through the range of Garry oak ecosystems where, for example, in Mendocino, oaks were carefully managed and owned. Acorns, including of Garry oak, were a major source of protein. We can assume that people were in the Georgia Basin area since the last icecap began receding – with a possibility of some links to earlier marine-based cultures from around the North Pacific. Subsequently, cultural developments and perhaps other human migrations transformed ecosystems around the Strait of Georgia. Salish food gathering had a particular emphasis on root crops, such as camas (*Camassia* spp.) and wild onions, *Allium* spp., and a score of other species. All of these root foods tend to thrive with the mild winters and can survive

both summer droughts and some burning. Salish tuber culture has some similarities to other island and coastal societies around the Pacific Rim. But while we have plenty of historical and cultural (as well as ecological) confirmations of extensive digging and burning in northern island Garry oak ecosystems (White's 1999 case study of Whidbey nearby in Washington State is the most conclusive so far), no models of intensities of use and impacts have been developed.

Coast Salish cultures at the northern margins of Garry oak ecosystems may well have represented a cultural fusion where root crop digging and burning and fishing cultures met. But most of the time in recent centuries, salmon would have been a more readily available source of protein. Nancy Turner (1975: 81) gives the best description of what little reliance there was on acorns in the twentieth century – after over a century and half of population decline. But what of before the 1790s when there were supposedly higher human populations and densities (Harris 1997)? And the recent period of cool Pacific temperatures, that was so conducive to salmon productivity, may have been an exception over the last several thousand years – with acorns and game having been the main protein alternative. The extent of gathering, digging, and burning may well have varied greatly with more impact before the nineteenth century.

The northern margins of Garry oak-dominated ecosystems can involve a range of canopy formations from few trees to savannah to woodland. Only three strata, herbaceous, shrub, and canopy trees, are a consistent features. The vine layer is nonexistent with little or no coexistence of poison oak and Garry oak, whether this is from natural or cultural factors, on their northern margins. Because of the amount of tubers and roots in the ground, the herbaceous layer may often constitute the majority of the total biomass – particularly of the more lush savannahs and sparser canopied grassland. Shifting factors between seasons and years, from fire to water-stress, may well have only a modest impact on the biomass of this layer.

A number of structural aspects of northern Garry oak ecosystems make some elements of associated biodiversity more vulnerable than others – both in nature and through the impacts of land use. Ecosystems that are temperate and with summer drought are often termed "fire-climax" because some regular combustion is inevitable in warmer and drier years. A second characteristic of temperature summer drought ecosystems is that fire-resistant trees (with thick bark) tend to dominate. Of these ecosystems, northern Garry oak ecosystems are exceptional in the small number of tree species that the woody biomass of the ecosystem (and key habitat features such as nesting cavities). Whereas California has scores of such fire-resistant tree species, the major species this far north are the older Garry oaks and Douglas fir (protected by their very thick bark often more than 3 cm). A third characteristic of cool fire ecosystems is also because of these fire-resistant trees in combination with lower temperatures and low rainfall that slows the breakdown of wood. When these trees die, they tend to stay standing as snags -- often for decades. Because of their high rates of biomass accumulation for their latitudes, Garry oak and Douglas fir mosaics provide a diverse set of niches and habitats for a host of species associated with both the grazing (live plant) and the detritus (dead) food webs – *if* standing and fallen biomass is not removed.

A fourth characteristic of mild, cool, summer drought ecosystems is the key role of fire in periodic release and redistribution of nutrients. The problem with a lot of

standing wood is that nutrients in short supply get locked away – until there is a fire. Thus, the productivity of these ecosystems, with relatively rapid uptake (for this latitude) of nutrients, makes redistribution of nutrients key for some plants (and perhaps insects). Fires of various temperature levels diversify and shift the edges within these mosaics. Spotty burns from `cool' fires (where there is not much un-insulated fuel to burn,) in turn, contribute to landscape heterogeneity. Nutrient release in the rains after fire may be key to the germination of some plant species, this far north, as it is with some more southerly West Coast oak ecosystems.

Characterizing northern Garry oak ecosystem landscape ecology & biogeography

In beginning to look at the landscape patterns of northern Garry oak ecosystems, in Canada, six basic kinds of landscape and biogeographical types, are evident:

1. the two mainland populations which, while tiny in BC, have links to landscapes that become progressively larger moving south into what is today the USA: from Bellingham to the central Skagit to larger areas around Tacoma, Olympia and in the Willamette Valley;

2. Vancouver Island around Victoria, Saanich and Metchosin where large areas of Garry oak and grassland dominated the landscape and have recently, and in some cases continue to, constitute the matrix;

3. other parts of Vancouver Island, such as north of the Cowichan Valley along the east coast to the Comox Valley, where recent occurrences of Garry oak ecosystems have tended to not be the dominant element in the landscape;

4. some flat areas and south-facing mountains on the larger Gulf Islands;

5. smaller Gulf islands (>5 hectors to <100 hectares) with drier microclimates and with relatively well-drained soils; and

6. drier rocks and islets (< 5 hectares).

The role, compositions and magnitude of patches, edges, disturbance gradients, and matrices, along with species availability, vary markedly between these landscape types.

What have been the forces that have destroyed so much, so quickly? The most destructive human activities, that have degraded nearly all of the Garry oak ecosystems in BC and have converted perhaps more than half of the area that existed in the mid-nineteenth century, are the following:

1. clear and grazing as part of agriculture;
2. urbanization;
3. introduction of invasive species;
4. tree cutting and removal of entire groves;
5. alienation of traditional land use practices; and

6. suppression of fire.

