REPORT

Linnaeus' study of Swedish swidden cultivation: Pioneering ethnographic work on the 'economy of nature'

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Abstract Carl Linnaeus' work on the 'economy of nature' was a major early development in what became the modern field of ecology. This analysis suggests that a key subject of this work that has been ignored or misunderstood for 250 years is the rural livelihoods, especially swidden (or slash-and-burn) agriculture, which Linnaeus studied during his expeditions through rural Sweden. Rereading his reports in the light of modern work on swiddens, political ecology, and the history of science affords a new appreciation of Linnaeus' insights into traditional systems of resource exploitation. The logic of nutrient cycling in swidden agriculture and its utilization of natural dynamics to serve human ends exemplify the principles of the 'economy of nature', and gave Linnaeus a philosophical basis for understanding and defending this system of agriculture as well as other rural resource use systems in Sweden. This analysis sheds new light on Linnaeus' ethnographic work, his view of folk environmental knowledge, and his often derided identification with Sweden's ethnic peoples.

Keywords Linnaeus · Economy of nature · Swidden agriculture · Slash-and-burn agriculture · Lapp/Saami · Sweden

INTRODUCTION

The 'Economy of Nature'

Carolus Linnaeus, one of the foremost scholars and natural historians of the eighteenth century, is best known for laying the foundation of modern biological nomenclature and systematics. He is much less well-known for his work on "*Oeconomia naturae*," the economy of nature (1775b),

which was a major early development in what became the modern field of ecology. This analysis suggests that in Linnaeus' development of his ideas on nature's economy, a key subject that has been ignored or misunderstood for 250 years is his study of rural peoples and livelihood systems in Sweden, especially swidden (or slash-and-burn) agriculture. Linnaeus' analysis of the logic of nutrient cycling in swidden agriculture, its utilization of natural dynamics to serve human ends, and the folk understanding of the environment underlying its practice, exemplifies his understanding of the economy of nature. Revisiting Linnaeus' ethnographic study and defense of rural livelihoods has the potential to inform generations of scholarship of his work, of the economy of nature, and of the traditional systems of natural resource use in Sweden.

Linnaeus (1775b, p. 39), known after his ennoblement as Carl von Linné, wrote "By the *Oeconomy* of nature we understand the all-wise disposition of the Creator in relation to natural things, by which they are fitted to produce general ends, and reciprocal uses." This natural theology encompassed the organization and government of all life on earth (Worster 1977). Humankind was seen as a part of nature's economy, which was so arranged by the Creator as to benefit them. As Linnaeus (1775b, p. 123) writes, "All these treasures of nature, so artfully contrived, so wonderfully propagated, so providentially supported throughout her three kingdoms, seem intended by the Creator for the sake of man. Every thing may be made subservient to his use; if not immediately, yet mediately...." The purpose of studying the economy of nature, therefore, was to husband the natural world to human ends by bringing human economic activities into accord with its principles (Rausing 2003, p. 185).

Examples of the economy of nature given by Linnaeus include pasture management, which illustrates the importance of species differentiation and the existence of

ecological niches: “[W]hen eight cows have been in a pasture, and can no longer get nourishment, two horses will do very well there for some days, and when nothing is left for the horses, four sheep will live upon it” (Linnaeus 1775b, pp. 99–100). Another example concerns soil fertility, which illustrates the principles of recycling of waste (Linnaeus 1775b, p. 78): “*Vegetables* therefore increase the black mould, whence fertility remains continually uninterrupted.” A famous example recounted by Koerner (1999, p. 83) brings humans into this cycling between life and death: “Traveling through provincial Sweden in 1746, Linnaeus noticed that people used churchyard soil for their cabbage patches. Human heads, he mused in his travel diary, thus turn into cabbage heads, which turned into human heads, and so on. ‘In this way, we come to eat our dead, and it is good for us.’”

