Published by the Forest History Association of British Columbia

No. 66 Victoria, British Columbia June 2002

GROWING UP IN THE INTERIOR
Part Two of Two
by Dave Wallinger

The large forest fires of 1960 now provided plenty of planting areas, and nursery production was increasing. Getting enough planting labour was becoming the main problem. Pick-ups off the street and UI types were no longer desirable, so we began to rely on native people; Kamloops being the first district to hire full native crews. There were some early problems but, by 1964, forty percent of the provincial planting force was made up of First Nations people.

Based on the knowledge acquired and procedures developed from the earlier research nursery trials, Red Rock Nursery was brought into production to provide stock for the Central Interior. At the same time, Chilliwack Nursery was established to supply seedlings for the southern Interior and the Coast-Interior transition types.

Other large nurseries were on the horizon to serve the rapidly increasing Interior planting program. To facilitate and smooth out the link between the nursery and the planting sites, portable cold storage units were designed, built, and placed in strategic locations.

New planting methods were being tested and evaluated. Initial work with seedlings grown in "bullets," devised by Jack Walters at the UBC Research Forest in about 1953, led to formal trials using planting "guns." Although planting guns were highly efficient, the plastic "bullets" prevented or restricted free and balanced root egress. Extracting the seedlings from the bullets and planting them with dibbles was found to be more successful, and this step led naturally to growing the seedlings in "styroblocks," and finally to the present "plug" system. The development of this system was a cooperative venture of the federal Pacific Forest Research Centre and the Forest Service.

The late 1960s and early 1970s was a period during which extensive testing took place to assess the performance of various sized containers, growing mediums, cultural schedules – light, temperature, fertilizers, irrigation, equipment – and combinations of all these. The seedlings produced by these nursery trials were outplanted in seemingly endless and replicated field trials throughout the Interior in order to assess and compare survival and initial growth. In 1967, we undertook the first trials with "mudpacks." This was a treatment in which the roots of the seedlings were packed in a thick slurry of clay and peat moss, rolled into a cylindrical shape and superficially dried. Despite the extra cost of mudding, the additional weight to be handled, and the distribution problems in the field, the survival of mudpacks, when planted with a special dibble, was shown to be acceptable under certain limited conditions.

In 1967, the Forest Service made two decisions which led to the explosion of reforestation in the Interior; the restrictions on slash burning were removed, and contract planting was approved. Slash burning would, of course, provide large areas of suitable planting sites, and the nurseries would increase seedling production to meet the demand. The first contracts in the Interior were let in the spring of 1970 – a total of 900,000 trees. Contract planting was soon to involve a great many college and university students, particularly when the planting season could be extended into early summer. It wasn't long before a host of contractors was bidding for work.

This was not an easy time for either the contractors or the Forest Service. We were feeling our way and the contractors were taking the brunt of our mistakes, however, it wasn't all one-sided as we had to put up with a lot from them as well. Each year, it seemed, new problems arose and we both found ourselves involved with the WCB, Labour Standards Branch, Motor Vehicle Branch, Sanitation and Hygiene Branch, Industrial Transportation and even the Federal Immigration people. New problems usually ended up being solved by putting another clause in the contract document. This document, which started out as one page plus a map, has, over the years, developed into a master contract of several pages plus at least four or five appended schedules as well as maps.

For its own projects, the Forest Service continued to rely heavily on native people and, in some districts, inmate crews under the Forestry – Corrections Program. Then, in 1972, the Ranger at Pendleton Bay on Babine Lake hired a crew of housewives for a small project. The women took to planting right away and did a good job. They would work every day except Saturday, which they wanted for getting in groceries and doing housework. The word spread like wildfire to the other districts and, within two years, over half the Forest Service seedlings were being planted by women; up to 80 percent in the Prince George District. By 1980, many women had become capable crew bosses and planting contract supervisors.

It seemed that the coincident evolution of the “plug” seedling program and the planting contractor was a marriage made in heaven. The format of the plug and the dibble as a planting system largely eliminated the problem of planting quality which, admittedly, was one of our big concerns in going the contract route. This planting system was also amenable to a wider range of site conditions and, because of the capability of storing trees longer through the use of better packaging and on-site cold storage, the spring planting “window” could be extended. Indeed, in some areas, careful selection of sites and scheduling of tree delivery could permit summer-long planting. This was a boon to the planting contractor. About 1970, and largely because of new and larger nursery development elsewhere, it was decided that the East Kootenay Nursery, with its limited production and high costs, was no longer needed. This facility was closed and the property is now managed as a park by the East Kootenay Regional District.

