Rethinking Precolonial Plant Cultivation on the Northwest Coast of North America*

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The indigenous peoples of the Northwest Coast of North America are widely believed to have been true “hunter-fisher-gatherers,” lacking plant cultivation of any kind. This depiction of the region’s indigenous inhabitants emerged within early colonial accounts and was perpetuated within the literatures of geography, anthropology, and archaeology. Still, there is ample evidence of plant cultivation available from archival, archaeological, and ethnographic sources. In particular, the peoples of coastal British Columbia created large gardens of edible estuarine plants, using sophisticated indigenous technologies. The oversight of these practices in written representations of the region reveals consistent patterns of bias, emanating from the agendas of colonial agents and early academics alike. In turn, this bias has undermined aboriginal traditions of cultivation and indigenous land claims. **Key Words:** estuaries, ethnographic representation, indigenous peoples, Northwest Coast, plant cultivation.

**Within the fields of geography, anthropology, and archaeology, there has been little debate as to whether the indigenous peoples of the Northwest Coast of North America cultivated plants prior to European contact. Almost uniformly, scholars in these fields have accepted that they did not. In fact, the presumed absence of plant cultivation among the indigenous peoples of this region, their large, sedentary villages of socially stratified and affluent foragers—stands out among prominent and enduring anomalies within North American anthropology, cultural ecology, and environmental history. They were, in the terms of Alfred Kroeber (1962, 61), “a wholly non-planting and non-breeding culture—perhaps the most elaborate such culture in the world.” They simply “did not rely heavily on plant foods” (Huelsbeck 1988, 166). Assessing this enigma, most authors have concluded that the annual harvest of vast salmon runs, caught with ease by aboriginal peoples in the bountiful rivers of the Pacific slope, eclipsed all other modes of subsistence—plant cultivation was simply unnecessary within this environmental context. Despite this long-standing view of Northwest Coast subsistence, a wide variety of evidence, largely overlooked by earlier generations of researchers, supports the assertion that the indigenous peoples of this region were indeed “cultivators.” Certainly, the use of fire for vegetation management, the tending of camas beds, and other forms of low-intensity vegetation management were widespread among these peoples and have been well documented by past researchers (Turner 1991, 1995; Deur and Turner 1999).**

Although overlooked, however, has been a more intensive practice of plant resource management, centering on the production and enhancement of estuarine root plots. These root plots, termed “gardens” by early observers and tribal consultants alike, were widespread on the coast of what is today British Columbia, in the traditional territories of the Kwakwaka’wakw (“Kwakiutl”), Nuu-chah-nulth (“Nootka”), and many other indigenous peoples of this region. Moreover, these Northwest Coast root gardens may be unequivocally designated as “plant cultivation,” as that term is now com-

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monly defined. Transplanting, weeding, and selective harvesting were all integral to the management of these gardens. Soils were actively and intentionally modified to enhance root output. Mounds or low terrace-like structures were constructed within individually owned root plots to demarcate boundaries and expand the cultivable portion of the estuarine shoreline. While some anthropologists recorded facets of the root cultivation traditions of Northwest Coast peoples intermittently for well over a century, these practices were very rarely reported within the anthropological literature.¹

The reasons for this omission provide insights into the means and motives that shape the construction of knowledge regarding aboriginal peoples and, as shall be demonstrated, provide a telling example of how academic representation can reconfigure the “ground truths” of indigenous societies. Representations of the Northwest Coast as a place without cultivation can be traced to eighteenth- and nineteenth-century discourses and reveal the condition of the social sciences and the colonial project at this time. No doubt Northwest Coast plant cultivation was technologically alien to eighteenth- and nineteenth-century European explorers and defied prevailing notions of what constituted “cultivation.” The journals of Captain James Cook (1967) and his crew, who visited Nootka Sound during Cook’s third voyage, provided an image of a seemingly nonagricultural people, uniformly “indolent” but blessed by a tremendous abundance of animal life. These journals, which also reported on the high value of Northwest Coast sea otter pelts in China, became the basis for subsequent exploration of the region, were widely read in Europe, and ostensibly shaped the view of indigenous peoples by all who followed in Cook’s wake.²

While the genesis of this label is largely a matter of intellectual history, it is clear that colonial (mis)representations of indigenous land use often have profound material consequences for indigenous peoples into the present, nominally postcolonial era. The prominence of the “nonagricultural” label, enshrined within and validated by scholarly orthodoxy, has taken on a life of its own. In the late nineteenth and early twentieth centuries, colonial authorities employed it as partial justification for the annulment of aboriginal title to lands along the entire coast of British Columbia. Today, aboriginal claims on formerly cultivated lands continue to be undermined by this persistent myth. As a challenge to both this academic orthodoxy and the policies that it has bolstered, this article provides an overdue reevaluation of Northwest Coast plant cultivation.

Contesting Cultivation

Increasingly, geographers have come to appreciate the problematic nature of past representations of plant cultivation and to assert that even well-established views of aboriginal subsistence cannot be accepted uncritically. Scholars of the late nineteenth and twentieth centuries equated cultivation with the familiar practices, crops, and geometric patterns that characterized the agricultural traditions of the West. And, too often, discussions of non-Western plant cultivation emanated from narrowly defined academic and colonial agendas. “Views of non-Western subsistence practices were rooted within a pervasive Western mythos, which held that the indigenous peoples of the colonial world used the land minimally, irrationally, and inefficiently; the colonial landscape thus represented tabula rasa, awaiting occupation and improvement to reach its full productive potential” (Deur forthcoming; see also Sluyter 1999).⁴ Thus, the unfamiliar anthropogenic plant communities found in Africa, tropical Asia, and the Americas were frequently dismissed as “primitive” and “nonagricultural” within past academic literatures, despite abundant historical and archaeological evidence that might suggest otherwise (Butzer 1990; Doolittle 1992, 2000). Turning a critical eye on the biases of past studies, many authors now assert that plant cultivation took multitudinous forms, often technologically sophisticated and
calorically efficient, yet significantly different from those known to the colonizing peoples of Europe (Wilken 1987; MacNeish 1992; Doolittle 2000).