Linnaeus’ work on nature’s economy was enormously influential. It influenced scholars like Adam Smith, Thomas Malthus, and Charles Darwin; it laid the groundwork for the emergence of the field of ecology in the nineteenth century; and it anticipated the eventual development in the twentieth and twenty-first centuries of ecology as a science of natural economics.¹ It will be argued here, drawing in particular on the records from two of Linnaeus’ celebrated expeditions, to Lapland and Skåne, that his understanding of the economy of nature influenced and was influenced by his ethnographic study of traditional environmental relations, including that of Lapp reindeer herders and, especially, peasant swidden cultivators.

RESULTS

Linnaeus’ ethnographic methods

Linnaeus studied the economy of nature in the course of a series of expeditions to different parts of Sweden: Lapland (1732), Dalarna/Dalecarlia (1734), the two Baltic islands of Öland and Gotland (1741), Västergötland (1746), and Skåne (1749). He explicitly regarded such travel as a pedagogical tool (1775a, pp. 28–29): “Ye who intend one of these days to cultivate your native soil with advantage, and profit, may be assured that you will find nothing in all the books of husbandry, that will be of such assistance to you in that art, as travelling thro’ the different provinces of this kingdom.” Linnaeus saw these expeditions as the preferable domestic equivalent to the foreign expeditions of countries with overseas empires (Rausing 2003, p. 192)

although he did send many of his students or ‘apostles’ on expeditions to foreign lands. As he (1775a, p. 14) noted in his 1741 lecture on “The Necessity of Travelling in One’s Own Country,” “Good God! How many, ignorant of their own country, run eagerly into foreign regions, to search out and admire whatever curiosities are to be found; many of which are much inferior to those, which offer themselves to our eyes at home.” This sentiment helped him to establish, as Sörlin (2002, p. 76) writes, that “Sweden was a country with a northern heritage and a northern scientific mission.”

Linnaeus’ observations during these expeditions focused as much on human society as on the natural environment. For example, his record of his Lapland journey continuously alternates—without transition, thus illustrating their equivalence in his own view—between passages on plants, the physical landscape, and the everyday lives of its indigenous inhabitants, the Laplanders, today referred to as the Saami (Broadbent 2013). He gives his readers multiple descriptions of Laplander clothes, cordage, tools, dwellings, even games (the *spetto* and *tablnt*, along with the rules for playing them), and seemingly endless varieties of bread. Notably, in this early modern era there is not a single type of Laplander bread, clothing, etc., but practically a different local variant within every day’s walk, and Linnaeus’ energy did not flag at recording them all, any more than he would have failed to note the many different kinds of moss that he encountered.

The state sponsors of Linnaeus’ expeditions, tasked with developing Sweden’s economy in the aftermath of debilitating wars, explicitly instructed him to investigate the potential from local economic resources and activities. Although scholars of his work have generally neglected these socio-economic materials in favor of his botanical and zoological notes, modern observers value them for the insight that they yield into the conditions at the time (Jackson 1923, pp. 208–209; Weimarck 1968, p. 11). Linnaeus dutifully investigated more orthodox resources like mineral deposits, forests, and fisheries, but noting (1811, vol. I, p. 113) that “The riches of the Laplanders consist in the number of their reindeer, and in the extent of the ground in which they feed,” he gave equal time to these animals, and how they are herded, milked, castrated, and slaughtered. He gives page upon page of detailed descriptions of locally varying ways of producing drinks and foods from reindeer milk, including descriptions of 19 different “uses of milk” at a single site (1811, vol. I, pp. 242–244). As Wikman (1970, p. 57) writes, “Linnaeus had all the equipment of a good ethnographer....” His fine-grained ethnography suffers little by comparison, for example, to Evans-Pritchard’s (1940) classic modern ethnography of a cattle people, in the Sudan, two centuries later, not excepting the appearance and names of the livestock (1811, vol. I, p. 314):

¹ Worster (1977, p. 33) cites Linnaeus’ work as one of the two most important eighteenth century contributions—the other being Gilbert White’s studies in Selborne, England—to the initial development of ecological thinking.

“I could not help wondering how the Laplanders knew such of the herd as they had already milked, from the rest, as they turned them loose as soon as they had done with it. I was answered that every one of them had an appropriate name, which the owners knew perfectly. This seemed to me truly astonishing, as the form and colour are so much alike in all, and the latter varies in each individual every month. The size also varies according to the age of the animal. To be able to distinguish one from another among such multitudes, for they are like ants on an anthill, was beyond my comprehension.”

