

# Report to Corangamite CMA on a study trip part-funded by the Susan Hickey Memorial fund. Andrew Lang

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**Note:** From the beginning I use the term NIPF as the abbreviation for 'non-industrial private forestry'. This is as opposed to industrial or corporate private forestry (IPF). It is an important distinction the Scandinavians and northern Europeans constantly make themselves. NIPF owners (NIPFO) are individuals and farmers who own forest areas, often as part of their farm, and may produce fuelwood, biomass or industrial logs. NIPF includes the Australian concepts of agroforestry, integrated farm forestry, family-owned private native forest, and small-scale farm plantation forestry.

Index	page1
Background	2
Summary	2
Itinerary	4
Report content	
Sweden - Overview of Swedish forestry	5
SodraSkog: A NIPF owners association in full swing	5
Knared - Insight into a family-owned mill operation	7
Lithuania. The IUFRO conference, and ideas from Ireland	9
Denmark. SDS, the state-supported, self-funded extension service	10
USA - Timbergreen Farm: a good living from 'one tree an acre per year'	11
Kickapoo Woods Cooperative: externally funded extension	12
Wisconsin state DNR services to NIPF.	13
Wisconsin renewable energy and bio-fuel	16
North American Farm Forestry conference, impressions of USA	17
Snowy Peaks Reforestation - 25 years of value-adding	18
Headwaters Co-op - lateral approaches to value-adding	19
Canada - Ecolumber Co-operative: realising commercial profits through forest certification, and targeted marketing	20
Conclusions and recommendations	22

## **Background to the study trip**

The trip to these countries was necessary as SMARTimbers has developed since 2002 to the point where we urgently needed information for the cooperative's further development that we couldn't find in Australia. Most of SMARTimbers activity falls within the CCMA.

At present, as one of the leaders in NIPF value-adding and marketing in the country,

- ❑ we are working toward becoming the first AFS (Australian Forestry Standard) group certified non-industrial private forestry organisation in Australia.
- ❑ we have members with nearly 300 ha of sawlog woodlot requiring thinning within two years, and no cost-effective systems available.
- ❑ we have mechanical harvesting annually that produces small diameter logs (150-300mm), and we will soon have second thinnings, that are at present uneconomic to further process, despite the value of the potential product.
- ❑ and we need to plan for the leap from our current sub-commercial state to a fully commercial production and marketing situation.

I was seeking the answers for our development in these areas in countries that have NIPF activity well established or in full swing.

The funding from these three organisations also allowed me to attend and present papers at two international NIPF conferences: a IUFRO symposium *'Small-scale forestry in a changing environment'* at Vilnius, Lithuania, and The ninth North American Agroforestry Conference *'Moving agroforestry into the mainstream'* in Rochester, Minnesota.

These papers related to the experiences, and success to date, by SMARTimbers in developing effective models for value adding a farm grown timber, and using these to create a viable timber marketing cooperative and begin to change the existing cultures toward farm sawlog production, particularly in lower rainfall areas (450-650mm).

## **Report summary**

In Sweden and Denmark NIPF is the norm and supplies the majority of industrial timber (the same applies for Norway, and to an even greater degree for Finland). In these countries NIPF owners associations manage establishment, management, planning and harvest for members. They have many of the answers for our need for the process for managing certification, and also for the handling of material and membership on a larger scale. They show the scope for the provision of extension services by association officers in a most focussed, cost effective and responsive way, in liason with the government forestry departments. At the back of this is clear, intelligently developed government policy and legislation going back up to 100 years.

In Lithuania, and to varying degrees in other Baltic and eastern European countries, NIP forestry is just emerging, as forest lands previously nationalised are being returned to former owners. Out of this complex situation are emerging the first entrepreneurial individuals and associations, value-adding timber and improving forest often mismanaged or neglected for up to fifty years.

In the Canadian province of British Columbia, most of the industrial log supply is from state-owned forest, or corporation-controlled land, by very large scale processes. The USA states of Wisconsin and Minnesota fall between these extremes with close to half of the forest product coming from NIPF, though harvest is mostly not overseen by any grower's association. Within this USA scene are small operators and co-operatives value-adding their forest product, in some cases taking it right to the point of installation in buildings. However the spread of this approach, and consequent large-scale new NIPF plantings, is clearly retarded by confused state and federal government policy. Some large US plantings of biofuel species -willow and polar - are stimulated by state and federal government policy, but the process is highly subsidised in an environment of relatively untaxed fossil fuels.