Moreover, scholars have increasingly come to accept that foraging, hunting, low-intensity plant cultivation, and intensive agriculture—exclusive categories once used to label the subsistence practices of all human societies—were never apt reflections of the range of practices found in the world. Nor were these different modes of subsistence mutually exclusive. Thus, among the “hunter-gatherers” of the past, the development of low-intensity plant cultivation did not always eclipse efficient and pre-existing modes of subsistence (Griffen 1989; Sponsel 1989). Instead, the advent of plant cultivation often served to augment the outcomes of hunting and gathering, thereby contributing to the overall temporal stability and spatial concentration of food resources.

In order to account for the continuum of plant management practices found throughout the world, from the low-intensity tending of plants to the most intensive forms of agriculture, scholars required a vocabulary that was more inclusive and less tied to the intellectual prejudices of Europe (Ford 1985). Following the lead of Harlan (1975), many scholars now differentiate between plant “tending,” which involves the minor modification of environments to encourage the growth of naturally occurring plants in situ, and plant “cultivation,” which involves a more intensive pattern of environmental modification, characterized by the seeding or transplanting of propagules, the intentional fertilization or modification of soils, improvements of irrigation or drainage, and the clearing or “weeding” of competing plants. “Domestication,” the genetic modification of crops, is a likely outcome of long-term patterns of cultivation in which humans have selectively propagated and protected plants with anomalous and desirable traits (Harlan 1975; Ford 1985; Smith 1997). While all nomenclature presents potential ambiguities, these definitions have allowed the analysis and comparison of plant management practices from diverse traditions around the world.

Current definitions of plant cultivation share an emphasis upon the repeated and purposive modification of both plants and their environments as a means of quantitatively and qualitatively enhancing plant production. Thus, researchers have directed growing attention to the presence of “agroecosystems”—human-constructed, genetically simplified environments created to increase the output of valued plants—as diagnostic evidence of cultivation practices among aboriginal populations. Within the Americas, the human-constructed landforms used to enhance the cultivation potential of wetland environments—including raised, mounded, and drained fields—are among the most widely recognized agroecosystems. Yet this recognition is a recent phenomenon; the wetland cultivation practices of the Americas received little recognition prior to the 1970s, overlooked in part due to the insignificance of such agriculture within Europe (Siemens 1998). Within both arid and humid environments, wetland cultivation facilitated the stability and intensification of aboriginal food supplies and, in turn, fostered the growth of large, sedentary populations in coastal lowlands and other wetland edge environments (Wilken 1971, 1987; Turner 1974; Siemens 1983; Mathewson 1984; Sluyter 1994). Placed in seasonally flooded wetland environments, with annual augmentations of waterborne mineral and organic soils, these agricultural landforms were characterized by relatively high soil fertility and could sustain high yields over comparatively long periods of time (Denevan 1970; Denevan and Turner 1974; Mathewson 1985). As shall be discussed in the pages that follow, clear analogues to these practices were to be found in the estuarine cultivation practices of Northwest Coast peoples. In light of the re-evaluation of “cultivation” that has transpired in recent decades, as well as the counterintuitive absence of cultivation on the Northwest Coast, these analogues demand that we critically revisit the literatures on Northwest Coast subsistence.

Resource Intensification on the Northwest Coast

The peoples of the “nonagricultural” Northwest Coast are a source of persisting puzzles. With their large sedentary villages, hierarchical chiefdoms, elaborate ceremonial practices, and patterns of land and resource tenure, they do not neatly fit prevailing models of a “hunter-fisher-gatherer” society. Successive generations
of researchers have sought to explain why these traits, characteristic of agriculturalists, were found on the Northwest Coast: the superabundance of salmon eclipsed all other forms of subsistence; the region was isolated from the primary paths of American agricultural diffusion and the concept of cultivation eluded its inhabitants; the plants and habitats of the region were inadequate for cultivation; scheduling conflicts with the salmon harvest resulted in the rejection of introduced crops.\(^7\) None of these answers has provided a satisfactory explanation.

The archaeological record provides additional puzzles. Archaeological evidence regarding Northwest Coast “foragers” fits all of the preconditions for agricultural development posited by some of the most noted theorists on agricultural origins. The Northwest Coast was a land of settled hunter-gatherers, abundant wild food plants, and leisure-time opportunities for experimentation; few regions of the world seemed so well suited to the “sedentary fisherfolk” hypothesis, advanced by Sauer (1952) and adopted by such authors as Anderson (1969) and Moseley (1975), or the “affluent foragers” model as summarized by MacNeish (1992). Certainly, the evolution of settlement and subsistence patterns on this coast over the last several millennia has followed a sequence that seems so well suited to the “sedentary fisherfolk” hypothesis, advanced by Sauer (1952) and adopted by such authors as Anderson (1969) and Moseley (1975), or the “affluent foragers” model as summarized by MacNeish (1992).

The scale and significance of traditional tobacco cultivation was dwarfed, however, by a number of cultivation methods involving native food plants. Through a variety of methods, the indigenous peoples of the region were able to place large concentrations of food plants in close proximity to village sites and within the defensible control of individual households. The edible bulbs of camas (Camassia quamash and C. leichtlinii) were traded from their native ranges in the relatively arid interior Northwest to peoples dwelling in the temperate rainforests of the ocean coast (Gunther [1945] 1992; Gritzner 1994). Camas was intentionally or
unintentionally replanted within burned anthropogenic clearings in these forests, expanding the range of these coveted food plants in a manner similar to tobacco cultivation (Deur 1999). Often, plots of these transplanted camas bulbs were divided into parcels owned by individuals or households and were demarcated with shallow ditches, logs, or corner markers of wood or stone. Such plots were weeded of competing plants and were subject to selective harvesting practices that prevented depletion; somewhat less commonly, the soil of these plots was tilled with digging sticks and fertilized with detritus gathered along the strand (Babcock n.d.). Camas from these plots provided a dietary staple food for peoples of the southern Northwest Coast, though it was not truly native to much of this zone. Rather, its presence in this region of dense forests and leached soils was largely dependant upon human intervention—burning, selective harvesting, soil management—which allowed these plants to compete with native vegetation, receive adequate insolation, and draw nutrients from sufficiently fertile soils. As indigenous plant management practices collapsed in the wake of colonial resettlement, camas, like tobacco, rapidly disappeared from many portions of the Northwest Coast, largely overgrown by native forest vegetation (Deur 1999).

