Lesniki and *Leskhozy*: Life and Work in Russia's Northern Forests

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ABSTRACT

This paper examines the history of forestry in the Russian North through a study area in the North Urals. The relationships between the local *leskhozy* (forestry enterprises) and the *lesniki* (forestry workers) and the environment are contrasted. The paper explores four key aspects: exile, planned production, decline in rural population and environmental problems which characterised the Soviet period, and links these to conditions in the region post-1991, drawing on archival sources, contemporary accounts from the Soviet period and fieldwork in the study area.

KEYWORDS

Soviet forestry, forced labour, planning, Soviet environmental policy

This paper seeks to contrast two relationships: that between the forestry enterprises (*leskhozy*), and the environment in which they operated, and the forestry workers (*lesniki*), and the environment in which they lived and worked. The paper argues that the forestry enterprises treated both the forest and the workers as simply resources to be exploited. At the behest of the Soviet state, thousands of forced labourers were exiled to the North Urals to cut timber in miserable and deprived conditions, and in the context of the USSR's questionable environmental legislation, timber was felled and transported in a way that led to serious environmental problems. However, for the workers, the forest as a living environment, source of wild food, fuel, and at a basic level, subsistence, provided a 'safety net' to cushion them against both the harsh climate of the region, and social and economic hardship at various times during the Soviet and post-Soviet period.

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The paper begins with a brief consideration of the pre-Revolutionary and early Soviet history of forestry in Russia, followed by a description of the process of timber extraction by forestry enterprises. It then considers four key aspects of the development of forestry industry in the North Urals. Firstly, the 'opening up' of the forest through exile, when labourers were forcibly moved from more southerly areas of the USSR to deploy their labour in forestry; secondly the exploitation of timber reserves, where the forestry enterprises produced timber to the orders of *Goskomstat* (the State Planning Agency); thirdly the beginnings of environmental decline, when dwindling stands led to the depopulation of the area, up to the eve of the collapse of the USSR; and lastly the consequences of the environmental damage caused by the forestry industry for the workers living in the forest.

For the purposes of this paper, the North Urals is considered to comprise the northern parts of Perm region (*Oblast*),[1] and the whole of the Komi-Permiak Autonomous Area (*Okrug*), part of the present-day Volga Region of the Russian Federation. Figure 1 shows the study area and its location within the Russian Federation.

PRE-REVOLUTIONARY AND EARLY SOVIET HISTORY OF FORESTRY IN RUSSIA AND IN THE NORTH URALS

Williams writes that there had been 'persistent and relentless peasant clearing' in the heartland of Russia in the mixed forest belt of oak, pine, aspen and birch, and that this clearing increased enormously during the sixteenth and seventeenth centuries. Clearing continued unabated through the eighteenth and nineteenth centuries.[2] Property rights to Russia's abundant forest resources were enforced under Peter the Great (1682–1725). The Tsar wanted to be able to challenge Europe's military powers, and in addition to building up his land forces, he founded Russia's navy. Forests thus became a resource of strategic importance for an expansionist state. By 1698 there were various laws relating to the cutting of timber; for example, oak was to be cut only if it was needed for ship construction, and offenders faced the death penalty. Although more than six million hectares of forest were cut during the reign of Peter the Great, his management system survived in essence into the first decade after the 1917 Revolution.

The history of commercial forestry in the Urals region began under Peter with the production of charcoal for use in smelting iron ore and copper. The Tsar's military requirements meant that the mining of iron ore had increased more than that of any other mineral since 1600. This increase originated almost entirely from the Urals, which had ore of high quality, and vast reserves of timber for charcoal.[3] The first areas of forest utilised were those near the factories themselves, or those alongside rivers on which logs could be floated or rafted.

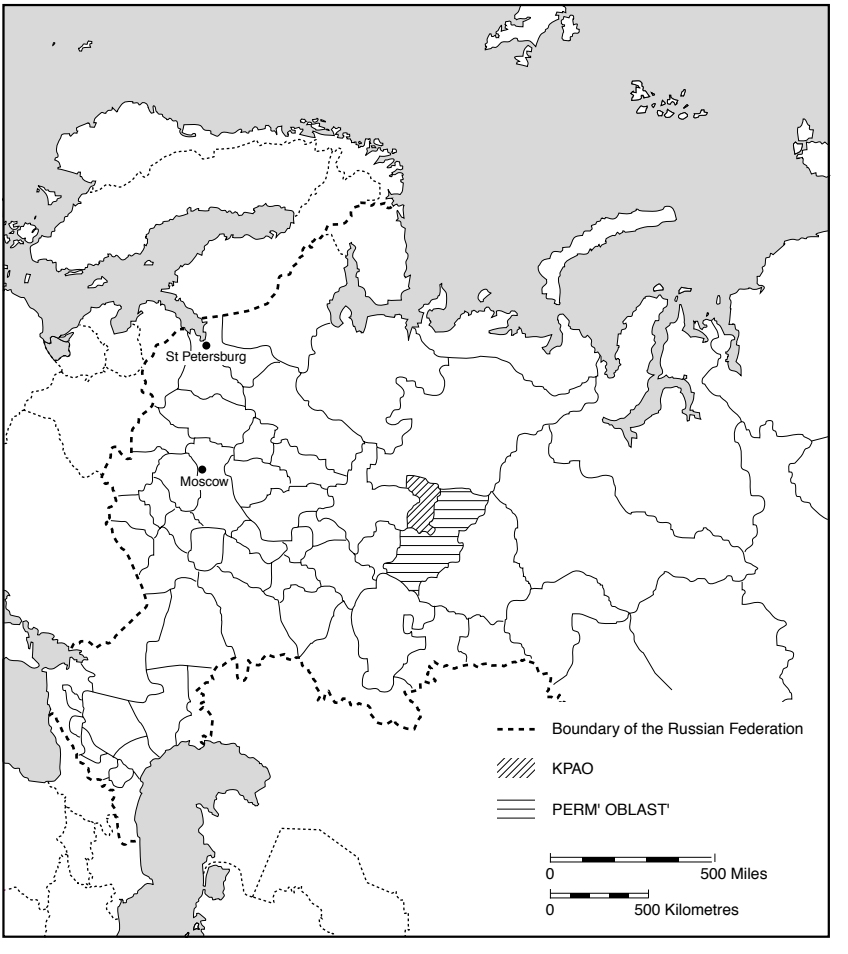

FIGURE 1. The Location of Perm region and the Komi-Permiak Autonomous Area (*Okrug*)

At the end of the nineteenth century, a time of high demand for timber in the area of the Lower Volga, intensive timber cutting and transportation began, with logs rafted down the River Kama to the Volga to timber merchants in the south of Russia.

After the 1917 Revolution, under the Soviet government, forests were nationalised, forming the State Forest Fund. In 1926, the Forest Code divided the forests of the North Urals into those of state (national) and local importance. In 1929, forestry enterprises were established by the state, to undertake forest

management and timber cutting. Most North Urals forestry enterprises were grouped together under the Trusts *UralZapadLes* (Western Urals Forestry), and *KomiPermLes* (Komi-Permiak Forestry).

