

Nurseries and Reforestation in Russia

John R. Scholtes¹

Scholtes, J.R. 1996. Nurseries and Reforestation in Russia. In: Landis, T.D.; South, D.B., tech. coords. National Proceedings, Forest and Conservation Nursery Associations. Gen. Tech. Rep. PNW-GTR-389. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 223-227. Available at: <http://www.fcnet.org/proceedings/1996/ascholtes.pdf>

Abstract-The following paper discusses the nursery portion of a Sustainable Natural Resources Management Project being carried out in the Russian Far East. It describes the project, the location, the current situation, and some of the accomplishments.

INTRODUCTION

My involvement in this project began in late May of 1995 with a telephone call from Peyton (Pete) Owston of the PNW Station, Corvallis, Oregon. Pete explained that he was a Team Leader on a project and was asking about individuals who could design a greenhouse irrigation system for a greenhouse project in Russia. After discussing how "designs" for this type of equipment are usually developed, I told Pete I thought I could draw one out and list the needed parts. This developed into a trip to the Russian Far East. I was part of a group made up of Wayne Bushnell, Fire Control Specialist and Chad Converse, Nursery & Tree Improvement Specialist. Both are in State & Private Forestry, Anchorage, Alaska. Wayne was the trip leader.

THE RUSSIAN FEDERATION

The Russian Federation is a huge, very diverse country. I already knew that. But just how large, really didn't strike home until I began looking at maps of where I was going to visit.

I have visited Alaska several times and am always impressed by the distances and sizes of that great land area. Once I visually compared the Russian Far East to Alaska, I began to realize just how large Russia really is. For starters, Moscow is 7 time zones away from the place I was to visit! Compare that to Washington DC being only 3 time zones away from our west coast. The importance of the Russian Federation to the world's environment can be expressed by the fact that it contains 20% of the world's forests and 50% of the coniferous forest lands (USAID).



Figure 1. United States vs. Russian Federation.

WHAT IS THIS PROJECT?

The U. S. Agency for International Development (USAID) is carrying out an extensive program titled *The United States Government Environmental Policy and Technology Project* (EPT). Within this project, is the Russian Far East Sustainable Natural Resources Management Program. In addition to the USAID projects, Region 10 of the U.S. Forest Service and the Pacific Northwest Research Station have a cooperative agreement with the Khabarovsk Territory of the Federal Forest Service of Russia. An implementing agreement that was established by the Forest Service in 1994 includes the following areas of emphasis:

- 1 . Forest Fire Protection and Management
2. Forest planning and Data Management
3. Reforestation and Timber Stand Improvement
4. Administration of Forest Lands
5. Timber Harvesting and Forest Operations
6. Training of Forest Specialists
7. Environmental Education Forest Product Development, Utilization, and Marketing

Pete Owston the leader of the "Biology and Culture of Forest Plants" team which is working within the Reforestation and Timber Stand Improvement emphasis area.

WHAT IS THE NEED FOR SUCH A PROJECT?

Past forestry practices in the Primorski and Khabarovski Krai in the Russian Far East have led to decline of biodiversity in large areas of these Krai which are about 94% forested. Although significant effort has been made in terms of reforestation, the heavy selection of preferred species (primarily Kedra pine *Pinus koraiensis*) has led to an imbalance of the natural ecosystem. This imbalance is being expressed in several ways. One of which is the effect upon the food chain of the Siberian tiger which is a threatened and endangered species. The tiger depends heavily upon the wild boar. The boar, in turn, depends heavily upon the large seeds of the Kedra pine. Thus interest in saving the Siberian tiger (who's population has declined to 200 or less) from complete extinction leads to the need to reintroduce Kedra pine back into its natural

sites. Another major factor is wild land fire which has burned over ten percent of the Khabarovski Krai in the past ten years. Fire prevention and control is a major emphasis area in assistance programs but increased restoration activities are needed regain the biodiversity of endangered areas.

WHERE IN THE WORLD IS THIS PLACE?

The Russian Far East (RFE) is often described as the eastern most tier of **Republics, Oblasts,** and **Krai** (which are administrative units) of the Russian Federation (Figure 2). But as shown, some individuals also include a few interior subdivisions in describing the RFE.

Attention is currently centered at two nursery locations. One is the Nekrasovka site near Khabarovsk and the other is the Goorsky site near



Figure 2. Russian Far East.

Komsomolsk-naAmurye about 300 kilometers north of Khabarovsk. Both locations are in the Khabarovski krai, which is in the south-eastern portion of the Russian Far East.

FIRST IMPRESSIONS OF A NEWLY ARRIVING AMERICAN

Unlike the view from your airplane at an American airport, there is always an obvious presence of military security. The one or two soldiers that came out to "guard" our plane were not particularly threatening. They were just there. At the two airports I visited, planes were always met by a fire truck and parked some distance away from the terminal. At Magadan, which was our first stop in the RFE, passengers were transported to the terminal via a people carrier which was somewhat like a large bus, only it was a 5th wheel trailer. There were no seats inside so passengers just grabbed a railing and held on while the truck pulled the carrier to the terminal.

The baggage carrier was also a little different. It consisted of one flatbed truck with stake racks. All the baggage from the flight was heaped onto the truck for the trip to the terminal. All of our luggage arrived in good shape but you probably wouldn't want to carry your laptop in your suitcase.

THE CURRENT PROGRAM

A few years ago, prior to the breakup of the Soviet Union, as many as 20,000 hectares were being planted each year (Perevertailo).