Methods similar to those used in camas management were applied to many other plants in the region. Transplanting and vegetative propagation has been mentioned in the region’s ethnographic record in reference to a number of plants with edible tubers or root segments, including the tiger lily (Lilium columbianum), “wild carrot” (Conioselinum pacificum), and wapato (Sagittaria latifolia) (Haeberlin and Gunther 1930, 21; Smith 1950; Suttles 1987; Compton 1993). As with camas, these plants all appear to have been subject to patterns of plot tenure, plot boundary marking, weeding, selective harvesting, and the tilling of plot soil. Most were starchy roots, the very plants that Sauer (1952) and other predicted would be the first targets of agricultural experimentation among sedentary fishing peoples with ready access to marine protein sources. A somewhat distinctive set of management practices were applied to berry plots, which were often enhanced through the burning of competing vegetation or dead woody growth, pruning and coppicing, and occasional (perhaps accidental) reseeding on cleared plots. As with camas, tobacco, and a number of starchy root vegetables, plots of edible berries were commonly owned by individuals and households and sometimes demarcated with wooden or stone markers (Turner 1991; Gottesfeld-Johnson 1994; Adam Dick, personal communication, 1999).

Estuarine Rhizome Cultivation

Clearly, all of the practices outlined above played an important role in allowing the peoples of the Northwest Coast to supply their large settled villages with abundant and predictable supplies of plant foods. Yet none of these practices was as important to the sustenance of certain tribes as the practice of estuarine rhizome cultivation. Peoples of this region maintained plots of edible native plants within the intertidal salt marsh, most importantly the Springbank clover (Trifolium wormskjoldii) and the Pacific silverweed (Potentilla anserina. ssp. pacifica). The Kwakwa’kwak’wakw, Nuu-chah-nulth, Nuxalk, Haida, and other Northwest Coast peoples produced what early explorers and anthropologists termed “gardens” of these plants in the intertidal zone. Boas (1921, 1934, n.d.) was among the few authors who provided detailed documentation of Northwest Coast gardens, on the basis of his ethnographic interviews with Kwakwa’kwak’wakw consultants. Garden plots containing both Potentilla and Trifolium occupied estuarine salt marshes where the mouths of rivers and streams met saltwater inlets, the zone to which both plants are native. Both produce a dense sod of thin, edible, starchy roots and rhizomes. The peoples of the Northwest Coast fashioned specialized digging tools for use in rhizome gardens: “They had a stick, called k’ellákw. It was yew wood . . . it was really sharp [on the tip] . . . I used to play with that—it’s hard because when you push it down you put all your weight on it when you’re breaking, softening that ground” (Adam Dick, personal communication, 1998). They also constructed specialized “digging houses” to shelter harvesters and store rhizomes alongside some large garden sites. Most gardens were divided into numerous family-owned subplots marked with shallow ditches, logs, or corner markers; in high-gradient tidal flats, garden plots were encircled by low rock walls. “Every
family [had] their gardens. They mark the boundary. You never cross over, never dig on someone else’s [garden]. Oh no, you’d never do that!” (Adam Dick, personal communication, 1999; see also Ford 1941, 51; Boas n.d., 166)

Among the precolonial peoples of the Northwest Coast, *Potentilla* and *Trifolium* rhizomes were of tremendous significance. Both rhizomes and rhizome gardens were mentioned frequently in tribal oral traditions (Boas 1908; McIlwraith 1948). Augmenting a diet that was rich in marine proteins, these plants were among their primary sources of dietary carbohydrates prior to the introduction of the potato in the early colonial period.\(^\text{13}\) Moreover, estuarine rhizomes were of tremendous importance within Northwest Coast economic and ceremonial life, creating strong incentives for enhanced production and surplus harvests. At ceremonial events, multiple crates of estuarine rhizomes changed hands, sometimes in trade for other foods as well as for household and ceremonial goods. Crates of rhizomes were delivered as part of the dowries in the marriages of hereditary elites. Indeed, the ethnographic record abounds with references to ceremonial feasts, regularly hosted by Northwest Coast chiefs, devoted primarily to the consumption of recently harvested *Potentilla* or *Trifolium* rhizomes. Drucker’s (1951, 62) Nuu-chah-nulth ethnographic consultants have reported identifying or edible plants were regularly weeded out of these gardens. Recessed storage pits were dug in the floor below the chief’s sitting area in some longhouses; rhizomes kept in these pits were sometimes stored in boxes of salt marsh soil (Boas 1921; Edwards 1979). Some tribes that lacked large garden sites undertook long-distance trading expeditions to acquire canoes-load of crates containing rhizomes (Turner and Kuhnlein 1982). “Our people used to plant enough to trade with the northern people,” reports Daisy Myanilth Sewid-Smith, a Kwakwaka’wakw elder; “the northern people [such as the Heiltsuk] would come and trade for them.” Clearly, these plants were a coveted resource.

For those tribes with access to suitable salt marsh sites, this high demand created both challenges and opportunities. Along much of the coast, these peoples labored to increase rhizome productivity and to maintain control over productive rhizome plots. They developed methods to enhance rhizome output, well suited to the distinctive biophysical properties of mid-latitude salt marshes. In the process, they became capable cultivators. Ethnographically documented rates of root vegetable consumption make it clear that this cultivation effectively increased natural levels of marsh productivity; the unmanaged tidal flats of today would not have met the human demands of the past. Historically documented rates of rhizome production were thus contingent upon human intervention. Over the last century, indigenous consultants from up and down the coast have consistently described the methods that their ancestors traditionally employed to achieve this. Plot delineation and demarcation, weeding and transplanting, selective harvesting and the enhancement of soils, the construction of “raised beds” with stone or wood impoundments: all were part of the traditional estuarine cultivation practices of Northwest Coast peoples.