The trip sought answers to these questions:

### **1) How do we manage AFS group certification as a small and isolated body?**

I found the answer, at least partially, in Sweden

- 2) **How do we harvest thinnings cost effectively?** The answer is that on our small disconnected scale no one I found was yet doing it cash neutral or positive. We have to develop our own system, or modify a Scandinavian system.
- 3) **How do we value-add cost effectively to small diameter straight logs?** The Scandinavians do it as the main part of their processed volume, but it requires scale. Several other solutions came out of the North American part of the trip.
- 4) **How do we negotiate the jump from sub-commercial to commercial scale?**  
The Ecolumber example in Vancouver, British Columbia was the closest example to our situation, and about two years ahead in time.  
As well I was looking for
  - a) ways that government could stimulate NIPF : I saw many different options in the USA, Scandinavia, and Canada.
  - b) what the potential was for biomass fuel for energy production: Sodra in Sweden, all of Finland's regions, and the federal US government are exploring different options
  - c) how the cooperative could diversity and add to our income stream - The Kickapoo Woods cooperative was showing one way.

## **Itinerary**

23<sup>rd</sup> May. Fly Melbourne-Singapore-London-Helsinki-Copenhagen

24-28<sup>th</sup> May. Spend three days in southern Sweden. Visit Oskarstrom offices of SodraSkog-southern Sweden's NIPF owners' association . Visit Halmstad offices of Swedish government forestry, visit private sawmill in Knared, visit forestry sites to view harvesting and thinning processes, investigate production and sales systems of fuelwood and pelleted sawdust for domestic heating, investigate machinery used at different levels of land ownership, frequency of small single operator sawmills, transport systems for cartage of logs. Collect literature, and arrange some translation.

29<sup>th</sup> May-3<sup>rd</sup> June. Lithuania: IUFRO conference at Vilnius, the capital. Three days of conference, and one day of excursion to see forestry operations at several sites. Participate in all parts of conference, deliver paper, interrogate numerous participants in search of answers.

4-5<sup>th</sup> June Copenhagen, visit officer of Skovdyrkerforeningen (Danish forestry extension), interview member of Christmas tree and foliage producer's association, collect information on bioenergy fuels, and certification management.

6<sup>th</sup> June fly Copenhagen-London-Chicago-Madison (Wisconsin capital).

7<sup>th</sup>-11<sup>th</sup> June. Visit forestry officers of DNR, collect information, hire car for four days. Visit Timbergreen Farm - extensive value-adding information, Kickapoo Woods cooperative - resource aggregation, landowner extension, Amish sawmill. Interview Gays Mills area DNR officer - government extension services. Visit private forestry management sites, get impression over 200km drive of NIPF activity in SW Wisconsin (mostly 'high grading' of unmanaged private forest by commercial operators, with landowners receiving low stumpage royalties).

12<sup>th</sup>-15<sup>th</sup> June - North American Agroforestry conference at Rochester, Minnesota- participants from many US states, most Canadian provinces, Mexico, Chile, Haiti, Holland, and India. Strong emphasis on composite of horticulture and forestry with Hazelnuts and Chestnut production, as perennial crop along with the traditional corn and soybeans. Also strong emphasis on using agroforestry as buffer along drainage lines to reduce nutrient and sediment runoff.

Full involvement in all parts of conference, participated in in-conference tour, interrogated various participants on situation in other states, Canadian provinces, other countries re bioenergy fuels use, and NIPF value-adding. Collect literature.

16/17<sup>th</sup> June Hire car, and drive to Little Falls area NW of Minneapolis. Visit Snowy Plains Reforestation and interview owner, visit Headwaters cooperative and interview director. Both operations are value adding a good range of local native timbers, keeping costs well below returns and encouraging better landholder management.