Each of these categories of disturbance represents a range of cause-effect linkages where combinations of degrade (and sometimes destroy) specific ecosystem types and populations of species. From a landscape ecological perspective, these modern forces have two kinds of negative implications. The new disturbances and additional inputs involve a new set of stress and mortality factors (on top of the more established ones). But perhaps more detrimental is the obstruction of some of the established processes, such as cool fires, on which some species and ecosystems depend.

Towards a postcolonial landscape ecology

A large part of the reason for the current marginalization of aboriginal history and knowledge in supposedly broad-based efforts for conservation and restoration of northern Garry oak ecosystems goes back to older interpretations of ecology (now largely discredited but with continuing salience amongst biologists). To understand why more perspectives on cultural aspects of ecosystems have been lacking in BC and are increasingly needed for conservation of Garry oak ecosystems, we can go back to the single most influential document on habitat conservation in the history of British Columbia. V. J. Krajina's 1972-1975 *Biogeoclimatic Zones of British Columbia* map.[5] This map indicates a 'Coastal Douglas Fir' zone but does not delineate a separate area for Garry oak ecosystems. This was not without considerable discussion. A distinct subzone, for drier areas, proposed well over thirty years ago. But this delineation was consistently opposed for a simple reason. It was believed that ecological disturbance was undesirable for habitat protection and that without them Garry oak and grassland areas would become gradually dominated by Douglas fir forest.

The following concepts of landscape ecology (Forman and Godron 1986) define the most important aspects of spatial patterning of northern Garry oak ecosystems. They also relate to some of the spatial formations that were exploited, managed and now left by aboriginal communities. The processes and landscape descriptors appears to have the most direct relevance to many of the species in these ecosystems (Ingram 2000) and the occurrence and survival of some of the species which are now at risk:

1. the size of patches dominated by oaks, Douglas fire and grasslands and the combined mosaics, the ages of dominants and the extent of accumulation of living and dead biomass including extent of canopy and tree and snag size);

2. the nature of fragmentation factors that divide and diminish the size of patches for particular ecosystems and communities;

3. edges or "ecotones" (their heights and extent of their contrasts and widths) between oak and Douglas fir, oak and grassland, and different sites with different grassland dominants;

4. flows across ecological corridors of various scales and temporal stability that sometimes function as landscape linkages;

5. the rate and scale of disturbance (and succession) factors, such as fire, and how these influence the size and shape of patches and the length, height and width of edges; and

6. The cumulative forces behind the formation of the landscape matrix (the ecosystem type and characteristics that touch on more others within a landscape and somewhat dominates).

In the coming years, it will be increasingly important, in any conservation planning or restoration effort for northern Garry oak ecosystems, to classify, inventory and map these features and associated processes for both larger protected landscapes (and for setting priorities for management and restoration). Likewise, it will be increasingly necessary to determine the relevance of patch sizes and shapes, edges, flows and linkages, fragmentation factors, the magnitudes and rates of change and matrices -- as part of the basis for any viable restoration strategies for various scales.

Understanding landscape ecology, and the relationships to the ecological impacts of aboriginal communities, is particularly important today where natural areas are dwindling. Higher levels of landscape heterogeneity (often expressed from complex edges of varying widths and contrast levels), a diverse range of successional conditions across landscape units, is generally good for northern Garry oak ecosystems and is necessary for maintaining biodiversity at the neighbourhood level. But today, some of the new successional conditions, even when they sometimes create more landscape heterogeneity, can threaten certain elements of local biodiversity. At the risk of being simplistic, there have been 'good' successional factors associated with the pre-colonial period (such as wildlife and at least some Salish burning) and now there have been 'bad' successional factors, from the modern era, such as associated with liquidation of old-growth forest, houses, roads and invasive species. But the aboriginal – colonial dichotomy is too simple. To maintain all of the ecosystem types and species, associated with northern Garry oak ecosystems and that are now vulnerable to disappearance, requires getting more specific about and focusing on the specific cause-effect linkages between populations and particular disturbance factors at certain scales and on specific kinds of sites.

6

Creating species-habitat-successional matrices which embody conservation and restoration goals will be difficult enough. But the conundrum is not so much around defining good and bad change, disturbance and stability factors but rather in how to spatially allocate and then maintain and restore the full range of species across and within relatively small sites and landscape units – ones that are increasingly vulnerable to urbanization and climate change. This conundrum is why new, more processed-based, ways of thinking about ecosystems, space, habitat protection, and environmental planning are needed – ones that recognize, more creatively, the crises and dilemmas being faced around the northern, highly insular margins of Garry oak ecosystems. Ultimately, this problem is as much for the social as the natural sciences. Various concepts of respect between different stakeholders around particular organism, resources and locations, of equitable exchanges over time, can guide new conservation initiatives. Such a framework requires landscape ecology's emphasis on flows, diversity, and change across space – at various scales.

So if protection of the biodiversity of Garry oak ecosystems requires disturbance in a period of tremendous destruction of habitat, why try to conserve them – or consider them a separate biogeoclimatic zone? Today, we have a plethora of reasons from concerns for species at risk to restoration of aboriginal land stewardship and plants of cultural important to recreation and aesthetics. But these cultural sides of ecology, important in landscape ecology, were largely suppressed three decades ago as old growth was quickly liquidated in the name of making 'working forests' (and not diverse Garry oak mosaics).