Bareroot nurseries and bedhouses have been utilized for many years. I visited a research nursery near Khabarovsk which had several bedhouses filled with nice crops of Kedra pine (*Pinus koraiensis*) and Siberian larch (*Larix siberica*) and a few minor amounts of local hardwoods. The Federal Forest Service nursery at the Nekrasovka site near Khabarovsk also

had one bedhouse sown to larch. It had been sown on May 25 1h and the larch seedlings were growing well ranging from 4 to 8 inches high by August 1st. We were told that about seven bedhouse operations are located at ten nursery sites scattered among the 44 lesnos (forest administrative units) within the Khabarovsk Krai and that two to three new nurseries are being developed every five years (Chernicoff).

Bareroot seedlings are also being successfully grown and planted throughout the area but a typical production cycle takes 5-7 years. Part of the reason for the long growing period is the density of sowing. Other reasons are lack of irrigation, fertilization and other culturing methods. As we noted during a trip to the Goorsky site near Komsomolsk, some bareroot "nurseries" are little more than clearings along roads where the soil is prepared and seed is sown. Growing is left pretty much up to nature. Heavy soils, short growing seasons and of course, the harsh winters also contribute to the number of growing periods needed to produce plantable seedlings.

At the Nekrasovka site near Khabarovsk, the bareroot operation has not been as fully successful as they would like. Sergei Buten, Nursery Manager is experimenting in an attempt to overcome several problems including soil, climate and lack of labor and equipment. He is attempting sowing in single row beds more like rows for growing corn or potatoes. Seedlings were very dense within these rows. I dug out approximately 8 inches of seedling row and it yielded 30 seedlings. The high density was valued as a way to overcome frost heaving. To overcome the lack of irrigation equipment (they have 9 sprinklers to irrigate 1.5 hectares of 2-0 seedlings and 2.4 hectares of 1-0 seedlings) the recommended sowing depth is 3-4 and up to 5 cm (2 in.) for Kedra pine. The deep sowing and the lack of irrigation during the early summer dry season left seedlings emerging following the arrival of rains in late July.

Root systems of two year old seedlings I dug were poorly developed. They had very few secondary laterals. The root systems ranged from 5 to 15 cm in total length (approx. 2-6 inches). Interestingly, even the poorer root systems exhibited signs of excellent mycorrhizal inoculation.

In spite of these tough soil and climatic conditions, 9.2-10.5 thousand hectares were planted with an estimated 24 million seedlings during the spring of 1995 (Chernicoff).

THE FUTURE

Through funding from USAID and training and advice from the U.S. Forest Service, American companies and other nations, the future for sustaining the natural resources and the environment within this huge land area is improving. The surface has just been scratched and much depends upon the stability of government and the economy within the Russian Far East and the Russian Federation as a whole. A target within the Khabarovsk Krai is to be planting 15 thousand hectares each year with about 30 percent of the seedlings being container grown by the year 2000 (Chernicoff).

During my visit, there was a dedication ceremony for the new container nursery operation at the Nekrasovka site near Khabarovsk. Vladimir Pominov the Russian Federal Forest Service administrator of the Khabarovsk Krai and Kevin Rushing of USAID

provided inspiring speeches and performed a ribbon cutting ceremony. A large utility building had been constructed plus there were three greenhouse frames which were nearly identical to the ones at the research station nursery. Two of the frames had been covered with plastic sheeting. One of these was being utilized for the bedhouse of larch mentioned earlier. The other was being utilized to test containers, growing media, watering system, etc. Tests utilizing 9 different mixtures of native potting materials had been installed. As part of my mission, I had purchased and carried over a system of filters, a nutrient injector and an assortment of nozzles to set up the test house for irrigation and the application of fertilizer. Our group had also carried over a small supply of water soluble fertilizer which is not available in RFE.

UPDATE

This past spring (1996) Joe Myers, Nursery Manager of the U.S. Forest Service Coeur de Alene Nursery and John Bartok, Nursery Specialist and Extension Agent at the University of Connecticut made a service trip to both nursery sites mentioned above. U.S. manufactured plastic covering material and other items were pre-shipped and Joe and John packed other items with them. They redesigned and oversaw the reconstruction and covering of existing houses at both sites. In addition, they oversaw the construction of a small demonstration house built to Bartok's specifications. These redesigns and demo designs were carefully made to utilize locally available materials so that additional houses could be built as needed.

Pete Owston just returned (August 96) from a trip to this area and was able to revisit the project sites. He reports that some of the seedlings grown in the tests the previous summer turned out fine and were successfully over-wintered. This is great news because overwintering was one of the larger problems to be solved. He also reports that good crops are being grown in the redesigned houses and in the demo house. In addition, John Bartok is planning to utilize his vacation time later this summer to return to RFE and oversee the construction of a full sized greenhouse based upon his design of the demo house.

Pete also reports that a U.S. made container filling and sowing line has been purchased and is ready for delivery to the RFE. Seed cleaning and storage equipment is also being specified for procurement. Given the accomplishments to date, and future plans, the future of sustainable natural resource management and ecosystem restoration is looking very hopeful.

¹*Nursery Manager, J. Herbert Stone Nursery, Central Point, Oregon.*

LITERATURE CITED

USAID - Undated pamphlet. Russian Far East-Sustainable Natural Resources Management Project. USAID/ Environmental Policy and Technology Project.

Perevertailo. Ivan. Chief. Laboratory of Artificial Reforestation and Seeds Production. Far

East Forestry Research Institute. 1995. Personal Communication. Khabarovsk, Russia.

Chernicoff, Alexander, Chief, Reforestation, Khabarovsk Krai, Russian Federal Forest Service. 1995. Personal Communication. Khabarovsk, Russia.