There was heavy demand for timber during the first Five Year plan (1928–1932) of the Soviet regime, and the volume of timber produced in the USSR increased dramatically, especially in terms of the timber used for industrial purposes. In fact, socialist construction demanded that production of timber should increase, and as a result, the first three of the Five Year Plans witnessed significant change in both the location and the nature of the forestry industry. Initially, timber cutting took place around the industries which needed timber, leading to the overcutting of poorer stands, but later, the remoter, denser stands began to be tapped. There was also a change towards increased mechanisation. During the Five Year Plans, efforts were made to increase labour productivity in forestry, with the introduction of power saws, the rationalisation of haulage routes and so on, but where forced labour was utilised, the sheer amount of labour available meant that efforts to increased productivity were less urgent. In the first Five Year Plan, the timber industry was reconstituted as a mechanised branch of the economy. By a decree of 27 August 1929, 'On the Perspective Plan for the Development of Forestry and the Timber Industry', felling was to be functionally separated from hauling, and there was to be wider utilisation of mechanical equipment. During the second and third Five Year Plans, felling increased, due to the use of power saws, and particular attention was paid to the development of roads for hauling timber by tractor. However, the Soviet timber industry was slow to adapt to mechanised production, although technical developments along with the utilisation of forced labour allowed remoter tracts of forest to be felled.[4]

In the post-World War II years, the agency responsible for forestry practices in the USSR was changed or reorganised on an average of once every four years, often as a response to poor performance in the forest industry. The ministries which oversaw forestry were unified, disaggregated and then reunified, in attempts to reduce wastage and increase efficiency, in response to increasing concerns about environmental damage caused by the timber industry, and also as a result of political manoeuvring in Moscow under Khrushchev.[5]

FORESTRY PRACTICE IN THE USSR

After 1928, the Soviet state sought to plan the economy, allocating production targets and destinations for products. Forestry enterprises were the basic planning units in the Soviet logging industry. The Five-Year Plans that the Ministry of Forestry and Paper Industry (*Minlesbumprom*) was required to fulfil were broken down into one-year plans, which were disaggregated to the forestry enterprise level.

Under the jurisdiction of each forestry enterprise were between two and four logging areas (*lesopunkty*). Each consisted of an area of forest to be logged, a series of roads, tracks, occasionally railways, depots with the tractors, saws and other equipment required for operations, a repair and maintenance department and a lower landing (*nizhnii sklad*). The lower landing for each acted as a storage depot and sorting yard for the timber logged within its area.

Each logging area had a number of 'brigades' of about four men, under the leadership of foremen. These groups represented the lowest level of planning in common use in Soviet forestry, and each forestry enterprise would break down its annual plan into targets for its various brigades. Trees were felled, delimbed, dragged along the forest floor, and then taken to the lower landing, where they were processed and stockpiled for further transportation. In many cases the lower landing would be little more than the bank of the river, from which timber would be floated loose downstream. During the winter, work at lower landings would consist of laying the timber in rafts or loose on the ice to await the spring thaw.[6]

The development of forestry formed a vital part of the industrialisation drive in the USSR, and in the early years of the Soviet Union it was characterised by two imperatives: the provision of labour, and need to utilise that labour to provide for the needs of the state. The forced movement of a labour force to the North satisfied both those objectives.

THE 'OPENING UP' OF THE FOREST THROUGH EXILE

Economic policy in the early years of the USSR dictated that the vast raw material resources of the Soviet Union, including its forests, must be utilised in order that economic development and industrialisation should progress as planned. Most of the USSR's forests were located in the Russian North,[7] the settlement of which grew from two linked policy objectives: rapid industrialisation and the repression of entire classes considered to be fundamentally antagonistic to the ideas and methods of the Communist Party. The changing policy of the Soviet administration played a pivotal role in the development and settlement of the Russian North. Starting out as a recipient area for forced labour, *kulaks*,[8] exiles and convicts, whilst at the same time representing escape from the various pressures of Central Russia, the North had a gruesome history of suffering and misery for millions of people.

The North Urals was part of this region of exile. In the early part of the twentieth century, the area was sparsely populated, with Komi peoples and ethnic Russians living in small villages in the forest. By the 1930s, major industrial centres were being founded further south around the major industrial functions of metalworking, machine building, chemical industry and forestry. Development of the industrial complex was based upon the region's fuel-energy

capacity. Through the 1920s–1940s, timber was a crucial source of energy, but exploitation of the extensive forest resources was restricted by a shortage of workers. Every year, temporary forestry workers arrived from the southern Urals, and also from Nizhnii Novgorod (Gorky) region, Bashkiria, and other regions of Russia. However, the lack of organisation of these workers, and the difficulty of the work, led to disruption of production. As Solomon has written, with the start of the first Five Year Plan in 1928, the USSR had begun to import large quantities of foreign machinery, and foreign firms were employed to install machinery and train workers. This machinery and expertise was bought in hard currency, one of the sources of which was the export of timber.[9] Throughout the 1920s, the timber industry faced problems of labour recruitment and retention, and the state moved towards reliance on convict labour to increase revenue. Elsewhere in Russia, the same policy of despatching forced labourers to fell timber in remote areas was being implemented, for example in Soviet Karelia, where previous attempts to recruit voluntary immigrants from the United States, Canada and Finland had largely failed to solve the problem of labour shortage.[10] In the North Urals, 'Special settlers' were a solution to the problem. In spring of 1931 a number of Urals organisations were provided with a large number of families of special settlers, who were *kulaks* and disfavoured ethnic minorities. These were forced deportees, and among the organisations to receive them were the forestry enterprises.

The plight of these exiles is described in detail elsewhere,[11] but suffice it to say that 'special settlers' destined for the North Urals, having been transported north by train, and marched in convoy from the railhead to the river port, were taken up the Vishera river on barges pulled behind steamers. However, river conditions, the erratic behaviour of the steamer captains who ferried the settlers to their destinations, and the general lack of organisation of the transfers of settlers made the journeys long and gruelling. In the depths of winter, steamer transport was impossible, and the settlers were marched hundreds of miles north on foot. The dead and frozen en route could not be buried in the frozen earth, so were left in the snow by the side of the road.[12]

Once the ordeal of transportation was over, there followed considerable hardship in the process of settlement. The administration of the North Urals was responsible for the utilisation of the 'special settlers' as workers, the servicing of their settlements, living arrangements, provisioning and so on. Most importantly of all, housing had to be constructed. It was decided that by June of 1931, 70 per cent of the housing required was to have been constructed, a month later, 90 per cent, and by 1 August, all of the building was to be complete. Such intensive preparation, or, at least, the planning of it, was necessary in order to utilise the settlers as a labour force as soon after their arrival as possible. However, the local administrations were in no position to accommodate this enormous mass of people. As a result, the families of 'special settlers' were faced with very poor living conditions, and only the most basic of amenities.[13]

The environment in which the settlers found themselves was extremely harsh. The North Urals are densely forested, with both broad-leaved and coniferous species. The area has extensive marshes, and is mountainous in the east. Wolves and bears are common, and encroach upon settlements in the harshest winters. The climate is cold; the annual average temperature is between -1 and +1°C, with winter minima as low as –50°C. Snow begins to fall in early autumn (September), usually reaching depths of around two metres, and thaws only in late April. The ground can freeze to a depth of two metres. The summers are short, but warm, with temperatures in the high 20s Celsius. Rivers and roads freeze solid during the winter, but the spring thaw, and the deep mud makes the dirt roads impassable until the summer sun has baked them dry. As summer draws to a close and rain begins, the roads again become deep in mud. Many settlements are isolated at certain times of year due to difficulties of transportation – during these two seasons, known as *rasputitsa*.