The improvements in nursery methods and increased production demanded improvement in the quality and quantity of tree seed. In 1968, nurseries were using over a ton of seed each year. Cones were now being harvested only in good crop years, at the optimum time, and from better trees in the stands. In the extractory, seed processing, testing and storage had been improved substantially so that seed could now be stored for many years without loss of viability.

In 1973, most of the bare-root seedlings were still being planted with the old mattock. In the Prince George District, “toppling” was occurring in some 10-year old plantations of lodgepole pine and, in some areas, it was quite widespread. Excavation of trees and examination of the root systems showed no sign of insect or disease damage, so the problem appeared to be due to either poor planting practice and/or lack of root development. It was determined that the roots were inadequate in volume to balance the rapid top growth. Nursery practices were revised to ensure a better balanced tree and the grading of seedlings became standard practice. The toppling problem also led to the demise of the mattock as a planting tool. A drain spade was adopted as the standard tool for planting bare-root seedlings since it produced an adequate hole with minimum effort. Narrowing the blade and adding a foot step improved its efficiency. The results of the toppling study also indicated the need for more container production, and this was increased with confidence on the basis of the results from the earlier nursery and stock testing trials.

In 1973, the Forest Service, in cooperation with the Pacific Forest Research Centre, undertook a study towards establishing planter performance standards. Over a wide range of sites, and under most imaginable site conditions, planting was carried out by a seven-man crew, using both bare-root and container systems. The crew's performance was monitored by time studies over a seven-week period. Daily work standards were established and tied to various site conditions – soil, slope, slash, debris, rock, duff, unplantable areas and combinations of these. Survival studies of the planted areas were made a year later as a means of relating success to the performance standards. The results of this study are still being used to prescribe systems, spacing, and to estimate planting costs.

A banner year for reforestation in the Interior occurred in 1974. For the first time, the total number of trees planted by both Forest Service and industry exceeded that for the Coast and, for the first time, industry planting surpassed that of the Forest Service in the Interior. By 1980, there were almost twice as many contracts as Forest Service-crewed projects. About 80 million trees were being produced in nurseries and, with the required preparatory work, supervision of the planting and the follow-up, reforestation was becoming a major part of the Forest Service workload.

Because of the amount of detailed preplanning involved, the job of reforestation was transferred from the District office to the Ranger staff. Nurseries were now beginning to experience some stock turn-backs. Trees were being returned because the areas which were scheduled for planting were not ready owing to a wet summer (no fires or slash burning), or to reduced logging activity. Returned seedlings were transplanted in the nursery, if space permitted, and held until next year. This often created bottlenecks in production and storage, and resulted in an oversupply of trees later. Thus, reforestation planning in the districts became a balancing act.

Because of what the industry may have regarded as an inconsistent supply of seedlings, some companies were given approval to develop their own nurseries, or to purchase planting stock from a few private nurseries that had appeared on the scene. It was stipulated, however, that any seedlings planted on Crown land, or within a sustained yield forest (TFL or Registered Tree Farm), must be grown from registered seed provided by the Forest Service Tree Seed Centre. In 1981, the government placed a production limit of 100 million trees for Forest Service nurseries and, if the demand for planting on Crown land exceeded this figure, the balance would be contracted out to private growers. This, I believe, was the thin edge of the wedge which led to the sale of seven of the ten Forest Service nurseries in 1986.

In 1980, I was reassigned from planting operations to coordinate and beef-up the seed collection program across the province. It was difficult for me to leave the world of planting and the many associations I had made. I was fortunate to have been involved in the early and exciting days of reforestation in the Interior and to have had a part in the evolution of site preparation and of contract planting. This new responsibility was to increase cone collections, and to improve collecting and handling procedures so that the new seed processing plant at Surrey would have better cones with which to work.

A training program was launched in the districts and, as knowledge and experience were gained, a collection manual was produced with the cooperation of the Pacific Forest Research Centre. Improvements in crop reconnaissance, timing of collections, field storage facilities, and transport resulted in bigger and better collections. As well, new collection systems and equipment were devised. Aerial collections came about with the cooperation of the Pacific Forest Research Centre, Protection Division, industry and various helicopter firms. At the Seed Centre, extraction, processing and seed storage practices had been vastly improved by better equipment, knowledge and testing so that the high quality of seed needed by the container program was now being provided. In the seed registry, a system was set up to record the provenance, germinative quality, storability, and inventory of every seedlot. The Seed Centre remains the core of reforestation in British Columbia.