Linnaeus does not just study the Lapps, he studies their beliefs, their system of knowledge, to an extent that was extraordinary for his era. Having both practiced and taught medicine at various points in his career, Linnaeus was particularly interested in the plant lore of midwives and herbalists, proclaiming that the best medicines are based on the accumulated knowledge of the “common people” and the “wild nations” of the world (Rausing 2003, 1999). As he (Linnaeus 1775a, pp. 27–28) wrote, “Let our young physician then learn, not to condemn, but accurately to remark those remedies, which are cried up amongst the common people.” The methodology that he employed, which Sörlin (2002, p. 85) calls “ethno-natural history,” was based on dialog with his subjects (Rausing 2003, p. 195). For example, he elicited vernacular names for flora and fauna, which he valued for the information they yielded regarding not only the life forms but the local knowledge and use of them (Eliasson 2002, pp. 127–129). As Linnaeus (1979, p. 84) wrote in 1741 during his expedition to Gotland, “The farmers’ botany is not to be despised.... I brought a good natured farmer with me to the meadows, and he knew far more plants than I would ever have expected, and his names for them had often very nice [viz., insightful] origins.” This was a pioneering insight that anticipated the fields of ethnobotany and ethnozoology by two centuries.

Linnaeus assumed the possibility of commensurability between his system of knowledge and that of the ethnic minorities he studied (Rausing 2003, p. 196). He regarded the different perspectives on the world that he encountered not as impediments to but rather resources for understanding. After studying the ethnic Saami of Lapland, for example, Linnaeus wrote “The Laps are our teachers” (Koerner 1999, p. 71). Linnaeus’ valorization of folk knowledge is illustrated by his naming of a Surinam tree (*Lignum quassiae*), whose bark was useful in curing fever, after the slave named Qvassi who discovered it, over the protests of the Swedish–Dutch family who owned him (Rausing 2003, p. 194). Although the concept of indigenous knowledge has been problematized in modern

Fig. 1 Martin Hoffman’s 1737 portrait of Linnaeus in his Lapland dress

scholarship (Agrawal 1995), it was perhaps more valid in Linnaeus’ time, it was certainly politically bolder to assert, and it enabled Linnaeus to learn details about economic uses of natural resources—details of nature’s economy, thus—that would otherwise have been hidden to him. Linnaeus’ attention to indigenous knowledge stands out by comparison to the relative disregard for such knowledge in the nineteenth century (Eliasson 2002, p. 127; Sörlin 2002, p. 85).

As a good ethnographer, Linnaeus identified with his informants. He even commissioned a portrait of himself dressed in the ethnic attire of the Lapps (Fig. 1), which he sometimes wore to social gatherings. All scholars of Linnaeus have remarked on this behavior but few have analyzed it, a notable exception being Koerner née Rausing (2003, p. 200), who critiques the accuracy of the attire and concludes that this was “reflexive exoticism.” This critique ignores the cultural politics of Linnaeus’ behavior, however. When Linnaeus, one the most celebrated scholars of his age, studied and displayed the dress, language, and beliefs of an ethnic minority, he was placing those peoples on the same level as himself. As he averred in a famous speech to Swedish royalty in 1759, “Wild Peoples, barbarians, and Hottentots, differ from us only because of sciences” (Rausing 2003, p. 193).

Some scholars have argued that his classificatory schema justified pernicious racial views (Koerner 1999, p. 57), and his least flattering descriptions of the Lapps have received great attention (e.g., Blunt 2001, p. 50), such as this one of one old woman he encountered (1811, vol. I, pp. 144–145):

“It might truly be imagined that she was of Stygian origin.... Her face was dark brown from the effects of smoke.... She had a grey petticoat; and from her neck, which resembled the skin of a frog, were suspended a pair of large loose breasts of the same brown complexion, but encompassed, by way of ornament, with brass rings.”