The growing season in the North Urals is short, and shorter still near to a river – frozen rivers keep the surrounding earth chilled until late into the spring. Animals must be stall-fed for eight months of the year, due to the harsh climate and the lack of pasture outside the short growing season. In terms of agricultural production, the area is considered to be 'risky'. The soils of the region are primarily podsolic, and require liming in order to increase fertility.[14]

During the construction of villages, many special settlements, especially those which in the winter the authorities had sited on swamps, became completely unfit for human habitation. In the North Urals as a whole, plans to construct houses in advance of the arrival of the special settlers were left unfulfilled almost everywhere. By September 1931, only 48 per cent of the proposed housing had been built, and by the end of the year, midwinter, the figure was still only 51 per cent. By March 1932, the total sum of construction in the North Urals was 24,300 houses and 77,200 flats, with 16,700 flats in the process of construction – this provision was for almost half a million special settlers.[15] Poor implementation of house building plans meant that many of the houses needed were built by the 'special settlers' themselves. Many settlers, originating from the southern regions of the Soviet Union, were unaccustomed to the severe local climate, and had neither the necessary building knowledge nor materials. They initially used raw, unseasoned timber, unsuitable construction techniques, and built draughty, leaking houses.

The settlers got by as best they could. The enterprises for which they worked granted every family a plot of land, consisting of 0.1 hectares for a kitchen garden, and not less than 0.5 hectares of hay land. The settlers, removed from their home villages without their own livestock, food stores and seeds, had few resources to hand, and the organisations were obliged to assist with the acquisition of working animals on the basis that there should be enough horses for agricultural work, and that every five families of special settlers should have one cow. However, in many cases the forest had scarcely been cleared where the

settlements were to be built, and the settlers had to fell the trees and cultivate the land by hand. In addition, those settlers from the south tried farming practices which were unsuitable for the severe climate of the north Urals, attempting to grow tender crops from their home regions.

The influx of settlers into the forest had considerable effect on the environment. The exiled settlers had no means of supporting themselves other than to strip the surrounding areas of resources, and by May 1930, a local forestry enterprise representative had announced

> … in the territory [KPAA] … there are ten thousand people, kulak exiles. They do not have their own supplies of food, and unless supplies are sent to them, in two months time they will have destroyed the local resources.[16]

Eventually the settlers built themselves houses and began to cultivate small kitchen gardens, but throughout the Soviet period (and into the post-Soviet period also), households in the forestry villages also relied upon the natural environment to subsist. Food, water, land, and firewood were all essential, and the households engaged in a network of exchange relationships, procurement and production practices, in order to satisfy their requirements. Such a way of life is familiar to Russian people; the fruits of the forest have always been collected and the land has always been cultivated. The typical household maintained a kitchen garden, cultivating potatoes, carrots, beetroot, cabbages, marrows, peas, garlic, tomatoes, and cucumbers, herbs such as flat-leafed parsley, fennel and horseradish, and soft fruits such as raspberries, and both wild (alpine) and cultivated strawberries. Oral testimony from descendants of the 'special settlers' reports that since domestic production was required to feed the members of the household not only at harvest time but also throughout the year, various methods of storage and preservation of seasonal foods were employed.[17] Root vegetables and potatoes were kept in a cellar beneath the house, protected from frost. Cabbage was compressed in wooden boxes before being bottled in salt water. Cucumbers and tomatoes were bottled in a sugar and salt solution with herbs and garlic, and herbs themselves were salted and bottled. Soft fruits were preserved as *varenia*, a kind of jam, or as compote, a form of fruit juice. At times of slaughter of animals, meat was preserved by freezing, salting or smoking.[18]

In addition, the forest was a crucial source of resources. Many households in forest villages collected wild foods from the forest, mainly berries and mushrooms, and most would also have fished and hunted. The berries collected were the same as those collected today: wild or alpine strawberries, raspberries, bilberries, bog whortleberries, red bilberries, cloudberries, red and blackcurrants, dog rose hips, berries of the guelder rose, or snowball tree, rowan berries, and bird cherries. Mushroom varieties included *russula*, coral milky cap, orange-cap *boletus*, brown mushroom, chanterelle, *Boletus luterus*, and saffron milky cap. Berries and mushrooms were made into preserves.

As at present, fishing would have been most productive during the months when the rivers and lakes were not frozen, but even when they were, holes

would have been cut in the ice and line fishing carried out throughout the winter. In some areas, the proximity of rivers would have meant that fish were an important source of protein. The most common species found in the North Urals include grayling, salmon-trout, pike, burbot, and perch. Fish would have been preserved either by drying or salting, to be eaten through the winter. In addition, the forestry households in the North Urals utilised timber resources for building their houses, and for firewood for heating the houses and the hot water for the bathhouses or 'banias'. As well as being the source of their employment, the forest provided timber, berries and mushrooms, nuts and honey, and wild food such as fish and game birds such as capercaillie.[19]

Exiled to a remote, harsh environment in the Russian North, the 'special settlers' gradually established homesteads for themselves in the forest, drawing on natural resources to effect subsistence in the absence of adequate provisioning from the forestry enterprises. They cleared and cultivated kitchen gardens, built wooden houses, and collected wild food in the forest. For them, the forest was not only the source of employment but also of subsistence. However, while the settlers existed in 'harmony' with the forest in their domestic lives, in their capacity as employees of the forestry enterprises they were required to clear the forest to fuel the Soviet industrialisation drive.

FULFILLING THE PLAN: THE EXPLOITATION OF TIMBER RESERVES

Forestry developed in the North Urals through the surge of forced settlement in the 1930s. By the 1950s, there were large brigades of forestry workers felling timber to feed the factories of the Soviet Union. For example, in 1955, *KomiPermLes,* a forestry combine in the North Urals reported over twenty thousand workers, over three quarters of whom were timber cutters.

TABLE 1. Workers in *KomiPermLes* forestry combine, 1955

Type of worker		**Number**
Industrial workers – in total		15,760
of whom employed in: timber cutting	14,413	
other production	1,347	
Workers employed in *splav* (rafting)		923
Non-industrial personnel		1,473
Other personnel		2,298
of whom: office workers	1,160	
TOTAL		**20,454**

Source: *Obiasnitelnaia Zapiska, proizvodstvenno – khoziaistvennii deiatel' nosti kombinata 'KomiPermLes' za 1955g*. GAPO, f.1336, op.1, d.23, l.152.