Back in the 1970s, Krajina's teachings were taken too literally. Ironically, his contemporaries back in his home region of central Europe, along with scientists in the Netherlands and Italy, were seeing the importance of acknowledging and respecting human factors as part of ecosystems. The landscape ecologist who sees people as being a factor in the vegetation of a polder could have also recognized Salish burning as having as much a bearing, and perhaps 'right' to be 'respected'. Today, to not acknowledge the cultural, the Salish, side of Garry oak ecosystems is to be scientifically and culturally biased – and from a land management standpoint could engender legal interventions. The prospects for the kind of comprehensive biodiversity conservation planning and restoration – to maintain such a dynamic ecosystems in urbanizing contexts --are diminishing and will remain only an ideal unless bold new stances are advanced and interventions made. For example, the scale of the new burning (as part of restoration programmes typically not organized by aboriginals) is still so modest as to hardly be able to reverse much of the recent loss of Garry oak and grassland habitat from fire suppression and subsequent expansion of Douglas fir.

Environmental history as (cultural) landscape ecology as (cultural landscape) history

Landscapes change. Cultural landscapes change with political economies, demographics, and, in deed, with cultures. The survival and continuing evolution of local biodiversity requires maintaining a full range of landscape processes (and areas without certain disturbances). At this point, roughly half way through this discussion, the relevance of human history, related to ecological changes, becomes clear. Landscape ecologies

embody environmental histories with the converse also true. But which social and biophysical relationships and processes are most important in trying to maintain elements of local biological diversity prone to permanent disappearance?

Conservation of northern Garry oak ecosystems, species and genotypes is as much about maintaining vacillating selection factors across relatively short distances as locking in to static management goals (or reserve boundaries). As I argue above, landscape ecology concepts, such as fragment, edge, corridor, flow, and matrix, are increasingly relevant to both understanding aboriginal impacts on Garry oak ecosystems and to setting goals for restoration.

Modern conservation biology is based on the goal of continuing evolution of local biodiversity through maintaining a full range of processes (and areas without certain disturbances) and selection factors that maintain certain ecosystems, species and genotypes. This ideal involves a complex set of objectives that cannot be set without considerable baseline and time series data. Much of the restoration goals, set so far for northern Garry oak ecosystems, relate to one vague point in time - typically between European contact and the end of the nineteenth century when the impacts of aboriginal communities around the Strait of Georgia had declined. But basing restoration goals on a single point defined by a dichotomy of aboriginal and settler, historic and pre-contact, or even pre-and-post invasive species, avoids viewing these landscapes (and associated biodiversity) as highly dynamic. In other words, biodiversity conservation of Garry oak ecosystem biodiversity is as much about maintaining change across broader landscape units, across mosaics, as locking in to simple management goals such as for re-establishing dominant species. A question of priorities emerges – for both additional habitat protection and restoration and for the kinds of human perspectives and management, administrative and ownership structures that might be most effective.

In exploring the role of forest and environmental histories in developing regional ecosystem strategies, the following four sections illustrate three disparate set of questions that are often at work:

1. poorly understood events -- in this case an 'Indian War' in 1863;
2. nostalgia (and lack of nostalgia) in the cultural memories of some groups;
3. new notions of marginalised stakeholders; and
4. more globalized political economic and cultural processes as outlined in *Empire*.

Weaving such disparate sets of descriptors into lean environmental histories becomes crucial for identifying the score processes that most warrant better understanding – as a basis for more viable forest, woodland and grassland biodiversity conservation strategies.

The terror of the coast:
Biodiversity conservation amidst legacies of social conflict

Chris Arnett's *The Terror of the Coast* is one of the most advanced works in the movement to reposition the presence of aboriginals and First Nations in British Columbia's history – and to re-examine the more violent aspects of the colonial and neocolonial projects. This movement increasingly uses and partially generates environmental histories. The focus on *The Terror of the Coast* is on a series of conflicts,

between the colonial government and aboriginals around land. Previously, this period was viewed as a time of almost enthusiastic cooperation between aboriginals and the colonial government – particularly in the years directly after the 1846 Oregon Evacuation (Arnett 1999: 28). Certainly, London began its presence in the region committed to recognizing aboriginal title (Arnett 1999: 29 – 31) and the 14 Douglas Treaties even recognized nominal sovereignty (Arnett 1999: 33 – 35). But by the early 1860s, there was a decided shift to alienation (in this case theft) without treaties (Arnett 1999: 69 – 110).

Today, the 1847 to 1871 years are increasingly being re-visited as the time when today's social hierarchies (that have marginalised aboriginals) were codified – and often violently. And one of the major flashpoints for conflict were native 'fields', often dominated by oak trees and associated species, which were more attractive for colonial settlements than the dark forests of Douglas fir. The histories of these conflicts can even be re-inscribed as struggles over a set of strategic spaces (relatively warm, south-west-facing beaches, flatlands and slopes) and their associated resources. While Arnett's is not an environmental history, any overlapping of his geographical data with ecological maps suggests the importance of these Garry oak systems to both aboriginal and colonial groups. But it was in the 1847 to 1871 period that the shift from viewing Garry oak ecosystems as comprising of aboriginal food production fields to being openings in primeval forests was codified and reproduced through settlement. Today, nuanced knowledge of the differences between heavily managed and regularly dug food production sites and less intensively altered but periodically burned sites is largely lost (with some recent efforts at recovery[7]).