18<sup>th</sup> June. Minneapolis-Dallas-Vancouver

Bus to coastal forest area north of Vancouver. Hire car for three days. Interview Triton logging managers- innovative submarine logging and value-adding operation. Visit Compuwoods - value-adding local cedar tops by turning into columns, and laser cutting thin section exotic woods. Visit Theden forest products - specialist flooring and siding producer and exporter. Visit forestry sites. Collect literature.

Vancouver - visit Ecolumber Cooperative, interview trading development, and impacts of Greenbuilding code in North America on demand for certified timber.

26<sup>th</sup> June depart for Australia via Hong Kong. Arrive 28<sup>th</sup> June.

## Report

### 1. **The Oskarstrom branch of Sodra Skog, south west Sweden** – *certification, site mapping, grower group administration, marketing, legislative frameworks.*

50% of the Swedish landmass is forest (22.7 million ha), with 20% of that in the southern region of Gotaland. This is the area where Sodra Skog is based. It is the southernmost of the six grower associations in Sweden that between them cover every part of the country.

The total membership of the six is about 350,000 families and individual owners, owning about half Sweden's forests, with an average of approximately 50ha per membership. 61% of all felled timber is from family or NIP forestry.

Overall in Sweden 80 million m<sup>3</sup> a year is harvested compared with the 100million m<sup>3</sup> annual increment. Forestry and associated industries produce nearly 15% of all Swedish exports and employ about 200,000 people (Sweden's population is approximately 8 million).

Sodra Skog began in 1920 as the association of forest owners of Smoland. Through growth and amalgamation with similar groups, by 1938 it was a serious enterprise. 'Sodra' simply means south and 'Skog' means forest or wood. This association is normally just referred to as Sodra and consists of about 35,000 members, with about 2.1 million hectares of forest. The annual financial turnover of Sodra is presently about 13.177 billion Swedish Kroner (SEK), or just over A\$3 billion. It employs over 3600 people, and is divided into four sections: forest management, sawn wood, fibre (pulp and paper) and energy (including biomass).

Just as an illustration of the scale of output of this organisation of small forest owners, the Skogsenergei section sells industrial byproduct, woodchip and fuel wood, pellets and sawdust briquettes, and peat. It employs 19 staff and has a turnover of 192 million SEK, or about A\$50million annually. All by-product of Sodra forest activity is sold, or used internally to create power, some of which is sold into the grid. Sodra is a leading Swedish trader of energy certificates. The full detail of Sodra can be read on the website at [www.sodra.se](http://www.sodra.se). The story of the other regional associations is just as inspiring. Taken singly or together they show how powerful a cooperation of individuals can become.

I wanted to see the activity of Sodra at the local level, how they managed certification, planned for members, managed harvests, and all the other activities that SMARTtimbers is beginning to do. So I visited the Sodra office at Oskarstrom. This office manages the interests of 1800 owners with a total 81,000 ha, an average of 45 ha of forest each. 50% have between 5-10 ha and may only harvest once every 5 to 10 years. The other 50% harvest most or every year and have holdings ranging up to 3000ha.

A landowner wanting to become a member applies to the local association board. To be eligible they must be owners or renters of forest and expected to contribute to the association's aims, and not be engaged in competitive activities.

If accepted the member must purchase one share per hectare of forest for the first 200ha, and is allowed to purchase an indefinite number of shares, though only ever having one vote. Current price per share is about A\$150. Share price is decided at the association general meetings, up to a maximum of A\$250/share. The share payment is normally deducted over time as a percentage of payment for product.

The nine office staff consist of: the director, an officer in charge of harvesting, 5 inspectors (with 3 year forestry diplomas), a mapping specialist, and a clerical person.

Sodra is a keen proponent of certification and 85% of the branch member's forests are PEFC certified. Each certified owner must have a detailed forest plan which separately and comprehensively details each section of the forest.

So for one actual owner with about the average 45 ha, his plan shows up to 80 different divisions or sites. This 45 ha forest area took about three days to map, covering details of species, productivity, age, and terrain or geology. Depending on terrain the mapping specialist will do 15 to 35 ha a day.

The cost to the member is about A\$33/ha plus a A\$600 administration fee (the computer program if wanted is an extra A\$1100). For the mapping of 25 ha of forest the member pays A\$1000-1200. The member's forest plan is good for ten years, and can then be readily updated. However following major events such as the storms of January 2005, when up to eight years harvest volume in the area came down in a week, there may need to be a whole new survey and plan done.