While they tended their small kitchen gardens and collected berries in the northern forests, these thousands of workers were also responsible for fulfilling the Plans for production set in Moscow. The forests were felled in accordance with the plans, with demands divided up between the forestry enterprises, and then the logging areas and brigades. For example, plans for the Vaiiskii forestry enterprise, centred on the village of Vaia, (in Krasnovisherskii *raion*, part of the North Urals) in the early 1960s show that each *lesopunkt* was allocated a portion of the total planned output. Reported output in 1963 came close to fulfilling the Plan, with two of the logging areas reportedly achieving over 95% of the target.

TABLE 2. Output of Felled Timber for Vaiskii Forestry enterprise, 1963

Logging Area	**Output in 1962 (th m^3)**	**Planned output for 1963**	**Output in 1963**	**1963 output as a percentage of plan**	**1963 output as a percentage of 1962**
Velsovskii	65.1	65.0	62.8	96.5	96.4
Gor'evskii	50.2	50.5	44.7	88.6	89.0
Zolotanskii	58.8	64.0	59.6	93.1	101.5
Vaiskii	43.2	48.5	41.5	85.5	96.0
Sosnovskii	48.7	52.0	51.0	98.0	104.0

Source: *Vaiskii Lespromkhoz kombinata 'UralZapadLes' Zapadno-Ural'skogo Sovnarkhoza (Jan 1964) Obiaznitel'naia Zapiska k godavomu otcheti o khoziaistvenno-finansovoi deiatel'nosti Vaiskogo lespromkhoza za 1963 god*. GAPO, f.1074, op.1, d.299, l.98–116.

Fulfilling the Plan was not always easy – the Perm State Archive contains the following account of some of the difficulties faced by the Vaiskii forestry enterprise in fulfilling its Plan for 1963:

> According to the Plan, 1000 cubic metres of timber requires an outlay of 195 working days, but in fact, the forestry enterprise required 218 such days to produce 1000 cubic metres. Labour outlay in preparation and subsidiary work over and above the Plan was essential. In the spring-summer and autumn, the forestry enterprise carried out the 'carting out' of timber. The banks of the Vishera River were fully cleared, and there was no place within three kilometres of a logging area where a sufficient area could be felled to provide timber to be carted out, without the transfer of additional labour to that place. During this period, small brigades were transferred several times from one place to another. At the end of April, and in May, brigades were transferred to timber felling areas where it was possible to cart out timber to the banks of the river, and to which it was possible to organise the transferral of people by motor vehicle.

> At the time of *rasputitsa* the workers travelled on foot. After the rafting of timber, the brigades were again transferred to the timber cutting areas, those to which it was possible to organise transportation by boat. After the level of water in the Vishera River fell, the brigades travelled to new cutting areas on foot. In the autumn, the brigades were transferred in such a manner no fewer than three times.[20]

These accounts from the archives of the forestry enterprises suggest how determined the forestry enterprises were to fulfil the Plan, and how difficult life was for the forestry workers. The work was hard manual labour, and the extremities of the climate meant that work had to be organised around the weather. In high summer in the northern forests, temperatures reach the high 20s, and the air can be thick with mosquitoes and horseflies. The downstream rafting of timber to processing plants could only take place when the rivers were flowing, so all winter, logs would be piled on the frozen rivers awaiting the spring thaw. Apart from the conditions in which they worked, enduring extremes of heat and cold, and travelling on foot through the forests, the workers suffered poor living conditions. Rural housing was of low quality, with basic amenities such as central water service and gas available to less than 25 per cent of the USSR's rural residents in 1973.[21] And in addition to their forestry labour, workers needed to tend their kitchen gardens, and to collect berries and mushrooms in the forest.

DWINDLING STANDS AND DEPOPULATION

After the death of Stalin in 1953, the nature of movement of the labour force in the USSR changed from a reliance on exile and imprisonment to move workers to the harsh, but raw material-rich environments of the North, to more persuasive techniques, luring workers with promises of higher wages, earlier retirement and so on. It was during this period that efforts began to be made to improve the standard of living of the population of the Russian North, including the North Urals, and this went hand in hand with the continued development of forestry in the region.[22]

The rural population were disadvantaged in comparison with their urban counterparts: rural incomes were lower, rural people had fewer civil rights (for example, they did not automatically receive an internal passport, then necessary for travel within the Soviet Union), and rural life was perceived by both rural and urban inhabitants as having low status. Rural out-migration was viewed as a problem by the state throughout the post-war period. In the 1960s, the Soviet premier Khrushchev developed a policy of bringing the 'urban way of life' to rural areas in an attempt to prevent out-migration to urban centres. His plan was to concentrate the rural population progressively into 'key settlements'. The logic was that if villages were larger, providing services to them would be cost-effective, and smaller and more remote settlements could die out. This policy of village consolidation involved the classification of all settlements into

one of two types; *perspektivnye* and *neperspektivnye*, viable and non-viable. Viable villages were to be expanded, while the non-viable were to be closed or simply left to decline. Standards of living in the viable settlements were to be improved.[23]

In the 1950s and 1960s, policies began to be implemented to improve the standards of living in forestry villages. These policies were always presented as means of reorganising timber cutting, and were published in the journal *Lesnaia Promyshlennost'* ('Forestry Industry'), which was primarily concerned with new forestry machinery and technology. However, there was always a sense of the importance of the living conditions of the forestry workers, carried through in some of the suggestions made for new housing, and for the servicing and layout of the villages themselves.[24]

Forest settlements were to be rationalised in line with the 'viable' and 'non-viable' policy, with guidelines set out for the size and servicing of settlements. For example, there were to be villages of 500, 1000, 1500, 2000 and 2500 people, with schools of different sizes, and all villages were to have a club (like a community hall), shops and a bakery. Table 3 shows the servicing envisaged for villages of various sizes. Amenities such as schools, kindergartens, clinics and so on were to be provided in greater numbers for larger settlements. For example, a settlement of 2000 inhabitants would have had a school with 320

TABLE 3. Amenities planned for forest villages, 1963.

Villages for long-term activity, in remote raiony					
Amenity	**Village Population**				
	500	**1000**	**1500**	**2000**	**2500**
School (places)	1 (80)	1 (192)	1 (192)	1 (320)	1 (80) 1 (320)
School boarding house (places)	1 (25)	1 (52)	1 (25) 1 (52)	2 x (52)	1 (25) 2 x (52)
Kindergarten & crèche (places)	1 (50)	1 (90)	1 (50) 1 (90)	2 x (90)	1 (50) 2 x (90)
Club (places)	1 (100)	1 (150)	1 (200)	1 (200)	1 (200)
Clinic (beds)	–	–	–	–	–
Field Hospital (beds)	–	–	1 (15)	1 (35)	1 (35)
Shops (Jobs)	3 (20)	5 (40)	8 (60)	10 (100)	10 (100)
Administration	–	–	–	–	–
Bakery	1	1	1	2	2
Bath-house	1 (10)	1 (20)	1 (30)	1 (30)	1 (30)
Market, Petrol station	–	–	–	–	–

Source: *Lesnaia Promyshlennost'* 1963, No.7, p.23.

places, two school boarding houses (to accommodate children from outlying villages), two kindergartens, a social club, a field hospital with 35 beds, ten shops employing 100 people, two bakeries, and a bath-house.