Arnett's history represents a crucial link in how spaces, ecosystems and resources, in this part of British Columbia with Garry oak communities, were reconceived as part of modern forms of exploitation and production. Rather than viewing the alteration and degradation of Garry oak ecosystems as representing a conflict between settler and 'nature', we can now discern a contest between different stakeholders and, not coincidentally, different modes of ecosystem management, exploitation, production and exchange. Perhaps the most enigmatic point in *The Terror of the Coast,* for a forest history of northern Garry oak ecosystems, is Arnett's mention on page 88 of an 1860 census of aboriginal food production areas from southern Vancouver Island up its east coast to Nanaimo.[8] While having implications for the contemporary management of Garry oak ecosystems and some associated species, this document confirms that the Colonial Office (Harris 2002: 1 – 16) was knowingly engaged in displacing aboriginal systems of food production and ecosystem management with one dominated by settlers (and their technologies, crops and livestock). The bitter fruit of this set of views and policy is today's at risk status of roughly one hundred species associated species.

But in defence of some of the early colonists, this only partial blindness to aboriginal fields as primeval forests was almost predictable. Many of these Salish fields were maintained by women. For much of the nineteenth century, the settlers were overwhelmingly male. The more educated male settlers, especially ones with good employment positions, were under tremendous pressure to not have contact with 'squaws' (a word that became more of a pejorative after the nineteenth century). Thus, few literate men would have spent much time to confirm that these often gendered landscapes were of any significance in negotiations. Similarly, aboriginal males may have had little

concerns for 'food security' and continued access to these food species – especially with increasing trade. In turn the settlers were often far more concerned with 'meat and potatoes' than with local camas. Paradoxically, the Salish were quick to introduce potatoes to their fields and to mix them with other bulbs and tubers such as camas. Throughout the colonial period, there were requirements to respect these fields, extending to the determining the extent and boundaries of Indian Reserves, yet few indications of recognition of these space have, so far, been confirmed.

Restoration & nostalgia:
Returning to Stelly's X Road

In the region around Victoria, the 'ecological restoration' movement has increasing salience. There are many under-funded individuals and over-extended volunteers trying to remove invasive alien species and to begin to re-establish more 'natural' vegetation. Paradoxically, this movement, locally at least, has often be uncritical of notions of environmental history – especially in setting restoration goals. The past is viewed with a kind of nostalgia that typically avoids the (aboriginal) cultural memories of British gunboats obliterating inhabited villages (such as described by Arnett 1999). What we do choose to remember and what we have actually experienced has direct relationships to what we choose to restore and who much time we can find to spend in archives or pulling out non-native plants for no pay. Sadly, the experiences of aboriginals and non-aboriginals remain worlds apart.

In much of my historical, restoration and ecosystems work (either volunteer or funded); I am inspired and haunted by experiences from when I was a young boy. I provide these examples of why I am compelled to make the arguments that I do in this essay. Without these recollections, some over forty years old, I might have been willing to be complacent in the continued alienation of aboriginal communities from their traditional sites of harvesting and management of Garry oak ecosystems and their associated biological resources. In sketching out very dear personal experience, I experience something of a rupture, an overwhelming subjectivity, in a set of historical and policy-based narratives. In trying to protect these experiences, I put them in a series of boxes, reserves in effect.

I grew up on Selly's X Road (the 'X' pronounced as 'Cross') in Central Saanich north of Victoria. My father and mother bought a piece of land and built a small house there when I was a baby. We had an acre of land across the road from the Tsartlip Indian Reserve (a reserve that was laid out in the time of the Douglas Treaties (Harris 2002: 19 – 21, 327)) . The land on both sides of the road was an open mosaic of grassland dotted with large, old oaks, woodlands and relatively open Douglas fir forest. These were very pleasant suburban lots with oaks and grassland, views of the mountains and sea, and all the trappings of the affluence of the nineteen sixties.

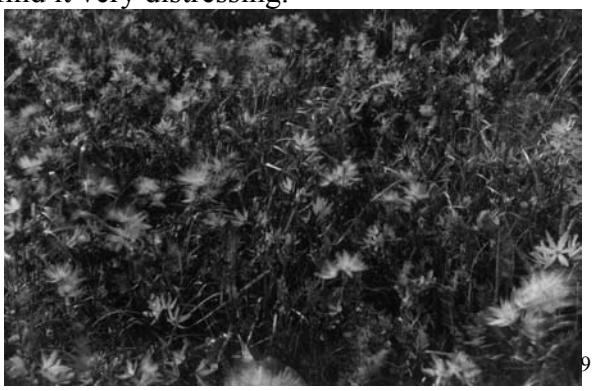
Our parcel on Stelly's X Road was long and narrow. The narrow, northern end touched the road directly across from the Indian Reserve. There were

at least five lots laid out this way. Ours was lowest on the slope directly below my adult brother's, followed by three other families all with their youngest children, like me, born in 1955. All of the other families involved both parents with Anglo-Saxon heritages whereas my mother was of a mixed-race background, more common in nineteenth century British Columbia. Her father's family were Seventeenth Century French settlers in central Canada and most families soon became 'Metis'. The Metis label had effectively been cancelled through class mobility and marrying a blonde. Both sides of my parents' families had been in British Columbia since the Nineteenth Century and my father spoke the local trading language, Chinook.