But this is an anomaly in Linnaeus’ writings about the Laplanders, which are otherwise decidedly rosy-hued (1811, vol. I, pp. 78, 314–315; vol. II, p. 132):

“I found with pleasure that these poor Laplanders know better than some of their more opulent neighbors, how to employ the good things which God has bestowed upon them.”

“I witnessed with pleasure the supreme tranquility enjoyed by the inhabitants of this sequestered country. After they have milked their reindeer, and the women have made their cheese, boiled their whey to the requisite consistence, and taken their simple repast, they lie down to enjoy that sound sleep which is the reward and the proof of their innocent lives.”

“The tranquil existence of the Laplanders answers to Ovid’s description of the golden age, and to the pastoral state as depicted by Virgil.”

Tellingly, the more contact that Lapps have with mainstream Swedish society, the less they impress Linnaeus (1811, vol. II, p. 51).

Some scholars have dismissed Linnaeus’ views of the Laplanders as a primitivist, idealization of the ‘noble savage’ (Koerner 1999, pp. 67, 76; Eliasson 2002, p. 129). But if his view is a romantic one, it is rooted in close study of the everyday lives of the Laplanders—their nineteen different uses of reindeer milk, and their dozens of different types of bread, many made from the bark of evergreens—and it is not removed from political reality. For example, Linnaeus (1811, vol. I, pp. 157–158) commiserates with “The poor Laplanders” who are fined if they cannot come to church because of impassable rivers “which surely is too severe.” More tellingly, he sympathizes (1811, vol. I, pp. 139, 162–163) with “the poor Laplanders” who, notwithstanding the fact that they treat immigrant Finnish colonists with “great kindness,” are often obliged to yield their fishing rights to them during pike-spawning season, without recourse to the law: “It is

Fig. 2 Lapp apparatus for boiling the kettle

certainly unjust that these people” “should drive the Laplanders away....” Linnaeus’ most powerful defense of the Lapps was simply his close observation and recounting of their lives, a good example of which is his sketch of an “apparatus for boiling the kettle” (Fig. 2) accompanied by a detailed description of how it worked and an enumeration of its six distinct advantages (1811, vol. I, p. 198). For a prominent scholar from Sweden’s metropole, on a government expedition, to devote such attention to the mundane, everyday technology of an ethnic minority at Sweden’s margins, was remarkable. Historically, only people “that matter,” and only non-mundane technologies (Kammen and Dove 1997) receive this kind of attention. Linnaeus’ attention to the detail of Lapp lives elevated their visibility, their comprehensibility, and their importance.

Linnaeus on Swedish swidden agriculture

The politically contentious subject of swidden agriculture well illustrates Linnaeus’ views of local peoples, practices, and knowledge. As with the animal husbandry of the Lapps, so too with the swidden cultivation of Swedish peasants,² “Many things that will occur, may appear trifling at first sight, which yet upon a more mature consideration, you will own may be turned to very great advantage; such as the various ways of cloathing, preparing victuals, feeding cattle, not to mention the manners, commerce, and numberless other particulars” (Linnaeus 1775a, pp. 29–30).

Anthropological studies of swidden agriculture have been at the center of much of the pioneering work carried

² The term ‘swidden’, used here in preference to the more misleading terms ‘shifting cultivation’ and ‘slash-and-burn agriculture’, is derived from the old English ‘swithen’, meaning to be singed (Oxford English Dictionary 1999).

out on human ecology since the mid-twentieth century (e.g., Conklin 1975/1957), and swiddens are still the focus of research on fallow management (Cairns 2007), the politics of upland-lowland relations (Scott 2009), biodiversity conservation (Padoch and Pinedo-Vasquez 2010), and the role of forest peoples in global trade (Dove 2011). Most of these studies have agreed that swidden agriculture is a sustainable adaptation to forest environments in which labor is scarcer than land, population/land balances allow for fallow periods long enough to restore forest cover between periods of cropping, and resource appropriation by external actors is minimal.