Policy envisaged that the central part of each forestry village should have a well-equipped community building, such as a school or meeting house (with running water, sewerage, central heating and electricity). There should also be a club, in which

> … there will be a hall with a stage, a lobby, a foyer for dancing, a number of rooms for club work, and a library. The stage in the hall is to be expandable, and if necessary may be shrunk to increase the capacity of the hall.[25]

Also, in the centre of the villages there were to be two-storied houses with flats on both levels, and on the outskirts, one-storied two-apartment houses, and one-apartment homes for individual construction. Most existing village houses were one storey, so the houses with apartments on two levels were of particular interest.

> On the first floor[26] there [will be] the sitting room, and the kitchen with a cellar for the storage of vegetables and for the sanitary junction between bathroom and sewerage. On the second floor there [will be] two or three bedrooms. All the bedrooms are non-interconnecting, and their dimensions and the positioning of their windows allow the free arrangement of furniture.[27]

Two years previously, there had been plans put forward for the reorganisation of forest villages – two 'new variants' were described in *Lesnaia Promyshlennost'*. In both of the plans, the living conditions in the villages were given high priority.

> *Variant 1*: Regarding the less populated villages in the forest, and the difficulty of equipping them with services and utilities, it is envisaged that all the workers will be settled in one central village, which will be significantly removed from the place of work. Therefore, some of the workers will need to be transported every day by special bus or train.
>
> *Variant 2*: To build two smaller villages, one in the place of work, and one outside of it. The problem with this variant is the lack of development of the road network in the forest.
>
> Each of these variants has its good and bad points. However, it should be pointed out that good villages are not simply those which are the most economical in terms of running costs, but, and this is the main point, those which are comfortable to live in.[28]

By 1963, there were new plans for the arrangement of villages in timber cutting areas, and also directives for other uses of the forest.

> For the first period of operation (30 years) [there will be] six forest villages, arranged around a central village, at a distance of 25–30km from it. The main timber cutters and their families will live in the central village. In the other villages will live workers who are employed in replanting, and workers in different trades, and auxiliary production. To this category it is possible to ascribe nut collection (if the nut production zone of the forest is not being cut), collection of berries, mushrooms, and medicinal herbs; haymaking, bee keeping, ski making, pitch production and so on. All of these occupations will employ approximately as many people as timber cutting itself.[29]

The presence of small settlements in the rural areas of the North Urals was part of the pattern in Russia as a whole. Low rural living standards were complicated by the profusion of settlements, many of which were remote from the local administrative centres, and difficult and expensive to service. Planners therefore aimed to restructure the rural settlement system in order to reduce costs.

The aim was to swell the population of rural settlements to a size which would make service provision economically viable. In 1959, a plenum of the ruling Communist Party approved a motion requiring that every *raion* be furnished with a long-term development plan, which would be the basis for the restructuring of rural settlements. The main feature was the classification of all rural settlements in a district as either viable or non-viable[30].

A document produced by the then main forestry enterprise in the North Urals, *'PermLesProm'* in 1976 detailed the fate of many forestry villages. Through this document, the scale of the exploitation of the environment became clear. Concerned with the population of settlements, their distance from the *raion* centre, their raw material base, and the length of time for which that base could sustain economic activity, *PermLesProm* had assessed the forest surrounding each village, and decided if the remaining stands were sufficient to sustain the settlement. Forest stands exploited through the Soviet period had often been insufficiently replanted, and their continued use was unsustainable. A judgement was passed on the future of each settlement, with a justification for the decision reached. For example, the settlement of Romanikha, in Krasnovisherskii *raion*, with a forest base of 1.2 million square metres, which was considered capable of supporting economic activity for only four more years, was adjudged to be non-viable, and its population was to be moved to Visherogorsk. The village of Novii Rodnik, also in Krasnovisherskii *raion*, had already been liquidated by 1976, and its population resettled in Mutikha, again because of the exhaustion of its raw material base. In another *raion* of the North Urals, four villages were designated for liquidation due to lack of resource base, and their inhabitants were to be moved to local 'viable' villages. Although the environment continued to support the subsistence of the forestry workers, it could no longer support their industry.[31]

During this period, there had clearly been a major change in the attitude of the forestry industry to its workers; forced labour was no longer acceptable, and

now that workers had to be persuaded to come to the North Urals, and especially, persuaded not to leave, incentives such as better housing and so on were being offered. Both the forest and the workers were increasingly being viewed not simply as resources to be exploited, but as assets to be developed and protected. Unsustainable felling practices had led to dwindling stands, which meant that many of the forestry villages in which workers lived no longer had a raw material resource base to support them. In response to this problem, the state sought to 'rationalise' settlements in the forest, coalescing villages in order that workers should have better access to services and amenities. The extracts above from *Lesnaia Promyshlennost'* demonstrate the attention being devoted to the planning of logging villages, particularly in the late 1950s and early 1960s. They are in stark contrast to the lack of planning of the exile of labour to the North in the 1930s. The journal contains no reports of the implementation of these plans, but personal observation suggests that while some well-equipped buildings were constructed in forestry villages, the majority of the plans described above never came to fruition.[32]

THE ENVIRONMENTAL LEGACY

As the years went by, it became increasingly apparent that the Soviet system of development of forestry was leading to environmental problems. The timber cutting that had sustained the forestry villages and their inhabitants took place at the expense of the natural environment. This situation developed as a result of the impetus for industrialisation in the first decades of Soviet rule, and also due to the very particular type of environmental legislation was in force in the USSR. There was a constitutional commitment to the protection of the environment; in the Fourth Constitution (1977), article 18 states that

> necessary steps will be taken to protect and make scientific, rational use of the land and its mineral and water resources, and the plant and animal kingdoms to preserve the purity of the air and water, to ensure reproduction of natural wealth, and to improve the human environment.

Article 42 stipulated that the citizenry of the USSR were obliged to protect nature 'and conserve its riches'. However, there were a number of problems with the laws which were intended to enforce these ideals. Firstly, the central principle was socialist control and ownership of virtually all natural resources – no one individual owned resources, and therefore no individual could be held accountable for environmental damage. The State owned all resources, and would not prosecute itself. Secondly, Marxism taught that the environment had no monetary value in exchange, and therefore it was not afforded protection. Thirdly, Soviet laws commonly had a significant educational function; law was seen as a means of developing the citizens' moral character, therefore some laws passed were

seldom implemented. The USSR therefore had an exemplary set of environmental laws which were meant to socialise the citizenry toward a protective attitude to nature, rather than because the laws themselves would be enforced.