Across Stelly's X Road, people lived in large families with extended families and often no running water and flush toilets. Many adults did not speak English. For children, there was a strict spatial segregation with `Tsartlip' children walking up 'The Reserve' side of Stelly's X Road and the 'white' children walking up the other side. There was never any talking or eye contact. In the same period, the 'native' school was desegregated and Tsartlip students began to enrol in the lower grades at Brentwood Bay Elementary. For reasons unbeknownst to me at the time, I was always placed in the row of classroom desks farthest from the window otherwise reserved for 'Indian kids'. And when it came to days for parents to visit the school, mine were the only ones who gave my comrades in the farthest row any attention.

About 1960 when I was five years old, Chief Christopher Paul (1894 – 1976), a neighbour and family friend, came to see my father. It was a hot late summer day and he asked to speak with my father. They moved off of our shaded veranda on to our gravel drive way. I only heard the tone of their conversation which I recall now involved a level of polite familiarity mixed with tension. In the subsequent hour, Chief Paul had negotiated one of the last instances of aboriginal burning in the area in the Twentieth Century. (It is unclear whether he wanted to burn the other properties, had a special interest in our site, or just wanted to burn and had a rapport with my family.) I was told later by my father that the Chief had asserted traditional rights over the land and the need to burn it. There was an ongoing dispute, going back to the colonial era agreements and surveys (Harris 2002: 57 - 58), and our land was claimed. Supposedly, Stelly's X Road had been mis-surveyed. The neighbours were a bit scandalized. Days later, the Central Saanich Fire Department lumbered in, I forced to watch from 10 feet way and Chief Paul said some things in his native language then lit a series of small patches of bunchgrass that were soon black and smouldering. Soon after, the fire department banned any further burning in the municipality.

I have often thought about how that experience of watching Chief Paul's skills with fire and plants, as the neighbourhood was beginning to be desegregated, was so formative to my world view. When colleagues involved in conservation and restoration of Garry oak ecosystem dismiss, or more often just ignore, the role of aboriginal culture in these landscapes I find it very distressing.



9

Stakeholders & stakeholders:
The politics of stakeholder analysis

There are a range of notions of stakeholders and how to identify and analyze contests and outright conflicts. In Canada, courts, that have been increasingly activistic since the 1982 constitution, have increasingly determined how to include marginalized stakeholders and bring 'them' to 'the table'. The most celebrated of the decisions on aboriginal land use, with implications on contemporary decision-making and policy, was the series of decisions around *Delgamuukw versus British Columbia*[10] throughout the 1990s. If there was a single event in the early 'postcolonial' period in western Canada, to codify new modes of negotiation between First Nations and land use agencies (including those involved with biodiversity conservation), it was the last of the *Delgamuukw versus British Columbia* decisions. Simply from the sources presented in this paper, there is a strong basis to involve aboriginal communities and their First Nations (and other governments and organisations) into management, renewed harvesting and restoration of the Garry oak ecosystems in British Columbia.[11] Well into the Twentieth Century, evidence of historical burning was used by First Nations was used as the basis for traditional tenure (Harris 2002: 234) though it was only with the 1997 Delgmuukw decision that there was the beginning of a no legal basis for legal intervention.

In the same periods as the Delgamuukw challenges, a series of parallel cultural and scholarly shifts formed the following paradigm shift. The following are some new fundaments in considering aboriginal and non-aboriginal stakeholders.

- Within every culture, social group and community are ecological and 'anti-ecological' tendencies – some of which might be counter to dominant ethical positions and accepted practices. To characterize a culture, perhaps other than one's own, as ecological or `unecological' would be a simplistic caricature verging on a kind of racist stereotyping.
- Within every culture, social group and community are tensions between the rhetoric and actual reality of specific practices applied in particular locales over

time. In other words, there was as much diversity of experiences and practices in the diverse aboriginal societies around the Strait of Georgia as there has been in the colonial and neocolonial periods.

In an analogous manner, contemporary conservation biology has created a framework for considering how to manage local biological diversity through the following axioms.

- Each species (and in some cases sub-species) responds differently to various changes in landscape and ecosystems including to specific processes, cycles, disturbances and lack of disturbances.

- Human disturbance, *per se*, has neither been inherently 'good' or inherently 'bad' for the persistence of elements of local biological diversity. It has been the specific and cumulative cause-effect linkages, between human practices, habitats and populations across landscapes that has, and will continue, to allow some species to persist and other perish.

- Removing any set of human impacts, that have been present for centuries, from cultural landscapes will invariably put some local populations at risk. In attempting to restore these impacts by non-aboriginals, considerable knowledge of those aboriginal practices and their spatial extents, are necessary.

With these intersecting sets of human social and biological stakeholder groups, a matrix can be created for regional ecosystem management for protection of local biological diversity.