Ethnographic accounts suggest that competing or inedible plants were regularly weeded out of rhizome plots, leaving only *Potentilla*, *Trifolium*, and other edible plants to reach maturity. Not only did this enhance rhizome output by reducing competition for water, sunlight, and nutrients, but it also facilitated the expansion of edible plants into vegetated portions of the estuary where these plants could not have successfully become established otherwise (Forde 1934, 80; Boas n.d.). Kwakwaka’wakw consultants report that their ancestors often traveled to their rhizome gardens solely for the purpose of weeding: “We *siixa* it; we called it *‘siixa,*” when you pull all the weeds out of there. They worked on it all day. They wouldn’t let anything, one little grass on there. They’d go down there, I don’t know how many times a year, just to keep that [garden] clean.” These peoples did so, recognizing that “if there’s lots of [weeds], it doesn’t grow that good” (Adam Dick, personal communication, 1998). Nuu-chah-nulth, Nuxalk, and Haida ethnographic consultants have reported identical practices (Edwards 1979; Turner et al. 1983;

Another common method of plot enhancement involved the selective harvesting and replanting of propagules. Some Nuu-chah-nulth elders recall that it was essential that harvesters leave the ends of *Potentilla* and *Trifolium* rhizomes behind to grow so that there would always be an adequate supply of plants in their garden plots (Turner and Efrat 1982; Bouchard and Kennedy 1990, 23). The former Nuu-chah-nulth garden site at Clayoquot Sound called *sisbnpika* (literally, “cultivated”) is so called because people used to maintain *Potentilla* at the site in this manner. Likewise, Kwakwaka'wakw elders suggest that their ancestors always intentionally left parts of the roots behind: “You don’t take those little pieces [of root]. You leave them here. They come back. You put them back in the ground ’cause that’s going to go to be your [Trifolium] and [Potentilla] next year” (Adam Dick, personal communication, 1998).

Moreover, some ethnographic sources indicate that rhizomes were gathered from specimens of *Potentilla*, *Trifolium*, and other edible estuarine plant species with desirable characteristics, such as atypical size, and “placed back in the ground so they would grow the following year” (Turner and Efrat 1982, 68, 73). Transplanted rhizomes were reportedly gathered both inside existing plots, in order to enhance the output of desirable characteristics from existing populations, and from naturally occurring plants from remote sites. Contemporary elders attest that transplanting was a means of improving the output of rhizomes by improving both the quality of plants in their gardens and the quantity of plants that were available locally. Occasionally, rhizomes appear to have been transplanted anew into tidal areas that lacked natural populations of these plants, in order to make these foods more accessible to sedentary village sites. Accounts of transplanting have been gathered from Nuu-chah-nulth, Kwakwaka’wakw, and Nuxalk consultants (Edwards 1979; Turner et al. 1983; Compton 1993; Daisy Sewid-Smith, personal communication, 1998). References to these practices also emerge in land claims testimony, such as the Kwakwaka’wakw testimony to the McKenna-McBride Commission (1913–16), which mentioned several gardens that their distant “fore-fathers [had] planted.” Though these plants generally were grown together in polycultural plots, contemporary elders suggest that, over time, the combined practice of weeding and in situ transplanting sometimes resulted in the production of contiguous monocultural plots, each containing only *Potentilla*, *Trifolium*, or *Fritillaria*.

While the direct manipulation of salt marsh flora was integral to traditional estuarine gardening, soil management was also an essential—and relatively undocumented—component of this practice. Within deltaic environments and other low-gradient tidal flats, cultivators broke the sod and turned the soil regularly with digging sticks to keep it aerated and porous. If the plants were to grow well and develop large roots “you’ve got to keep that earth soft . . . soften it up!” (Adam Dick, personal communication, 1999). Estuarine detritus, rich in nutrients from marine, estuarine, and terrestrial sources, was deposited in these flats along the high-tide line during winter storms and spring freshets. This material was churned into or mounded onto individual plots; this “fed the garden,” as some contemporary consultants suggest.

In relatively high-gradient estuaries or rocky, high-energy shorelines, however, soil was usually subject to higher degrees of modification. Along much of the Northwest Coast, with its sheer glacial topography, patches of level porous soil represented rare resources. Boas’s (1934, n.d.) accounts of garden construction appear to be based primarily on descriptions of a medium-gradient estuarine environment on the Nimpkish River estuary, which was constructed in a manner typical of higher-gradient shorelines. Boas suggested that garden beds were initially created by the removal of rocks and debris down to a level rock surface. In these environments, the Nuu-chah-nulth, Kwakwaka’wakw, Haida, and other peoples piled rocks along the boundaries of garden plots and sometimes lined plots with split boards, placed on edge and held between stakes inserted into the ground (Bouchard and Kennedy 1990; Newcombe n.d.). Annual accumulations of detritus appear to have served as the medium within these cleared enclosures; detrital soils were churned and mounded within these enclosures in the same manner described for low-gradient estuaries, with similar.
results. Soil could thus be accumulated and plants grown where neither had been present before. Accordingly, the Kwakwaka’wakw term for these gardens is ts’akis, a term which can be most accurately translated as “place of human-manufactured soil” (Boas 1947). Likewise, the Nuu-chah-nulth have rockwork-encircled rhizome grounds named ts’akis, “place with soil.” As one contemporary Kwakwaka’wakw consultant reports, “It’s called ts’akis because you made that soil. . . it’s yours!” Of course, considerably more labor was required to build and maintain these high-gradient marsh gardens than was needed to maintain gardens at low-gradient sites lacking stone or wood abutments. When asked why their ancestors opted to expend the labor required to build and maintain these high-gradient marsh gardens than was needed to maintain gardens at low-gradient sites lacking stone or wood abutments. When asked why their ancestors opted to expend the labor required to build rockworks and other garden features in high-gradient sites, contemporary Kwakwaka’wakw consultants observe that “you have to have something like that to make flat ground.” In the absence of large deltaic rhizome grounds, demands on the limited rhizome supply created incentives to innovate and to invest time and resources into construction projects. “It depends on the land. How much land there was.” Despite relatively low labor-to-output ratios, many tribes seem to have been compelled to construct their own planting media (quotes in this paragraph from Daisy Sewid-Smith, personal communication, 1998; Adam Dick, personal communication, 1999).

Yet the mounding of soils and the construction of abutments had additional benefits beyond the production of productive patches of “human manufactured soil.” Among the intertidal vascular plants of the Pacific coast, Potentilla and Trifolium have unusually narrow ranges of distribution within the tidal column. In undisturbed estuarine environments, these two species can only grow in a narrow band, within the highest elevations of the marsh, due primarily to their osmotic intolerance for regular saltwater inundation (Jefferson 1973). By creating garden mounds, abutments, and other features, the peoples of this coast elevated the lower elevation zones of the salt marsh on a level backfill surface. By doing so, they allowed the narrow zone of natural Potentilla and Trifolium habitat to expand seaward and raised the position of the planting surface relative to the tidal column, cumulatively allowing the dramatic expansion of the cultivable surface. With their characteristic placement and design, these gardens were able to exploit the peculiar properties of a narrow band of the estuary where the “energy subsidy” from outside sources is unusually high, while the cumulative stresses on halophytic plants are relatively low (Odum 1974; Eilers 1975).