However, the main obstacle to protection of the environment was the fact that the agencies responsible for the enforcement of the law were the same agencies responsible for the use of natural resources. For example, the Ministry of Fisheries was at the same time responsible for fishing, and for protecting stocks of fish from over-exploitation. These ministries would not prosecute themselves for damage to the environment, so environmental problems developed.

As discussed earlier, the administration of forestry in the USSR was in a seemingly constant state of change from one organisation or agency to another, in response to moves by Moscow to increase efficiency, reduce wastage, and to try to tackle growing environmental problems associated with the timber industry. The felling of trees can cause soil erosion, destroy wildlife habitats, increase stream sediment, damage fish runs, and alter local microclimatic conditions. Within Soviet forestry there were additional problems associated with the ways in which forestry was carried out. Loggers could assume that since the time taken for them to exhaust a given felling area was shorter than the time take for the forest to regenerate, they could abandon the felled area without having to spend time and money on conservation measures, because they themselves would not be harvesting the area again. Logging enterprises did not have permanent responsibility for a given tract of land, so the incentive to carry out rehabilitation work was low.[33] There were additional problems, such as the considerable felled area left to reseed itself by means of residual seed trees. Regeneration in these areas was often of aspen and birch, rather than the more valuable coniferous trees which had been extracted, and hence the composition of the forest was altered.[34]

Apart from the problems associated with the felled areas themselves, a major environmental hazard associated with forestry was that of the transportation of timber. The term '*molevoi splav*', or rafting, refers to the free floating of tree trunks from logging areas to downstream processing sites. In the Soviet Union, rafting was a major means of timber transportation. In 1950 over half of all the timber logged by the Ministry of Forestry was dispatched from lower landings by water, and by the 1970s the figure still stood at 37 per cent, with about 60 per cent of that total being loose floated. Water transportation was far cheaper than other methods. Maintenance of rivers for rafting was forty times cheaper than the maintenance of the same length of road, and sixty times cheaper than the maintenance of narrow-gauge railways. In the 1970s the cost per cubic metre kilometre of transporting timber by river was one third of that for the same unit on an average road.[35] In the North Urals, such rafting was the major method of timber transportation from the logging areas of the north to the paper and pulp factories located to the south. For example, the paper plant '*Visherabumprom*' (Vishera Paper Production) in Krasnovishersk was supplied with logs rafted

on the Vishera from timber cutting settlements upstream, and likewise, paper plants at Solikamsk, and as far south as the city of Perm itself, were supplied with wood rafted down the Vishera and Kama Rivers.

Although rafting was crucial to the forestry industry, especially that of the North Urals, where there are very few railways and where the roads are largely unmetalled, this method of timber transportation was not without its drawbacks. The whole surface of the water would be covered with floating tree trunks, and it was very difficult to prevent some of the timber sinking during the journey. Sunken timber would rot, releasing ammonia, phosphate and polyphenols, the toxic products of timber degradation. The effect of the release of such chemicals is that the waterway affected becomes starved of oxygen. In addition, fungal growths occur on the wood itself, and decompose, further depleting the oxygen supply. The overall consequence is a loss of many biological species leading to an imbalance in the aquatic ecosystem.[36] These environmental problems have been evident in the rivers of the North Urals since at least the 1980s.[37]

In order to understand the response of the Soviet government and local forestry enterprises in the North Urals to this degradation of waterways caused by free rafting, it is necessary to view the problem as part of the Soviet policy of environmental management of forestry. In the Soviet Union, forest industries treated logging as a type of 'mining' operation, in which brigades cut trees down and then moved on to new stands of trees, ever further from the central regions of the country.[38] Toward the end of the Soviet period, a new management scheme was introduced in an attempt to tie forest management to forest utilisation, using perestroika-style regulations of economic accountability and profit making. Several major agencies managed the forest resources, overseeing silvicultural activities and the commercial use of wood.[39]

This change in forest policy in the 1980s was related to changes in environmental awareness in that decade. Pryde calls this period the 'Chernobyl Awakening'.[40] He argues that from 1986 to the early 1990s the Russian general public became environmental activists, spurred on by the fears of nuclear radiation and other issues they saw affecting them personally. These changes served to complicate the Soviet environmental agenda. The existing agenda, which emerged in the 1960s, was based on the principles of using natural resources in the most efficient manner, with a passing concern for their conservation, but after the Chernobyl disaster, 'green' issues came more to the forefront of Soviet environmental policy.

In 1987, a year after Chernobyl, the Council of Ministers of the Russian Republic of the USSR (RSFSR) issued a decree 'Concerning the closure of rivers and other water bodies of the RSFSR to log rafting',[41] aimed at reducing the environmental damage done to Soviet rivers by the large volumes of timber rafted on them annually. According to the decree, in the North Urals the Vishera and its tributaries were to be closed to rafting by the end of 1995. On 31 January 1995, the Perm Region Committee for Nature Protection reported

on the progress made by the region towards closure of the rivers of the North Urals to rafting:

> In the region, certain work has been carried out to end rafting, and to return rivers to their former status for fishing. In the period 1991–1994, rafting was ended on the rivers Obva, Visherka, Uls, Vels, and Iaz'va, and the extent of the rafting on the river Iaiva was limited. However, colleagues note that, in the work aimed at ending rafting, there are serious shortcomings. [Forestry Enterprises] AO[42] '*KomiPermLes*', AO '*Ust-Iazvinskii raid*', and other water users have not fully carried out measures to prepare for the transition from the transportation of timber by rafting to transportation by land.[43]

In response to the circumstances of forestry enterprises in the region, the Perm Region Committee for Nature Protection drew up a list of actions to be taken. One of these was directed at the Komi-Permiak Autonomous Area (KPAA)[44] Committee for Nature Protection, alongside whom the Perm Region Committee intended to appeal to Moscow.

> We propose that the Perm region and Komi-Permiak Autonomous Area Committees for Nature Protection, in conjunction with water users AO '*KomiPermLes*', AO '*Verkhnekamskaia splavnaia kontora*' and AO '*Verkhne-Kosinskaia kontora*' should apply to the Russian Government for a prolongation of the time period allowed for rafting on the rivers Vesliana, Kosa and Lolog.[45]

On 8 February of the same year, the Committee of the Russian Federation for Water Management replied to the appeal:

> In accordance with the resolution of the Council of Ministers of the Russian Republic, 25 September 1987, rafting on rivers Vesliana, Lolog and Kosa must be ended by the end of 1995. As was established in 1994, by a commission of the administration of the Komi-Permiak Autonomous Area, the condition of the rivers Vesliana, Kosa and Lolog is extremely unsatisfactory. 70,000 cubic metres of timber are scattered along the banks of these rivers. The concentration of phenols in the river Kosa exceeds permissible levels by 10–17 times, and those in the Kama, downstream of its confluence with the Vesliana, exceed the permissible levels by 30 times. Oil products in the Kosa exceed allowed levels by 20 times, and in the Kama by 50–90 times.[46]

Having considered the appeal, the national Committee initially decided that it could not agree to the request, but it did give consideration to the views of the Russian State Forestry Company, and of the Ministry of the Economy.