In contrast to these developments throughout the 1990s was the formation of the Garry Oak Ecosystems Recovery Team (GOERT) in 1999. Unfortunately, there was little effort to engage with or welcome in aboriginal groups and First Nations – even for communities that have such ecosystems in the lands of their Indian Reserves. GOERT portrayed itself has involving all levels of government from the local to the federal and today indicates on its website[12] the support of the Nature Conservancy of Canada and the Habitat Stewardship Programme of the Government of Canada. One would think that with the growing body of knowledge of aboriginal reliance on and management of Garry oak ecosystems, assertions of First Nations, the fundamental changes that came with Delgamuukw challenges, and GOERT's supposed commitment to inclusiveness, that there would be serious efforts to include and represent the concerns of aboriginals. But so far, this has not been the case. Aboriginal involvement has been slight and the discourses on traditional impacts, in the documents on the GOERT site (including a 'recovery strategy'), have been so obscure as to trivialize First Nations. A new set of Indian Reserve boundaries have been effectively drawn: between land claims, real estate and cash payments (the domain of First Nations) and biological resources (the domain of government biologists and pliant consultants). How, in the supposedly postcolonial present, with a two-decades-old constitution, with major precedents around aboriginal input and joint management codified by 1997, and with greater public sensitivity to

'diversity', could this neocolonial lapse have happened (and how can it continue)? *Empire* can begin to tell us what happened to the British Empire and the prospects for the future.

Empire after The Empire

So far, I have sketched some points for a forest history of northern Garry oak ecosystems over the last 250 years. But what would be the point? How can history help us see options for the future? The beginning of this century in British Columbia is seeing some of the old sites of aboriginal – colonial interaction fragmented, turned on their heads and reflected to find new views almost like a kaleidoscope. Would a history of Garry oak ecosystems re-enforce or undermine new forms of 'Empire? Or can we, as historians of the colonial and theorists of the postcolonial dump the basic Hegelian dialectic (Hardt and Negri 2000: 144) and perhaps even rethink the basic notions of the impacts of the British Empire? Yet, if the conditions of most areas of northern Garry oak ecosystems are any indicator, the neocolonial, in deed the colonial, remain with us in a very material sense. And I wonder whether or not GOERT's obfuscation of aboriginal aspects of those ecosystems has a relationship to *Empire*'s discussion of the new "imperial racism or differential racism" (Hardt and Negri 2000: 190 – 195) that in new ways continues to be culturally chauvinistic and Eurocentric marginalising other groups and where,

> "The central moment of modern racism takes place on its boundary, in the global antithesis between inside and outside. As Du Bois said nearly one hundred years ago, the problem of the twentieth century is the problem of the color line. Imperial racism, by contrast, looking forward perhaps to the twenty-first century, rests on the play of differences and the management of micro-conflictualities within its continually expanding domain."
> (Hardt and Negri 2000: 195)

Of course the postcolonial alternative might be just as problematic – incorporating aboriginal perspectives and management – to a modest level.

> 'More often than not, the Empire does not create division but rather recognizes existing or potential differences, celebrates them, and manages them within a general economy of command. The triple imperative of the Empire is incorporate, differentiate, manage."
> (Hardt and Negri 2000: 201)

Under sufficient pressure, GOERT could find a way to consolidate its ambiguous political position as part federal, part provincial, part nongovernmental and part private by adding the political support of First Nations.

Empire's alternative to thinking in terms of the North-South divide instead with Centre, Periphery and Semi-periphery (Hardt and Negri 2000: 334) may have some utility in understanding how former aboriginal frontiers become suburbs of metropolitan cities. Similarly, the central argument below has some utility in understanding various axes of power around these ecosystems -- from Saanich to Victoria to Vancouver to Ottawa to Washington – even to Asia and occasionally back to London.

> "[T]he coming Empire is not American and the United States is not its center. The fundamental principle of Empire...that is power has no actual and localizable terrain or center. Imperial power is distributed in networks, through mobile and articulated mechanisms of control."
> (Hardt and Negri 2000: 384)

Conclusions

In his essay on forest history in Australia, Tom Griffiths (2002) argued

> "The politics of understanding regrowth are related not only to the issues of clearing and density, but especially to the culture of burning in Aboriginal and settler society and its implications for management and biodiversity."

To some extent, this example from the Pacific coast of Canada confirms that this movement of linking aboriginal land use with contemporary conservation strategies, through environmental history, spans the Pacific and extends to other parts of today's Commonwealth.

A didactic interpretation of the current situation around conservation and management of Garry oak ecosystems could centre on the question of whether or not the Garry Oak Ecosystems Recovery Team (GOERT), is currently devaluing aboriginal impacts and sites and marginalizing First Nations effectively reproducing yet another variation of neocolonial political economy. The answer to such a simplistic question would have to be a resounding yes. But for those who might argue that it is really the dominant scientific milieu that is neocolonial and effectively racist (with groups such as GOERT simply 'the tails wagged by the dog'), we have more critical forms of stakeholder analysis and notions of Empire to help us see a more complex set of relationships, tendencies and agendas. *Empire* reminds us that we are in times when it is often more convenient to obscure the trapping, archaeology, in deed the fetishes, of the British Empire – in order to salvage the social hierarchies that were implanted. The crisis of biodiversity loss is a convenient foil to mask ongoing efforts to re-invent modes of knowledge and decision-making that support the classes and the state (British Columbia). In other words, the original colonial project, that originated in London, and was worked into a neocolonial landscape by 1870.

Rather than the brief colonial world, it was the social groups, classes, and modes of power, in Pacific Canada, that have continued to reproduce themselves, even under the guise of decolonization, that continue to dominate ecological impacts. For example, there are a number of laws that suggest that GOERT's marginalization of aboriginals and First Nations is illegal and could, at the very least, jeopardize its funding. But after near 4 years and numerous pressures for authentic representation from and support to First Nations, the gulf between the so-called conservation biologists and the landscape ecologists, ethnographers and historians is greater than ever. While today's counter much of what London officially conceived for the colony, a new form of Empire in deed

continues – with some links back to the British Empire and the nineteenth century along with permutations the recombine historical processes in way never seen before.