Most studies of swidden have focused on less-developed regions of the tropics, however, which contributed to a kind of amnesia regarding the long history of swidden in Western Europe and North America. In North America, a swidden system based on a melding of European and Native American practices dominated the southern uplands through the nineteenth century and persisted in remnant form well into the twentieth century (Otto and Anderson 1982). Swiddening thrived in parts of France until around 1890; and pockets of swidden cultivation remained in Germany, Austria, and northern Russia until the 1950s and 1960s (Sigaut 1979). European swiddening may have survived the longest in some of the less-populated and less-industrialized parts of Scandinavia; and it was certainly still widely practiced in Sweden in the mid-eighteenth century when Linnaeus studied it (Lehtonen and Huttunen 1997; Emanuelsson and Segerström 2002; Myllyntaus et al. 2002; Kunnas 2005).

Linnaeus observed swidden cultivation in many parts of Sweden, but his most detailed observations of the practice are contained in his account of his expedition to Skåne or Scania in southern Sweden, undertaken at the behest of the Swedish government in 1749 (Fig. 3). Like his birthplace in neighboring Småland—which he also journeyed through during his 1749 expedition—Skåne’s landscape was a pastoral one, which Linnaeus personally preferred (Worster 1977:31; Koerner 1999, p. 84). In his 1751 account of this trip, Linnaeus provided detailed descriptions of land-use, in particular the practice of swiddening. As he writes, “Burn-beaten areas, which are everywhere seen among the forests here in Småland, and which are looked upon by some as profitable, by others as rather deleterious, were closely examined and the benefit and the injury done to the countryside were weighed against one another...” (Linnaeus 1751, p. 26, cited in Weimarck 1968, p. 56).³ The term ‘burn-beating’ is a translation of the Swedish term ‘svedjebruk’, which refers to the practice of swidden agriculture. Linnaeus saw distinct advantages of burn-

beating in districts unsuited for intensive agriculture (1751, p. 26, cited in Weimarck 1968, p. 56):

“[W]hen the farmer here cuts down the trees and burns the land by burn-beating, he obtains from his otherwise quite unprofitable forest and soil, a mostly fine grain, and for several years after that a good pasture of grass, which comes up between the stones, until the heather once more chokes the grass. Pine and spruce soon re-establish themselves, so that after 20–30 years they are ready for new burn-beating. In this way the farmer gets an abundance of grain from otherwise quite worthless land.”

Linnaeus concluded with an unqualified endorsement of the economic importance of burn-beating to the rural populace of the region (1751, p. 26, cited in Weimarck 1968, p. 56): “If the inhabitants of Småland were not allowed to have burn-beating, they would want for bread and be left with an empty stomach looking at a sterile waste....”

The Swedish botanist Gunhild Weimarck (1968, p. 7) carried out extensive studies of environmental history in northeast Skåne in the mid-twentieth century, and observed that “[A]ll naturally well-drained mineral soils within these investigated areas have on some occasion been subject to burn-beating.” Based on her analysis of archival forestry records, Weimarck (1968, pp. 35, 37, 52) finds that in 1842, almost a century after Linnaeus’ observations, burn-beating was still the “principal livelihood” of the rural inhabitants and remained so until the end of the nineteenth century.

Burn-beaten lands were subjected to a multi-year cycle or rotation, with the more-demanding land-uses staged earlier and the less-demanding staged later. The cycle consisted of (1) clearing and burning the forest, (2) cultivating turnips, (3) cultivating rye, (4) cultivating hay, (5) managing the land as pasture, and then (6) relinquishing the land to a natural forest fallow (Weimarck 1968, p. 52). Linnaeus, as cited earlier, stated that the fallow period averaged 20–30 years; Weimarck (1968, p. 43) put it at 30 years. At the end of this period, the burn-beating cycle would be started anew.

The productivity of this agricultural system was high. One late eighteenth century report cited a return to sown seed in burn-beating ranging from 16/1 to 24/1, which far surpassed the contemporaneous yields of 2–5/1 in permanently tilled fields (Weimarck 1968, p. 46). With such yields, burn-beating was an attractive way of obtaining a livelihood. As J. Krook, one of Linnaeus’ contemporaries put it, “[T]hey in this way got a greater yield with comparatively little work” (cited in Weimarck 1968, p. 43; cf. Dove 1983). Weimarck (1968, p. 49) noted even in the mid-twentieth century, “Old people say that burn-beating was a labour-saving cultivation method....”