> The Russian State Forestry Company and the Ministry of the Economy of the Russian Federation hold that it is possible to extend the period of rafting on the stated rivers, since the financial capacity of the forestry enterprises does not permit them to spend 140 million rubles [at 1991 prices] on the construction of a timber-lorry road, depots, reloading stations, railway access roads, and on the acquisition of additional timber lorries. It is not possible to assign resources from the central government.[47]

The North Urals' administration's point of view was also taken into account. The region requested that rafting on the three rivers should be allowed to continue for another two years, and it also drew attention to the question of the construction of a railway line through the Komi-Permiak Autonomous Area, as a means of replacing the rivers as a mode of transport for timber. The Russian Federation Committee for Water Management replied:

> The question of the construction of a railway line, passing through the Komi-Permiak Autonomous Area was considered by the Ministry of Economics of the Russian Federation in connection with the formulation of a general scheme for the development of railway transport in the period up to the year 2000, and it did not receive a favourable decision from the state experts of this Ministry, because of the high costs of such a construction project.[48]

However, the National Committee for Water Management did eventually relent, recommending that the Russian Government should allow rafting to be prolonged for another two years, making 1998 the date of its final cessation in the North Urals.

Despite this stay of execution for three rivers, the vast majority of waterways which had previously been used for log rafting were closed for this purpose by the end of 1995. The cessation of rafting had the effect of increasing the costs of forestry in the region, and therefore of reducing its productivity. The ending of rafting for environmental reasons was a considerable contributing factor in the demise of forestry in the area.

The closure of the Vishera river to rafting was as damaging as might have been expected. Siusiusin, General Director of AO '*Visherales'* said at the last meeting of the shareholders on 31 October, 1995,

> Because of the withdrawal of the Vishera river from rafting, and because of the absence of forest cargo vehicles, the continual use of roads, and the lack of capability to replace technical equipment, the lack of spare parts and engine oil, we have hardly produced half as much timber as we did in 1994.[49]

The director of another joint stock company, said in early 1996; 'Forestry workers are producing food on their plots, and people are holding out for the enterprise'.[50]

The closure of the rivers of the North Urals to rafting was a bitter blow for forestry enterprises already shattered by the collapse of the USSR and its attendant economic changes. The inability to transport timber cheaply meant that many enterprises became bankrupt, and their employees lost their incomes. The effect of this has been increased reliance upon kitchen gardens and collection of nuts, berries and mushrooms in the forests, as people attempt to subsist in the absence of employment. At the present time, the regional administration states that the situation facing forestry enterprises is still depressing. It quotes deterioration of the basic production assets of the enterprises; sharp deficiency in financial

resources; shortage of qualified personnel adapted to market conditions; a low level of industrial and technological culture; absence of real investment support on the part of the state, as well as difficulties integrating into the infrastructure of foreign trade activities, as reasons for continued low productivity. In the region's Business Plan to 2003, the aim was simply to stabilise of the industry, rather than to achieve any productivity increases.[51]

CONCLUSION: THE POST-SOVIET LEGACY

This paper has considered the history of forestry in a study area in the North Urals, an area which was settled forcibly during the 1930s at the direction of Stalin, and in which forestry was developed in line with Soviet industrialisation policy. The environment was critical to this development – the rich resources of timber were the reason for the settlement, and they provided both employment and subsistence for the workers. The forestry enterprises and workers had very different relationships with the forest. The enterprises were the instrument of the state, felling the forest in accordance with the state Plans, sometimes neglecting the replanting of felled areas, and often choking the waterways with rafted timber. The workers cultivated plots of land in their villages, collected berries, nuts and mushrooms from the forest, and used its resources at a small scale for their own consumption.

Throughout the Soviet period, the state sought to exploit the forestry resources of the North Urals, with little regard for the protection of the environment from damage by the forestry enterprises. After the Chernobyl disaster in 1986, measures began to be taken to protect the rivers from pollution by timber rafting. However, after 1991, these measures served to further suppress the forestry enterprises which had already suffered considerable hardship since the collapse of the USSR. Loss of its cheapest method of transporting timber meant that North Urals forestry was even less cost effective than it had been before, and the impact on the local economy, and with it the forestry workers, was significant.

To conclude, then, it can be said that Soviet industrialisation and environmental policy went hand in hand in the development of forestry in the North Urals, and both must be considered contributing factors in the poverty and marginalisation that now characterise the region.[52] Through the turbulent history of the forestry enterprises, their exploitation of the natural environment, and the economic and social consequences of the environmental damage the industry caused, the forestry workers continued to subsist from the land. The natural environment, which had provided them with housing, fuel, and food to survive the harsh climate in the early years of forced settlement, continued to support them when their employment could not.

NOTES

[1] During some of the Soviet period, the city and region of Perm were known as Molotov. 'Perm' is the current name and will be used throughout.

[2] M. Williams, 'Forests', in B.L. Turner et al. (eds), *The Earth as Transformed by Human Action: Global and Regional Changes in the Biosphere over the Past 300 Years* (Cambridge, CUP, 1990).

[3] W.H. Parker, *An Historical Geography of Russia* (University of London Press, 1968), p. 112.

[4] M. Ilic, 'The Development of the Soviet Timber Industry', M. Phil. thesis, University of Birmingham, 1986, pp. 19–20, 41, 64, 96, 117, 127–42.

[5] B.M. Barr, *The Soviet Wood-Processing Industry; A Linear Programming Analysis of the Role of Transportation Costs in Location and Flow Patterns* (University of Toronto Dept. of Geography research publications, 5, 1970), p. 93; B.M. Barr, and K. Braden, *The Disappearing Russian Forest: A Dilemma in Soviet Resource Management* (Totowa, NJ, Rowman and Littlefield, 1988).

[6] P. Blandon, *Soviet Forestry Industries* (Epping, Bowker, 1983), pp. 55–70

[7] The Russian or Soviet North is a region to the north of the Soviet landmass, characterised by harsh climate, poor soils, and short growing season. The function of the classification of this region as 'North' was to administer Northern benefits in order to attract migrant workers to the region. Geographically, the delineation of the North has varied through the Soviet and post-Soviet periods. For a fuller discussion, see M. Bradshaw, 'The Russian North in Transition: General Introduction', *Post-Soviet Geography* 36 (1995): 195–203.

[8] Kulaks were prosperous peasants regarded as exploiters, who were expropriated and deported to distant parts of the USSR during collectivisation in the 1930s. S. Fitzpatrick, *Everyday Stalinism* (Oxford, OUP, 1999), p. 4.

[9] P.H Solomon, 'Soviet Penal Policy, 1917–1934: A Reinterpretation', *Slavic Review* 39, 2 (1980): 195–217.