I have inferred a solution, a form of mediation at least, between the supposedly postcolonial present and what persists of the colonial and neocolonial: landscape ecology studies combined with environmental histories. This liberal response, naive somewhat, places its hopes in policy changes based on greater knowledge of past aboriginal impacts. Such an approach would be entirely naive if it were not for the window opened by the final *Delgamuukw versus British Columbia* decisions. With more irrefutable knowledge, there will be more of a legal basis for eventual claims for joint management of some of the remaining landscapes with northern Garry oak ecosystems. But I am reminded of the blatant ignoring of aboriginal fields in the colonial period – when there was even more of a legal basis for respecting indigenous tenure. With all of the dictates from London and with all of the wrangling in Fort Victoria, those ownerships with their nuanced production and management systems were nearly completely extinguished. It would be rhetorical to argue that the biodiversity conservation strategies for northern Garry oak ecosystems, currently funded by the Government of Canada, represent a new, reinvented form of neo-colonialism. But *Empire* suggests that the opportunities to appropriate resources from aboriginal communities, that marked the shift from colonialism to neo-colonialism in British Columbia, can be replicated indefinitely (as long as those resources continue to exist). But if there is any basis to develop new approaches to the continued colonisation of aboriginal biological resources, it will be in the fertile cusps, the historicized ecotones, of landscape ecology and environmental history.

biography

Gordon Brent Ingram was born and raised in the Garry oak ecosystem area of south-eastern Vancouver Island. His dissertation for a Ph.D. in environmental planning (1989 University of California, Berkeley) focused on biodiversity conservation options on islands with rainforest. He constructed environmental histories and related institutional profiles for three islands under pressure for needs of traditional communities, logging, protected areas, and tourism: Gwaii Haanas of Haida Gwaii of British Columbia; Ferguson Island of the D'Entrecasteaux Islands of Papua New Guinea; and Siberut, Mentawai Islands, West Sumatra, Indonesia. His doctoral studies at Berkeley also included work on Garry oak ecosystems in California. Most recently he has been an Associate Professor of forest degradation and conservation in the Netherlands and a lecturer in the Restoration of Natural Systems Program of the University of Victoria, British Columbia.

references

Arnett, Chris. 1999. *The Terror of the Coast: Land alienation and colonial war on Vancouver Island and the Gulf Islands, 1849-1863.* Burnaby, British Columbia: Talonbooks.

Forman, R. T. T. and M. Godron. 1986. *Landscape Ecology*. Toronto: John Wiley.

Griffiths, Tom. 2002. How many trees make a forest? Cultural debates about vegetation change in Australia. *Australian Journal of Botany* 50 (4): 375 – 389.

Hardt, Michael and Antonio Negri. 2000. *Empire*. Cambridge, Massachusetts: Harvard University Press.

Harris, Cole. 1997. *The Resettlement of British Columbia: Essays on colonialism and geographical change*. Vancouver: UBC Press.

Harris, Cole. 2002. *Making Native Space: Colonialism, resistance, and reserves in British Columbia.* Vancouver: UBC Press.

Ingram, G. B. 1995A. Landscapes of (un)lawful chaos: Conflicts around temperate rain forest and biological diversity in Pacific Canada. *RECIEL: Review of European Community & International Environmental Law* 4(3): 242 - 249.

Ingram, G. B. 1995B. Conserving habitat and biological diversity: A study of obstacles on Gwaii Haanas, British Columbia. *Forest and Conservation History* (North Carolina) 39(2): 77 - 89.

Ingram, G. B. 1995. Reclaiming territory through conservation areas: Gwaii Haanas, Haida Gwaii, 1851-1993. UnderCurrents (Toronto) Politics of Natural Space issue: 42 - 48.

Ingram, G. B. 2000. The implications of landscape ecology for conserving the biological diversity of northern Garry oak, Quercus garryana, ecosystems. in *Workingpaper Landskabsøkologiske Skrifter. The Management of Biodiversity from a Landscape Ecological Perspective*. Roskilde University, Roskilde, Denmark. 135 - 176.

Ingram, G. B. 2002. Thinking like a dynamic mosaic: The relevance of landscape ecology to setting goals for biodiversity conservation & restoration for northern Garry oak ecosystems. Conference *Proceedings Conference: Restoring Garry Oak Ecosystems – Progress and Prognosis*, University of Victoria, April 2002, 96 – 108.

Krech, Shepard. 1999. *The Ecological Indian: Myth and History*. New York: W. W. Norton & Company.

Pellatt, M. G., R. J. Hebda and R. W. Mathewes. 2001. High-resolution Holocene vegetation history and climate from Hole 1934B, ODP leg 165S, Saanich Inlet, Canada. *Marine Geology* 174: 211 – 226.

Turner, N. J. 1975. *Food Plants of British Columbia Indians Part 1 / Coastal Peoples*. Victoria: British Columbia Provincial Museum.

White, R. 1999. Indian land use and environmental change Island County, Washington: A case study. In *Indians, Fire, and the Land in the Pacific Northwest*. Robert Boyd (ed.). , Corvallis, Oregon: Oregon State University Press. 34 – 49.