With the technologies outlined here, Northwest Coast peoples were able to harness the tremendous biotic output of the midlatitude estuarine salt marsh, one of the world’s most productive terrestrial ecosystems (Thom 1987). While estuarine cultivation is a practice with few parallels, this was not a wholly novel agricultural practice. These gardens, with their mounded detrital soils and retaining structures, functioned much like the shallow terraces or raised garden beds characteristic of aboriginal cultivation in the Americas, Oceania, and elsewhere. While Northwest Coast gardens utilized estuarine, rather than alluvial or lacustrine, carbon, they functioned in most respects like these other wetland gardens and similarly served to concentrate productive plants near large, sedentary populations. With abundant detritus from upstream and estuarine sources being churned into garden plots annually, the nutrient composition of the “human manufactured soils” of the Northwest Coast was notably conducive to rapid plant growth. Cumulatively, these technologies allowed the peoples of the Northwest Coast to make the most of the estuarine ecologies in their midst. Through subtle modifications of their environment, they could locate predictable and productive concentrations of starchy root foods conveniently within their territories and adjacent to their villages. They were able to produce a dietary staple in a manner that was arguably “sustainable.” Clearly, the labor that these peoples expended in garden construction and maintenance was justified by this outcome.

Finally, as mentioned previously, all cultivated patches within the estuary appear to have been subject to some form of ownership. Patterns of land tenure are most easily reconstructed for the central coast, where clan or village chiefs owned each garden site, and family subunits of these clans or villages could own individual plots within the garden. Contemporary elders explain that, under the traditional system of tenure, owners of rhizome gardens were very possessive of their holdings, as indi-
individuals, families, and clans invested a great deal of labor in their gardens. Harvesting rhizomes in a chief’s garden or a family’s subplot without first securing permission was a grave offense, punishable by violent reprisals: as Kwakwaka’wakw elder Charles Nowell Owadi reported to Ford (1941, 51), “In the olden days... if one woman gets in another’s [rhizome garden], they fight over it.” Boas (1910, 187, 383; 1921, 1345–48) noted in his work the existence of similar traditions. Garden sites may have even been guarded against rhizome theft. Nuu-chah-nulth consultants related to Turner and colleagues (1983, 120) a story of a chief who had several slaves guard a particularly productive garden from unauthorized harvests.16 Certainly, the demand for these rhizomes sometimes exceeded the readily foraged supply. Patterns of estuarine garden plot tenure have been reported among almost every ethnolinguistic group in the region, including the Kwakwaka’wakw (Boas 1934; Deur 1999, 2000), Nuu-chah-nulth (Sapir 1913–14; Sapir and Swadesh 1939; Drucker n.d.), Nuxalk (Edwards 1979; Compton 1993; N. Turner, personal communication, 1999), Tsimshian (Darling 1955; Compton 1993), Haida (Blackman 1990; N. Turner, personal communication, 1998; Newcombe n.d., 46/18), Tlingit (Oberg 1973), and others.

**Ethnographic Representation, Territorial Representation**

Much (though certainly not all) of the evidence presented here was known to early writers, including Boas, who was the first anthropologist to bring Northwest Coast peoples to the attention of the Western world. In light of these facts, it is puzzling that scholars have entirely dismissed the presence of “cultivation” on the Northwest Coast. As suggested, the genesis of the truism regarding Northwest Coast cultivation can be traced back to the journals of Captain Cook. After a few weeks spent in the summer season, when cultivation tasks are few, seldom inquiring into women’s work, and staying far from the nearest gardens, Cook departed the region with skewed impressions: the land was a place of Edenic abundance. Its people had never been wrested from their inolent aboriginal simplicity (Clayton 1999).

Still, beginning with the earliest explorers’ accounts of Northwest Coast peoples, we see suggestive documentary evidence of both the presence of estuarine gardens and the etiology of their relative “invisibility” to the European eye. In September of 1792, Archibald Menzies, botanist for the George Vancouver expeditions, noted a number of Nuu-chah-nulth women collecting rhizomes. Significantly, this was one of the first European visits during rhizome harvest season. At this time, Menzies (1923, 116) noted a number of Females busily occupied in digging up a part of the Meadow close to us with Sticks, with as much care and assiduity as if it had been a Potato field, in search of a small creeping root... of a new species of Trifolium which they always dig up at this time of year for food... Wherever this Trifolium abounds the ground is regularly turned over in quest of its Roots every year. Clearly, Menzies and his European peers were mistaken when assuming that these root grounds were wholly natural features. Eurocentric notions of cultivation shaped the documentation of ethnographic evidence; lacking rectilinear plantings or a monoculture of familiar domesticates, Northwest Coast gardens were overlooked or summarily dismissed. In this light, it is telling that tobacco, the only Northwest Coast cultivar that was familiar to the peoples of Europe, is still commonly described as the only evidence of cultivation in the region (Harris 1997, 219).17 While the methods of tobacco cultivation differed little from other cultivation methods discussed here, and indeed were less intensive than rhizome gardening, the ethnographic literature generally depicted tobacco cultivation as wholly anomalous (Turner and Taylor 1972).

Abruptly, in the wake of exploration, European resettlement transformed the lands and peoples of the Northwest Coast. Introduced diseases arrived in wave after wave, reducing native populations by 90 percent or more in the first century of contact. Demographic pressures on estuarine resources plummeted, survivors regrouped in multitribal villages, and entire territories were largely depopulated. Potatoes, introduced early to the inhabitants of the region, quickly became a valued trade good, as the sea otter was extirpated from much of its original range and trade in its pelts ceased. Promoted as a “civilizing influence” by early mis-
sionaries, potato cultivation quickly eclipsed rhizome cultivation, as families planted potatoes in the middens and house pits of villages decimated by influenza and smallpox (Suttles 1987; Fisher 1992). Many gardens were abandoned, and their retaining structures quickly torn apart by the turbulence of the intertidal zone. Others were reoccupied by white settlers seeking grazing land for cattle or level land for development. “They covered the gardens that the old people used to have . . . it was all gardens all over that field there and they put a dike around it. They took the whole flat” (Daisy Sewid-Smith, personal communication, 1998). Quickly, the physical traces of cultivation eroded and disappeared.