[10] S. Autio, 'Soviet Karelian Forests in the Planned Economy of the Soviet Union, 1928–1937'. Paper for University of Chicago Russian Studies Workshop, Nov 2002, http://cas.uchicago.edu/workshops/russian/autio.rtf

[11] D. Moran, 'Exile in the Soviet Forest: "Special Settlers" in Northern Perm Oblast', *Journal of Historical Geography*, forthcoming (2004); L. Viola, 'The Other Archipelago: Kulak Deportations to the North in 1930', *Slavic Review*, 60, 4, (2001).

[12] Unnamed fund, held in the Kosinskii *raion* archive, Kosa, containing data from the Государственный Архив Коми -Пермяцкий Автономного Округа (Komi Permiak Autonomous Area State Archive) hereafter GAKPAO f.4, op.1, d.86, l.79, and f.40, op.1, d.101, l.22

[13] Ekaterinburg Izdatel'stvo Ural'skogo Universiteta *Sud'ba raskulachennykh spetspereselentsev po Urale* (*1930–1936gg*) *Vypusk 1 Bank dannykh po regional'noi istorii Urala v XX veke* (1994).

[14] Author's observation: [Feb–May 1996], [Solym and Kosa, Kosinskii raion, Perm Oblast]

[15] Yekaterinburg Izdatel'stvo Uralskogo Universiteta *Sud'ba Raskulachnennikh spetspereselentsev no Urale* (*1930–1936gg*) *Vypusk 1 Bank dannykh po regional'noi istorii Ural v XX veke*. (1994).

[16] Kosinskii *raion* archive account, containing data from GAKPAO, f.4, op.1, d.86, l.79, and f.40, op.1, d.101, l.22

[17] Author's interview: Anonymous, July 1998, Solym, Kosinskii *raion*, Perm Oblast.

[18] Ibid.

[19] Ibid.

[20] *Vaiiskii Lespromhoz kombinata 'Uralzapadoles' Zapadno-Uralskogo Sovnarkhoza Ob'iaznitel'naia Zapiska k godavomu otcheti o khoziaistvenno-finansovoi deiatel'nosti Vaiskogo lespromkhoza za 1963 god* (Jan. 1964). Государственныи Архив Пермский Области (Perm State Archive), hereafter cited as GAPO, f.1074, op.1, d.299, ll.98–116, 5–6

[21] Fuchs and Demko, 'Geographical Inequality Under Socialism', *Annals of the Association of American Geographers*, 69, 2(1979): 304–18.

[22] Ibid.

[23] J. Pallot, 'Rural Depopulation and the Restoration of the Russian Village under Gorbachev', *Soviet Studies* 42, 2 (1990): 665–74.

[24] For example, G.L. Filichkin, *Sborka Shchitovikh domov v lesnikh poselkakh Lesnaia Promyshlennost'* 10, (1952): 5–7

[25] P.I. Verenchikov, V.P. Pronevich and Yu. A. Suskin, *Lesnie Poselki Lesnaia Promyshlennost'* 10 (1967): 25–26.

[26] In Russia, 'First' floor is equivalent to the British 'Ground' floor, 'Second' floor to British 'First' floor and so on.

[27] Verenchikov,et al. (1967): 25

[28] *Lesnaia Promyshlennost* 2 (1961): 28

[29] *Lesnaia Promyshlennost* 4 (1963): 22

[30] J. Pallot and D. Shaw, *Planning in the Soviet Union* (London, Croom Helm, 1981).

[31] *Spisok Lesnikh Poselkov Predpriiatii. Vsesoiuznogo Lesopromishlennogo Obedinenia Permlesprom po sostoiania 1.10.1976g* authorised by *Nachalnik Otdela Zhilishchno-Kommunalnogo Khoziaistva i byta obedinenia, F.S.Kozlov* Kosinskii *raion* Administration, Department of Statistics *Spisok naselennikh punktov po Kosinskomu Raionu na 1 ianvaria 1997 goda*. Despite the apparent finality of the document regarding the fates of the villages to be liquidated, Romanikha and Odan still exist, albeit in a precarious position: Odan had a population of just four in 1997; and although Romanikha was home to 206 people in 1993, it was described as a 'non-viable' village by its *raion* administration in that year. Possibly the non-fulfilment of the planned liquidations stemmed from the review and revision of the rationalisation plans which was ordered by Brezhnev, and which halved the number of 'non-viable' villages and adopted a more flexible approach to those remaining.

[32] Fieldwork observations made by the author. Observations made in Solym, Kosinskii *raion*, Feb–May 1996 and Vaia, Krasnovisherskii *raion*, July 1997.

[33] Barr, *The Soviet Wood-Processing Industry*, p. 96.

[34] Ibid., 97

[35] Ibid., 97

[36] O. Bridges and J. Bridges, *Losing Hope: The Environment and Health in Russia* (Avebury Studies in Green Research, 1996), p. 114.

[37] Committee of the Russian Federation for Water Management (Roskomvod) 8 February 1995 'Regarding the prolongation of timber rafting on the rivers Vesliana, Kosa and Lolog in the Komi-Permiak Autonomous Area', First Deputy Chairman V.I. Makarentsev.

[38] P.R. Pryde, *Environmental Management in the Soviet Union* (Cambridge University Press, 1991), p. 119

[39] Ibid.

[40] Ibid.

[41] (25 September 1987, No.384)

[42] Joint stock company. After 1991, state forestry enterprises had become joint stock companies.

[43] Perm Oblast Committee for Nature Protection, 31 January 1995, 'Concerning the work of nature protection and water use with respect to the closure of the rivers of the oblast to rafting'. Committee Chair, V.V. Kazantsev.

[44] The Komi-Permiak Autonomous Area (KPAA) is located within, but is currently administratively separate from, Perm Oblast.

[45] Perm Oblast Committee for Nature Protection, 31 January 1995 'Concerning the work of nature protection and water use with respect to the closure of the rivers of the oblast to rafting'. Committee Chair, V.V. Kazantsev.

[46] Committee of the Russian Federation for Water Management (Roskomvod), 8 February 1995, 'Regarding the prolongation of timber rafting on the rivers Vesliana, Kosa and Lolog in the Komi-Permiak Autonomous Area'. First Deputy Chariman V.I.Makarentsev.

[47] Ibid.

[48] Ibid.

[49] *Krasnaia Vishera* 10 November1995

[50] *Krasnaia Vishera*29 April 1996

[51] Zakonodatel'noe Sobranie Permskoi Oblasti Reshenie ot 22 July 1999, No. 571, 'O Kontseptsii Razvitiia Promyshlennosti Permskoi Oblasti na 1999–2003gg' U.G. Medvedev, *Zvezda*, 23 February1999.

[52] For a discussion of contemporary socio-economic conditions, see J. Pallot and D. Moran, 'Surviving the Margins in Post-Soviet Russia: Forestry Villages in Northern Perm' Oblast', *Post-Soviet Geography and Economics* 41, 5 (2000): 341–64; D. Moran, 'Exile and Exclusion: The Legacy of Soviet Forestry for Villages in the North of Perm Oblast', *Geojournal* 55 (2001): 541–7.