³ The passages by Linnaeus cited in Weimarck (1968) were all translated from the original Swedish by Weimarck.

Fig. 3 Route of Linnaeus' 1749 expedition to Skåne

Burn-beating was one component in a complex agroecological system comprising both 'infields', referring to the arable fields and meadows, and 'outlands', referring to the surrounding woods (Weimarck 1968, p. 13). The infields were kept under continuous cultivation. As described by Linnaeus (1751, p. 423, cited in Weimarck 1968, p. 56): "The agriculture here in Småland was usually organized in such a way that the one-field system was used in the tilled fields, which were sown each year without rest, either with rye or barley." The challenge of this "one-field system" is to maintain the productivity of the continuously tilled fields year after year by annual applications of manure, and feeding the cattle that produced the manure was another function of burn-beating. As Weimarck (1968, p. 13) writes:

"Burn-beating offers an important yield of grain and straw, turnips, potatoes and hay and after that a good grazing, making cattle-breeding possible in these districts. Burn-beating was carried out in connection with the one-field system and, consequently, *manure from the cow house* could be obtained for the tilled arable fields, *making this yearly cultivation possible.*"

In short, the burn-beaten outlands sustained the cattle that, in turn, sustained the infields. As Linnaeus' contemporary Krook (1765, pp. 11,12, cited in Weimarck 1968, p. 13) wrote, "[T]he tilled fields are nowadays not manured from the hay-crop but instead chiefly with straw from the harvested burn-beaten areas and grass from the abandoned burn-beaten land." The requisite proportion of outland to infield area averaged about 4/1 from the end of the

seventeenth century to the middle of the nineteenth century (Weimarck 1968, pp. 21, 35–26). This combination of permanent-field agriculture at permanent settlements with distant forest burning, farming, and grazing at summer ‘shielings’ dates from the origins of Swedish agriculture in the Roman iron age. It may have developed partly as a strategy of colonizing empty lands, but by Linnaeus’ time its main purpose was to alleviate fodder shortages at the permanent settlement (Emanuelsson and Segerström 2002; Karlsson et al. 2010).

A central principle in Linnaeus’ concept of nature’s economy is conservation through recycling of matter. The cycling of nutrients between burn-beaten outlands and permanently cultivated infields, through the alimentary processes of cattle, is an elegant example of this. The ultimate act of recycling in the economy of nature is death and rebirth, as Linnaeus (1775b, p. 40) writes: “[T]he death and destruction of one thing should always be subservient to the restitution of another.” The burning of the forest and growing of plants in its ashes is a dramatic example of this. The key dictate from nature’s economy for the human economy is that it should not battle but cooperate with nature. Burn-beating, depending as it does on the natural regrowth of the forest following each period of cropping, and given that the cropping itself “mimics” the forest (Vickers 1983), honors this principle more than perhaps any other major system of agriculture in human history. Linnaeus thus found in burn-beating an economy of agriculture modeled on the economy of nature.

DISCUSSION

The Controversy Over Linnaeus’ Analysis

Linnaeus’ work on burn-beating was at the center of one of the most celebrated, and most misunderstood, controversies of his career. Opinions at the time in Sweden were divided about the merits of burn-beating. As a contemporary of Linnaeus, Faggot wrote (1750, cited in Weimarck 1968, p. 40), “[T]he great problem at this time was whether burn-beating was beneficial or injurious to the country.” There was no question on the part of the government, which had been prejudiced against the practice since the mid-seventeenth century. Many forest regulations in Sweden at the time of Linnaeus’ study prohibited burn-beating, as a result of which the practice was often carried on surreptitiously (Weimarck 1968, p. 16).⁴ The publication of Linnaeus’ Skåne travels brought the conflicting views of burn-beating to a head.

⁴ This is typical of swidden systems worldwide, which Scott (1998) has called “fugitive agriculture.”