You can’t see [the garden plots] anymore. It’s all overgrown with tall grasses, and all that . . . see, it’s never been looked after . . . The last time I was there, I took a funeral party up there, and I told my son “Let’s stop by there where we used to [have our gardens].” And there’s nothing there. You can’t even see it. You don’t see them anymore, ’cause I guess it’s just like any other garden. If it’s not looked after it’s overgrown. (Adam Dick, personal communication, 1998)

The retreating physical imprint of cultivation only served to reinforce arriving settlers’ preconceptions of this land: it was largely unoccupied wilderness, underutilized by its original inhabitants, awaiting reoccupation (Harris 1997; Sluyter 1999). There was little left on the landscape to refute the “myth of emptiness” on which the colonial project had become contingent (Blaut 1993).

While explorers and settlers had initiated and perpetuated the region’s “noncultivating” designation, Boas was largely responsible for institutionalizing the label within academic discourse. Ironically, Boas was aware of many of the cultivation practices described here, but chose to reaffirm rather than to dispute prevailing views of Northwest Coast subsistence (Blaut 1993).

More ironically still, his claims regarding the absence of cultivation were compatible with his overall project, driven by his sympathies with the political left and his desire to celebrate the accomplishments of the non-Western world. Boas was a man of many contradictions. A student of physics and physical geography, he brought the chilly rigor of European natural science to illuminate the cultural and technological sophistication of aboriginal peoples, the Kwakwaka’wakw in particular. Toward this end, he compiled volumes of ethnographic data in an effort to falsify the prevalent theories of his contemporaries—environmental determinists, eugenically minded racial determinists, and advocates of unilinear and ethnocentric models of cultural evolution. As Melville Herskovitz (1953, 112), a student of Boas, noted, “[A]s a Nineteenth Century liberal he rejected, in principle, the colonial system. However, as a Nineteenth Century scholar with a European orientation, he tended to think in [European] terms.” These contradictions gave Boas’s scholarship its characteristic flavor, shaping the agendas of academic anthropologists and geographers for generations to come, but also skewed his representations of Northwest Coast subsistence.

In Boas’s view, Northwest Coast cultivation practices were ambiguous; these peoples occupied the gray categorical spaces between the designations “hunter-gatherer” and “agriculturalist.” Today, these categories are widely viewed with suspicion, concealing as much as they reveal (Smith 1997). Yet Boas did not call these categories into question: while dismissing much of the prevailing Western mythos surrounding indigenous minorities, he remained uncritical of the most fundamental categories used by the West to order the world (Foucault 1970). His theoretical program disassembled the explicit intellectual manifestations of Western ethnocentrism while leaving the implicit manifestations largely unexamined. This was only one source of dissonance between Boas’s representations and the “ground truth” of the Northwest Coast. The writings of Boas and his students were based almost exclusively on the post hoc analysis of oral literatures provided by male elites and centered on the general themes of ceremony and myth (Ray 1989). Field visits to subsistence sites and interviews with women and lower-status males—the primary cultivators of estuarine gardens—were extremely rare.

If Boas’s misrepresentation of Northwest Coast subsistence is to be attributed to any one factor, perhaps, ironically, it should be attributed to the zealous promotion of his progressive political and theoretical agenda. As indicated, Boas was deeply critical of any deterministic model of cultural progression. Accordingly, his entire ethnographic project on the Northwest Coast could be viewed as a prolonged effort to
falsify nineteenth-century academic dogma regarding the causes of cultural development (Lakatos and Musgrave 1970). Exceptional ethnographic cases provided the fuel for Boas’s theoretical program. The “noncultivating” Northwest Coast, therefore, was ideally suited to his needs (Harris 1968). Thus, as his primary challenge to the environmental determinism of Ratzel and his students, including Ellen Semple, Boas turned to the Northwest Coast example. Comparing the region to coastal Norway, he (1930, 266) asserted that “the same environment will influence culture in diverse ways” and that “the most fertile soil will not create agriculture.” “Contact with the rest of Europe was sufficient to teach the Norwegians the tilling of the soil. The Northwest Coast of America was not so favored” (Boas 1966, 23).

Boas also used the exceptional case of the noncultivating Northwest Coast on other academic fronts. Early in his career, unilinear evolutionary theories of human cultural development, shaped in no small part by the ideas of Lewis Henry Morgan (1877) and E. B. Tylor (1871), dominated the field of anthropology and informed the colonial project. In the view of Boas’s contemporaries, agriculture was a precondition for the development of large permanent settlements, hierarchical social structures, and ceremonial complexity, no matter the cultural context, in human societies’ progression from savagery to an essentially Northern European model of civilization. The Northwest Coast, with its large villages of socially stratified hunter-gatherers, provided Boas and his students with one of their most striking and widely publicized exceptions to this evolutionary metanarrative. The supposed “hunter-gatherers” of the Northwest Coast defied its rules; unlike the crude Western stereotypes of Tylor and Morgan, Northwest Coast peoples were obsessed with “the desire to obtain social prominence by the display of wealth,” “enjoy seasons of rest during which they live on stored provisions,” and “have developed a complex art and a social and ceremonial life full of interest to themselves” (Boas 1928, 154, 218).

In the wake of Boas’s work, his students—Margaret Mead, Ruth Benedict, Robert Lowie, and Alfred Kroeber among them—became the preeminent figures of American anthropology. In turn, a number of geographers, notably Carl Sauer and his students, became closely affiliated with the Boasian school, largely through connections at Berkeley (Speth 1999). Together, geographers and anthropologists adopted the view of the Northwest Coast as a place devoid of cultivation on the basis of Boas’s writings, and broadcast this representation of aboriginal subsistence broadly within the academic literatures of both fields. Thus, while Boasian anthropologists and geographers labored to dispel one set of European myths about the indigenous peoples of the Americas, they ultimately assisted in the construction of others.