I left reforestation in 1988 with almost 35 years under my belt. In the Fall of 1996, I made a tour back to the Kootenays and to other parts of the southern Interior in order to have a look at some of the plantations in which I played a part, from 1953 planting at Newgate to the early 1980s contract planting in the Sue Fire at Golden. Considering that we knew very little in 1953, things turned out okay – we did the best we could with what we had, and we have learned a lot since. I was very pleased with all the plantations I saw and I only wish that I could take the tree planters of today forty years ahead in time. It would be quite a sight…

MARTIN MARS, "GOD OF RAIN"
by Dirk Septer

With a wingspan of 200 feet, the Martin Mars is the largest operational flying boat the world has ever seen, or probably ever will see. Only seven of these aircraft were built and from 1946 to 1956, when the last one was retired, they carried a quarter of a million passengers and many tons of freight over the Pacific for the U.S. Navy. One Mars carried a record 68,327 pounds of cargo from Pax River, Maryland to Cleveland, Ohio.

These flying boats had performed well and developed somewhat of a mystique of invincibility. They were well-liked by their crews. When the last operational flight was made in 1956, the three older JRM-1 Mars had logged between 18,000 and 20,000 hours each.

From 1957 through 1959 the four remaining Mars aircraft rested on the beach of the Alameda (California) Naval Air Base awaiting possible destruction. Around 1959, they were auctioned off to be scrapped. Veteran coastal pilot Dan McIvor was instrumental in acquiring the Mars flying boats. He developed the "gallons per hour" concept of using aircraft capable of dumping large amounts of water on forest fires and was involved in the early days of aerial fire fighting using the DeHavilland Beaver and Grumman Goose.

Late in 1959, B.C. Forest Products Ltd., MacMillan Bloedel Ltd., Pacific Logging Ltd., Tahsis Company Ltd. and Western Forest Industries Ltd., formed Forest Industries Flying Tankers (FIFT) to purchase, convert and operate the Mars as waterbombers for the member companies. An operational base was established, complete with communication centre, fuelling and maintenance facilities and crew living quarters at Sproat Lake near the community of Port Alberni.

Though a scrap dealer had just purchased the Mars aircraft for a total price of $23,000, Dan McIvor managed to acquire them for $100,000 – still a huge bargain. The four aircraft, named *Caroline Mars*, *Marianas Mars*, *Hawaii Mars* and *Philippine Mars* were ferried to the Victoria International Airport at Patricia Bay. Sitting at the old Fairey Aviation of Canada Ltd. hangars and tied down across the airfield, these "monsters" literally dwarfed the nearby small control tower.

Fairey Aviation stripped the first two aircraft of redundant military gear and other equipment not required in a peacetime waterbomber. They were then fitted with plywood and fibreglassed tanks holding some 7,200 US gallons. Finally, two pickup probes were installed to allow the aircraft to take on water while "on the step." The hydraulically-operated probes fill the tanks in 30 seconds as the aircraft taxies across the water at 70 knots (130 km/h).

During the summer of 1960 a technical evaluation of the Mars waterbomber was carried out. Initial trouble with engine failures was traced to excessive vibration caused by faulty propeller blading, but the general opinion justified continuing the operation with one aircraft. However, after performing well on two fires, *Marianas Mars* was lost on its third fire of 1961. On her first run, the Mars crashed in heavy timber close to the target area at Northwest Bay and four crewmen lost their lives. *Marianas Mars* had apparently failed to drop her load and she could not outclimb the rising ground.

A lengthy inquiry exonerated the aircraft and FIFT ordered another Mars to be converted. Overhauled down to the last hull rivet, she was ready for service in early 1962 but saw relatively little action due to the generally low fire hazard that year. A total of 118,000 gallons of water was dumped on five fires. On the largest fire the real potential of the Mars was recognised.

A year later, *Caroline Mars*, the fourth aircraft slated for service but not yet converted, was written off under totally different circumstances. On October 13, 1962 the tail end of Typhoon Freda struck the Victoria airport, broke the eight heavy steel anchor cables and hurled the four-engined giant 200 yards, breaking her back. Damaged beyond repair, the aircraft was scrapped.

It was during the 1963 season that the Mars really showed what she was worth. For the first time the aircraft completely extinguished a fire without ground crew support. In September, however, the Mars really got into action! The usual fall rains held off and the weather turned hot and dry. Fanned by strong winds, many slash fires were soon out of control. Consequently, the Mars flew more sorties in three days than in any of the

preceding three years. In 32 runs some 177, 000 gallons of water were dropped on a number of fires. Until the ocean became too rough, salt water pick-ups were made offshore from the fires, with round trips made in 10 minutes.