Baron Carl Hårleman, one of the sponsors of Linnaeus’ Skåne expedition, saw the proofs of his report and was highly critical of the passages on burn-beating. The Baron, who had criticized the practice in print himself (Blunt 2001, p. 213), complained that Linnaeus “not only had not condemned burn-beating, so pernicious for the country, but even contrary to his better judgement justified and sanctioned the undertaking” (quoted in Weimarck 1968, p. 40). Linnaeus complained about the Baron’s criticism in a letter to the Secretary of Sweden’s Royal Academy of Sciences, saying that “troublemakers had been at work”; and he disingenuously disclaimed any vested interest in the matter, writing that he “cared as little whether or not a farmer burnt his land as whether or not he smoked a pipe” (Blunt 2001, pp. 213–214). But in the end Linnaeus was obliged to replace the page containing his most positive remarks on burn-beating with, as Sernander (1926, pp. 82–83, cited in Weimarck 1968, p. 40) writes, “harmless notes on manure,” but this bore a personal cost.⁵ As Blunt (2001, p. 214) writes, “The book [on Skåne] was well received and Linnaeus was urged to undertake further journeys; but he had had enough. As he told the Secretary of the Royal Academy of Sciences, ‘Many a time have I set sail to bring back gold from Ophir, only to come home a broken man, my ship disabled and her sails in tatters. Another voyage might well be the end of me’.”

Almost all scholars of Linnaeus’ work, ignorant of the ecological and political dynamics of burn-beating, have regarded his disagreement with the Baron as a trifling matter. For example, Jackson (1923, pp. 208–209) writes, “[A] slight misunderstanding arose between him and his patron, Baron Hårleman, as to the account given of paring and burning the turf....” Blunt (2001, p. 213) writes of an “exchange of bitter letters and... good deal of unpleasantness” that ensued because Linnaeus “gave his blessing to the old Swedish custom of cleaning the ground by setting fire to the stubble.” Blunt seems to be referring to the common practice of post-harvest burning of stalks on agricultural fields; and Jackson perhaps is referring to the historic Northern European practice of burning peatlands (Kunnas 2005)—but neither is referring to burn-beating of forest lands. Since the post-harvest burning of stubble is not contentious, and since Linnaeus himself criticized burning of peatlands (Kunnas 2005, p. 433), this leaves the basis for the controversy between the Baron and Linnaeus unexplored, which is why other scholars have attributed it to his supposedly sensitive nature. For example, Lindroth

⁵ A small number of copies of “Scanian Travels” with the unexpurgated original text survived (Blunt 2001, pp. 213–214), and the complete edition of the Scanian Travels was not altered. The 1884 edition by Martin Weibull (Lund: Gleerup) and the 1940 facsimile edition (Malmö: John Kroon) contain both the original and amended texts.

Fig. 4 Under the Yoke (*burning the brushwood*): Eero Järnefelt's 1893 painting of Finnish 'burn-beating', depicting secondary burning

(1983, p. 61) attributes the disagreement to the fact that Linnaeus was a “clamoring, egocentric, and unpolished genius.” This was not a question of turf, stubble, or personality, however. As Weimarck (1968, p. 40) writes, this was a “grave conflict... concerning the question whether burn-beating was to be considered useful or injurious to the country.”

The seemingly innocuous passage on manure that Linnaeus substituted in his report is, upon closer inspection, revealing. In it he advised the farmers how to increase their supplies of cattle fodder by gathering plants in the forests, but he specified plant types that were peculiar to burn-beaten forests. In his replacement passage, therefore, Linnaeus in effect says that the best material for manure comes from burn-beaten forest lands. So even though he dropped the passages explicitly supporting the practice of burn-beating, Linnaeus still made the case for it, albeit indirectly. As Weimarck (1968, p. 41) writes:

“In my opinion Linnaeus has chosen to write his article on manure as a matter of grave necessity, intending to draw attention to the importance of special activities in order to save the small, yearly cultivated fields becoming poor. Suffering from the

want of fertilization, until this time procured principally by burn-beating, the fields gradually lose their potential productiveness, reducing their fertility and size of yield.”