Colonizing Northwestern Images, Colonizing Northwestern Territories

On its surface, the categorization of the Northwest Coast peoples as “noncultivating” was a benign semantic exercise, carried out by Western explorers and scholars in order to make an unfamiliar place intelligible. Still, these subtle acts of categorization had profound consequences for the lives of aboriginal peoples and the future apportionment and use of the Northwestern landscape. Rooted in the early accounts of explorers such as Cook, this label gained legitimacy through its repetition in the works of Boas and other anthropologists of the nineteenth century. “Of agriculture they are quite ignorant,” anthropological texts asserted; “[t]hey have no aboriginal plant which they cultivate” (Brown 1873, 50). As the fledgling field of anthropology became established, the image of a noncultivating Northwest Coast was widely popularized in the British Empire and the United States, primarily through Boas’s writings on Northwest Coast cultures. Simultaneously, the lands of the Northwest Coast, including British Columbia, were being rapidly reapportioned to foster European resettlement. Increasingly, colonial authorities invoked the “noncultivating” designation to rationalize the dispossession of tribal lands, including estuarine gardens, that had been subject to countless generations of indigenous tenure and management.

At the turn of the twentieth century, colonial authorities eagerly sought to define Western Canada’s Indian reserve system. Land disputes and unresolved aboriginal claims of title had slowed the pace of reoccupation in some areas
of British Columbia and was perceived as a potential threat to the establishment of the fledgling frontier economy. With unabashed territorial aspirations, many questioned—on the basis of both conventional wisdom and anthropological data—whether the native peoples of the coast required land of any kind beyond their village sites in order to subsist and survive. Even the Indian agents, the designated representatives of aboriginal interests, provided public challenges to indigenous land claims. The Indians had never needed land to survive prehistorically, noted Kwagiulth Indian Agent William Halliday, and there was no reason to assume that they would need it now. Invoking the anthropological literature on the matter of traditional subsistence, Halliday (1910, 236–38) indicated that “it will take more than one generation to make agriculturalists” out of these primitive peoples—clearly, their traditional diet consisted almost exclusively of fish, and the “waters of the coast teem with fish.”

The McKenna-McBride Royal Commission was formed to bring closure to the Indian land question during the early twentieth century. It solicited indigenous land claims throughout British Columbia and was responsible for making legally binding judgments on their merits. The pattern of Indian reserve lands in contemporary British Columbia is, in many respects, a relict of the McKenna-McBride period and the agendas that shaped these hearings. Despite the many disruptions to traditional estuarine gardening brought on by the demographic and dietary changes of the colonial period, many gardens persisted and were still maintained and harvested. This was particularly true on the more remote sections of the coast, where diets remained largely aboriginal. Thus, several tribes on this coast made claims on estuarine garden sites during the McKenna-McBride period and the agendas that shaped these hearings. Despite the many disruptions to traditional estuarine gardening brought on by the demographic and dietary changes of the colonial period, many gardens persisted and were still maintained and harvested. This was particularly true on the more remote sections of the coast, where diets remained largely aboriginal. Thus, several tribes on this coast made claims on estuarine garden sites during the McKenna-McBride hearings. The Knight Inlet Kwakwaka’wakw, represented by Chief Humseet, testified that they continued to maintain several rhizome gardens that Humseet’s “forefathers planted” on the central mainland coast of British Columbia (McKenna-McBride Royal Commission 1913–16, 188). The Kwakwaka’wakw alone claimed over twenty-five garden sites through this process.

When presented with multiple claims for “garden lands” from a purportedly nonagricultural people, the McKenna-McBride Commission ultimately interpreted these claims as references to “proposed” or “potential” uses rather than “existing” uses of the land. The commission viewed these claims as a speculative land rush, driven by enterprising Indians hoping to acquire excess land. Claims on estuarine garden sites were summarily denied. Invoking the Northwest Coast anthropological literature, the final findings of McKenna-McBride explained that access to the sea was necessary to the survival of the peoples of the coast, but resource lands were not “reasonably required” (1916; quoted in Galois 1994, 74). The Crown ultimately authorized a diffuse pattern of small reserves encompassing occupied village sites and little else (Wagner 1972; Tennant 1990; Galois 1994). “They didn’t do this to the eastern tribes . . . they said that we didn’t know how to take care of the land, that we didn’t plant crops like those eastern tribes and so they could take all of our land” (Daisy Sewid-Smith, personal communication, 1999). The Crown acquired all garden sites, even those that were still being actively maintained. In turn, many of these lands were sold or leased for agricultural development or for the construction of cannery or logging infrastructure. By the end of the twentieth century, traditional rhizome gardening had been almost entirely eradicated, persisting only in the memories of a handful of elderly men and women who had learned about the gardens from the elders of their youth.

Ultimately, the explorers, anthropologists, geographers, and other writers who dismissed Northwest Coast plant management practices as being somehow inferior to true “cultivation” were mistaken. Theirs was not an objective “view from nowhere.” Their claims were made without an appreciation of the sophistication of Northwest Coast plant management methods specifically and of non-Western systems of cultivation generally. Yet the taxonomic rituals of the European world made distinct physical traces on the ground and had unintended effects upon the lives of aboriginal people. Boasian scholars provided the white world with a coherent ethnographic narrative that rendered the peoples of the Northwest Coast intelligible, but not without doing some violence to their subject. In retrospect, this violence seems unintentional, an unavoidable byproduct of the pro-
found situatedness of these writers’ scholarship. Yet, through the textual designation of indigenous societies as “noncultivating,” they lent credibility to colonial policies that called for the elimination of intermediate categories, those parts of the world that simply did not “fit” the European worldview. In the lands of the Northwest Coast and in the lives of Northwest Coast peoples, the European worldview was made manifest.

There is little doubt that the peoples of the Northwest Coast were “cultivating” plants, as that term is now commonly defined. They seeded and transplanted propagules, intentionally enhanced garden soils, altered the hydrology of garden sites, and weeded out competing plants (Harlan 1975, 1995). Using these criteria, scholars have recently revisited such places as Amazonia, California, and portions of the American Southwest—places once designated as nonagricultural—and found compelling evidence of “cultivation” or “agriculture” that is now widely accepted within the contemporary literature (Blackburn and Anderson 1994). The time is upon us to direct this revisionary critique to the Northwestern corner of the North American continent. Indisputably, by the criteria outlined here, the peoples of this region were cultivators. The misdiagnosis of their traditional subsistence has had broad and unanticipated consequences. We must, therefore, turn a critical eye both to the conventional scholarly wisdom regarding the absence of cultivation on the Northwest Coast and to the land policies that have been fostered by this scholarly truism.