A record 495,000 gallons of water were dropped on nine operational fires during the 1963 season. For once and for all the Mars proved to be a major contribution to fire control. Consequently, FIFT decided to bring a reserve tanker into service during the coming year. During the summer of 1965, the two Mars bombers dropped more than one million gallons of water on 17 forest fires in British Columbia. This was the first time the million-gallon mark was reached.

On operational tours, the Mars crew consists of four people – Captain, First Officer and two Flight Engineers. The Captain is responsible for the overall success of the mission and the safety of the aircraft. It is he who ultimately decides whether it is safe to fly over the fire area, considering terrain, smoke conditions and air turbulence. As the giant flying boat will create about a 4-ft. (1.2 m) swell on takeoff, the Mars aircraft taxi to a secluded part of the well-populated Sproat Lake prior to starting their takeoff run.

When flying in to pick up a water load, the Captain takes complete control. Descending fairly rapidly, he will ease the aircraft down until it is planing through the water at exactly 70 knots. When the aircraft is planing smoothly, he will lower the probes to pick up water. During an actual operational mission, chemical fire retardant would then be injected into the tanks.

Meanwhile, the First Officer is busy with the flaps and trim controls in preparation for takeoff. The moment the loading starts, the First Engineer will take over control of power. In these critical 20 seconds required to take on a full water load, he must maintain the aircraft speed at 70 knots, and then boost power for takeoff.

While en route to the fire, the First Officer maintains radio communications with the Pilot of the birddog aircraft, awaiting instructions. Ideally, the birddog Pilot has by then identified the first target and lined up the best line of approach. Before starting his bombing run, the Mars Captain will often fly over the target to confirm the instructions from the birddog Pilot. The captain will then make the drop. Once committed to his run, he concentrates entirely on his approach course and altitude. The First Officer will take over the throttles to maintain airspeed at 120 knots. Once past the target, he then applies climbing power to ensure a safe exit from the fire area.

The fourth crewmember on the flight deck is the Second Engineer. When he is not busy watching the maze of instruments on the console to ensure that all systems are “running green,” he will make frequent inspections of the water tanks and miscellaneous auxiliary power units. The radio person back at the base takes care of dispatcher duties, alerting the base crew about any repairs or supplies the aircraft may require upon return to base. During slow fire seasons when callouts are few and far between, the crews will keep a regular schedule of maintenance, training and base improvement. But when the call comes, the crews will be ready to respond.

In 1962 FIFT used a birddog plane, a Cessna 195 floatplane, for the first time. A Grumman Goose later replaced it. In water bombing operations, a birddog is indispensable. In addition to making the tanker operation more accurate, it also makes it safer. First over the fire scene, the Pilot of this aircraft will do a quick assessment of the situation, identifying the target priority. After establishing air-to-ground contact, he will warn crews working on the fireline of the approaching airtanker. Using a standard warning system, the Birddog Officer will ensure that ground crew and equipment are clear of the area targeted for airtanker action. Normally, radio communication between the Birddog Officer and fire control line supervisors will prevent incidents of fire fighters being hit by airtanker drops. The birddog plane will now lead the airtanker to its target. The secondary function of the birddog plane is that of a "jack-of-all-trades," locating spot fires or flying a fire boss over trouble spots.

Though the Mars are almost exclusively used for the company's own forest fire suppression operations, when available and so required, they have been used by other agencies. In recent years the two Mars aircraft worked on the huge fire near Salmon Arm in 1998. The "Silver Creek Fire" forced evacuations in the province's dry Okanagan country. In 2000 the Mars worked outside Canada for the first time, logging 44 hours fighting wildfires in California.

When one of the two remaining partners in FIFT pulled out last year, the future of the two Martin Mars JRM-3s was hanging in the balance for a while. By 1998, the number of FIFT partners had dwindled to only two, MacMillan Bloedel Ltd. (MacBlo) and TimberWest. After Weyerhaeuser took control of MacBlo, they considered the operating costs of $2 million annually too high to justify the continued use of the two Mars waterbombers, leaving them to TimberWest to operate.

After their first and only accident, the two remaining Mars bombers have worked 40 years accident- and incident-free. Averaging about 75-100 hours a year, the two aircraft have logged a total of 2,800 hours each since the beginning.

This newsletter is the official organ of the Forest History Association of British Columbia. Please submit newsletter material and send changes of address to the Editor: John Parminter, # 3 – 130 Niagara Street, Victoria, BC V8V 1E9. Phone (250) 384-5642 home or (250) 356-6810 office. E-mail: jvparminter@telus.net

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