Williams, M. 1997. Ecology, imperialism and deforestation. in *Ecology and Empire: Environmental history of settler societies*. In T. Griffiths and L. Robin (eds.). Edinburgh: Edinburgh University Press. 169-184.

Notes

[1] Mount Tuam Ecological Reserve, Salt Spring Island, October 1976, photograph taken by author

[2] Canada and British Columbia have yet to fully codify a legal framework for their protection any way comparable with the USA's *Endangered Species Act*.

[3] For one discussion of the background to the Douglas Treaties, see the Union of British Columbia Indian Chiefs, n.d., The Douglas Reserve Policy, at the following site, http://www.ubcic.bc.ca/douglas.htm
with the following points:
"Between 1850 and 1854 Douglas made fourteen treaties with the Coast Salish natives in the immediate vicinity of Victoria, Fort Rupert and Nanaimo. Cash payments in the form of blankets were made for small portions of Vancouver Island, with reservation to the Indians of their village sites and enclosed fields. In the spring of 1850 Douglas concluded nine agreements covering Victoria, Metchosin and Sooke; in 1851, two at Fort Rupert; in 1852, two covering the Saanich peninsula; and in 1854, one at Nanaimo. The limited area covered by these treaties was due in large measure to Douglas's decision to conclude agreements only as pressures of settlement in various areas made treaties necessary. For instance, the Cowichans wanted during this period to sell their lands in the same way as they understood the Songhees to have done, but Douglas refused, on the grounds that settlement was not immediately moving into that region (Douglas to Barclay, 16 May, 1850, HBCA, A-11/72). As well, a scarcity of funds with which to purchase lands in the later period was a limiting factor on the concluding of treaties. It is clear, however, in the content of the Fort Victoria treaties, that Douglas and the Colonial Office shared the notion that the aboriginal race exercised some form of ownership over the land that needed to be extinguished by colonial power."

[4] Krech (1999) has a chapter on fire (101 – 122) that mentions some of the ecological impacts from burning for similar Garry oak ecosystems to the south, in Washington State and in Oregon, by communities with some cultural similarities to the Salish-speaking peoples around the Strait of Georgia (106, 116 – 117, 114, 120 - 121). But his framework (as on page 122) still embodies that now fully discredited dichotomy of ecological processes that are either 'natural' or 'Indian'. Today most ecosystems in North America can read as having signs of being formed and reformed, for at least the last 5,000 years, by aboriginal communities.

[5] This map is entitled *Biogeoclimatic Zones of British Columbia* and proposed by V. J. Krajina and was published by the BC Ecological Reserve Committee. There was no date on earlier editions though the indication of Robert Williams as Minister of Lands, Forests and Water Resources indicates publication as in the early years of the 1972 – 1975 provincial government.

[6] This photograph was taken by the author in 1979. This site is near Mt. Maxwell Provincial Park and Ecological Reserve, Salt Spring Island, and when this photograph was taken, in June 1979, was on private land. The area was acquired by Nature Trust in November 2001 and is now leased to BC Parks. Mr. Bill Ackerman report to Ms. Brenda Beckwith in 1999 that this mountain had been heavily burn by Cowichan people (which Mr. Ackerman stated was a quarter of his heritage) until the late nineteenth century.

[7] Brenda Beckwith has been working with Nancy Turner in the School of Environmental Studies of the University of Victoria (Brenda Beckwith, pers. comm. 2000 – 2003).

[8] George Heaton to William Young Colonial Secretary, June 16, 1860, Colonial correspondence (on file British Columbia Archives F748 / 249).

[9] Dallas Road, Victoria May 1980, photo by author. The main plants in this image are two species of camas bulb a key source of local sugar when baked in pits. This site is in a city park, Beacon Hill Park in the central part of the city of Victoria. This site was part of a well-documented food production landscape well into the late nineteenth century. This camas patch probably survived into the 1980s because after aboriginal burning was curtailed, people flicked cigarettes accidentally started fires. Since then, the area has become an off-leash area for dog owners and the remaining fields have been turned into tracts dominated by mud and non-native plants.

[10] Throughout much of the 1990s, the various phases of the court proceedings for *Delgamuukw versus British Columbia* dominated questions of aboriginal control of lands and biological resources in Western Canada. For some of the initial lists of the studies, particularly around the 1997 *Delgamuukw versus British Columbia* decision, that confirmed the basis for ongoing ecosystem management by aboriginals, see the following web sites:
a. complete set of documents:
http://www.legalcasedocs.com/120/243/661.html
b. summary of the decision
http://www.lexum.umontreal.ca/csc-scc/en/pub/1997/vol3/html/1997scr3_1010.html
c. a bibliography of the now scores of discussions around the decisions:
http://www.usask.ca/nativelaw/Delgamuukw.html

[11] So far, the Yale First Nation (for an area along the Fraser River) and the Sta:lo First Nation (for Sumas Mountain also near the Fraser) have been the only aboriginal governments to formally and *publicly* re-assert management prerogatives for the survival of Garry oak ecosystems on these sites. The Sta:lo First Nation made an overture to GOERT around Sumas Mountain though the status of its land claim for the area is unresolved. Other First Nations, based on Vancouver Island, may have unpublicized claims to Garry oak areas on the islands that are based on prior occupation, harvesting and management, but for a number of reasons have not made these assertions public.

[12] http://www.goert.ca/