Notes

1 As will be discussed later, anthropologist Franz Boas (see, e.g., 1921, 1934) was the first academic researcher to document these gardens. Primarily on the basis of secondary references to Boas, the existence of these gardens have been mentioned by regional specialists more often than not affiliated with anthropology’s cognate fields instead of anthropology itself, including ethnobotanist Nancy Turner (1995) and archaeologists Dana Lepofsky and Bryan Hayden. A handful of geographers have uncovered and reported secondary and tertiary references to these practices found in published accounts of Northwest Coast ethnography; see Butzer (1990) and Forde (1934). Most recently, Doolittle (2000) has reported references to these practices in his monumental work on pre-Columbian aboriginal cultivation in North America, following mutually beneficial conversations with this author. Only in the dissertation research reported here has a researcher returned to the Northwest Coast to investigate these practices on the basis of empirical observations of the peoples and places associated with traditional cultivation practices.

2 Cook and his crew noted the consumption of abundant roots, of the sort grown in estuarine gardens, by the inhabitants of Nootka Sound, but did not mention making inquiries into their origins. The site visited by Cook, at Yuquot on the mouth of Nootka Sound, is tens of kilometers distant from the nearest large garden site documented in the course of this research.

3 Examples may be found in literatures of diverse origins and antiquities. See, for example, C. Harris (1997, 219), Netting (1986, 27–40), D. Harris (1977, 218–20), M. Harris (1968), Sauer (1936, 1952), Kroeber (1939), Linton (1936), Lowie (1920), and Spinden (1917). This pervasive view of the precolonial landscape has been discussed using such terms as “the myth of emptiness” (Blaut 1993) and “the pristine myth” (Denevan 1992).

4 Important reference points within this critique include Smith (1997), Harlan (1975, 1995), MacNeish (1992), papers in Cowan and Watson (1992), and Sahlins (1972).

5 Mathewson (1985) has noted that these agroecosystems tend to be “physiomimetic” in New World agriculture, in that they mimic or enhance the biophysical variables that foster plant growth under natural conditions.

6 See, for example, D. Harris (1977), M. Harris (1968), Piddocke (1965), Service (1963, 208–9), Vayda (1961), Sahlins and Service (1960, 77–80), and Sauer (1952, 55).

7 Much evidence suggests that village populations may have actually been larger prior to European contact. Introduced diseases arrived on this coast indirectly through trade networks prior to direct European contact, and the villages visited by the earliest explorers often appear to have been mere remnants of much larger population centers. See, e.g., Harris (1997).

8 The gathering and propagation of camas seeds also receives occasional mention in the regional ethnographic literatures (e.g., Stern 1934, 42–43).

9 Remnants of these features can still be found today in archaeological reconnaissance surveys, but have largely been eliminated by a century or more of disturbance in these turbulent environments. See Deur (2000).

10 Many other examples of low-intensity plant cultivation can be found in the region’s ethnographic literature. On this point, see Deur and Turner (forthcoming).

11 Other edible estuarine plants commonly grown in these gardens included the Nootka lupine (Lupinus nootkatensis) and the riceroot lily (Fritillaria camschatcensis).

12 The nutritional value of these rhizomes exceeds...
that of the potato, which replaced these rhizomes in the Northwest Coast during the colonial period. On the comparative nutritional values of Potentilla, Trifolium, and potato, see Kuhnlein, Turner, and Kluckner (1982).

The author’s reconnaissance archaeological surveys identified remnants of such rock features at some ethnographically documented rhizome garden sites (Deur 2000). Most are poorly preserved, due to a number of human and natural disturbances in the intertidal zone. Remnant garden rockworks appear as complex, subdivided plots of the sort mapped by Boas (1934), but also appear as singular rectangular or oval enclosures or crescent-shaped rock terraces. As high salt-marsh features, all are situated meters above the elevation of the stone fish traps for which they have commonly been mistaken in past archaeological surveys. Well-preserved specimens are often abutted on one or more sides by poorly consolidated soils, rich in organics. Deur (2000) excavated one ethnographically documented Nuu-chah-nulth garden with a rock retaining wall, ts’isakis on Clayoquot Sound, Vancouver Island. Oxidizable carbon ratio dating indicated that this garden was constructed 200 to 300 years prior to first European contact and was abandoned during the early colonial period.

Unsystematic sampling of estuarine garden soils by the author indicates that these soils exhibit a nutrient composition much higher in nitrogen, phosphorous, potassium, and trace elements such as calcium than are unmodified marsh soils at rooting depth.

These slaves were also responsible for harvesting rhizomes at this garden site. The significance of slave labor in traditional rhizome harvesting remains unclear.

Though mentioned by the earliest European explorers of the region, even tobacco cultivation was widely attributed to the instruction and “considerable friendship” of yet earlier European explorers, though the precontact antiquity of tobacco cultivation is no longer in dispute (Douglas 1790, 369). Here, as in many other cases around the world, diffusionist reasoning betrayed colonial presuppositions and a deeply ingrained ethnocentric bias in written accounts of indigenous land use (Blaut 1993).

He recorded evidence of garden construction in several volumes (e.g., 1909, 1921, 1934) and consistently depicted the practice as a precontact phenomenon.

While Ray (1989) and others have suggested that Boas’ primary consultants were primarily members of the elite, chiefly caste, contemporary interviewees suggest that these consultants were actually the nouveau riche of the Northwest Coast, seeking money and legitimation from the white world. True hereditary elites reportedly resisted sharing cultural information with anthropologists. Information on ceremonies and legends, in particular, were considered proprietary. Opinions vary on the extent to which this bias skewed representations of Northwest Coast peoples.

This pronouncement is particularly significant in light of the fact that Halliday’s extended family took a land claim on the tidal flats of Kingcome Inlet. The land they acquired included one of the largest and best-documented estuarine garden areas on this part of the coast. The land was promptly fenced off, and cattle were barged to the site to graze on the estuarine meadows. The residents of the adjacent village of Gway’i note that this episode precipitated one of the most intense periods of interethnic hostility of the entire colonial period.

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