The Swedish kingdom had historically encouraged burn-beating, especially by immigrant ‘forest Finns’, as a way of opening up the country’s vast, unpopulated tracts of forest (Fig. 4). By Linnaeus’ time, however, the state was less interested in colonizing the frontier than in obtaining revenue, which is problematic with burn-beating. Swidden agriculture is inherently resistant to extraction of revenue by central state authorities, due to the spatial scattering of fields, the mixture of crops, the staggering of harvests, and the general ‘illegibility’ of the system, along with the mobility and thus independence of its practitioners (Dove 1983, 2011; Scott 1998, 2009). As Weimarck (1968, pp. 46–47) writes, “The negative attitude to burn-beating, shown by several authorities, might be due to several different reasons, but in my opinion the most material cause was the fact that this large production and this important activity was without profit for the political economy of Sweden, since it was not assessed for taxation.”

Linnaeus' (1775b, pp. 120–121) thesis of the economy of nature enabled him to see that non-use for the state did not mean non-use for everyone:

“[T]he Laplanders have one way of living; the European husbandmen another; the Hottentots and savages a third, whereas the stupendous oeconomy of the Deity is one throughout the globe, and if Providence does not always calculate exactly according to *our* [added] way of reckoning, we ought to consider this affair in the same light, as when different seamen wait for a fair wind, every one, with respect to the part he is bound to, who we plainly see cannot all be satisfied.”

By analogy therefore, what constituted a “fair wind” for the burn-beaters, and a fair wind for the Swedish state, was not the same. Linnaeus' articulation of the burn-beaters' perspective in the face of the prevailing political winds was remarkable, and it complicates the state-oriented cameralist stance that is so commonly ascribed to him.

Linnaeus saw the local value of burn-beating notwithstanding its official ‘erasure’ by the Swedish state. As the work of Agamben (1998) and others has shown, one of the most powerful tools of governance of the modern state involves re-classifying subjects and behaviors that displease it as outside of the state and, hence, as beyond state protection and vulnerable to the most severe state sanctions. This has been the fate of systems of swidden agriculture in many time and places, and it was so in Linnaeus' era. Analysis of archival sources shows that whereas quantitative data on the continuously tilled ‘in-fields’ were routinely gathered in the first half of the eighteenth century, the practice of burn-beating was often simply not recorded; sometimes it was referred to but without quantitative data being provided; and when data were provided, the practice was generally under-estimated (Weimarck 1968, pp. 24, 30, 44).

SUMMARY AND CONCLUSIONS

I have highlighted heretofore unexamined virtues of Linnaeus' scholarship, namely his ethnographic method and his appreciation of traditional rural livelihoods, especially historic swidden agriculture or burn-beating. His work on these topics represents a largely unexamined dimension of his thesis about the economy of nature, and how this thesis was developed in his expeditions through rural Sweden. Prior studies of these expeditions have focused on his purported state-oriented cameralist agenda. Little if any attention has been paid to how his theoretical framework on the economy of nature affected, and was in turn affected by, his observations of local peoples and livelihoods.

Scholarly thinking on this subject has focused on sensationalist anecdotes and the inferred racism of Linnaeus' classification of human species. Overlooked has been the arguably more telling ‘thick descriptions’ (Geertz 1973) of traditional lifeways, to which Linnaeus devoted far more scholarly effort. The sensitivity and accuracy of these descriptions, with subjects that were often politically sensitive, tell a different story.

Linnaeus was a man of his times in many respects, but he also transcended them, which is reflected in contradictions in his work. He was not uninfluenced by contemporary biases and political interests, but these were largely subverted by his own intellect and sensitivities.

It is not surprising that he espoused imperialist or cameralist agendas; what is surprising is what he could see in spite of these agendas. Not yet possessing the cultural theory and sensibilities of modern anthropology, armed with just his formidable native insight and intellect, he clearly saw more than practically anyone else around him.

This reprisal of Linnaeus' work has lessons not just for the way we think of his legacy, but also for contemporary scholarship on the anthropocene (Crutzen 2002). Linnaeus was professionally and theoretically at home in an anthropogenic landscape. He was bold in confronting orthodox dogma regarding human behavior and environmental degradation. And his own life illustrates how there is a politics of knowledge, which can sometimes be subverted by textual legerdemain.

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