Auditing is by independent auditor with sites randomly chosen on a ratio of about 1 in 100 inspected annually. Harvest from certified sites attracts a higher payment (A\$1.25/m<sup>3</sup> for pulp and A\$2.50/m<sup>3</sup> for logs, though this appears to be an internal cross-subsidy process).

Management and harvest: Every site or forest is thinned two to three times. Sodra has an agreement with the owner for each operation which is overseen by one of the 5 branch inspectors. The Sodra branch has its preferred contractors, but all harvest and marketing decisions are ultimately the landowners. There are normally about nine harvesting units in the branch's area, each with a harvester and forwarder.

All thinnings are taken to be processed for biomass. There is no subsidy for this process so it is often deferred till the volume allows the process to be cost neutral. 25-30% of members do their own thinning. Most thinnings go to become pulp. Tops from harvest are taken to the roadside and there chipped, with the chip being sold as biomass.

Log harvest is initially weighed onto self-loading trucks from the roadside dumps. There are three normal categories from a harvest: 5-12cm diameter logs go to pulp wood, 12-18cm diameter is priced as small log, and 18cm and over diameter as standard log. Each member's logs are electronically measured and entered by independent assessors.

While Sodra has a number of large high tech mills, log sales are also made to other smaller mills through the area. Payment goes to the Sodra office, is checked, harvest management and other costs, such as share purchase payment, are deducted, and the balance paid out to the member. The member can elect to have log payment invested in a special association loan account.

Before the final harvest the member has to give official notification to the government forestry offices. The member must re-establish or plant back the area to forest within five years. It is straightforward to change species mix or species from the previous forest planting. To convert pasture to forest also requires formal notice to be made to the government department but no subsidy is involved. To convert forest back to pasture is a more complex process but still is a matter of an application through the proper process.

## **2. A small modern family-owned mill in southern Sweden – efficient milling of small diameter logs, economics, disposal of processing waste as biomass, industry attitude to certification, development of a timber resource and industry in cleared country.**

While the milling of timber wasn't a core interest, I was curious how the smaller family-owned mills fitted into the scene where Sodra appeared to dominate supply and production. It was also of interest in that the mills were clearly milling logs of diameters that in Australia would normally be of low or pulp value.

The mill was based in Knared, a small town about a 30 minute drive south of Oskarstrom. In the same town were also at least two small part-time mills, and many forest owners had their own tractor drawn log forwarders that, as well as forwarding out sale logs to the roadside, were used to bring firewood and small mill logs home from their land. It was a common sight at the end of a weekday to see mid-size tractors hitched to 5 tonne forwarders heading home along the roads. All though the area were swathes of forest downed in the January storm, still requiring much clearing and replanting.

The area had been largely clear of forest prior to the 1920's. Then it was poor heather-clad rolling country supporting subsistence farming: potato growing, some sheep and cattle grazing, and cottage industry of home knitting and making of baskets for carting potatoes. In the 1920's there was such emigration to North America that much land was untenanted, and the impoverished sandy boulder-strewn country was planted to scots pine, norwegian spruce, and some birch and beech.

The Knared mill was established in 1969. In 1991 the whole mill was substantially upgraded, with a high speed supply line, and in 2000 the family invested in the first Hewsaw in Sweden. This allows precise and efficient sawing with a small workforce of about 10, none of whom are on the mill floor. It is now producing about 20,000m<sup>3</sup> of lumber per year working one shift a day. This compares with a regional Sodra mill that has an output of 400,000m<sup>3</sup> working two shifts. Clearly this small mill cannot compete on price so has to compete on direct supply of small orders. Logs milled come from within 55km radius. The mill is uncertified, and as such does not pay extra for logs from certified forests. 15-20% of their logs come from Sodra. The miller candidly assured me that for Sodra members to be receiving extra for certified logs it must be from within the organisation. " Everyone in Europe thinks certification is a waste of time". 50% of their production is sold within Sweden where there is no obvious demand for certified framing timbers as such. The balance sells to the UK, Ireland and Japan.

The mill specialises in milling short, small diameter logs of 10-25cm and 2.4-2.7m long. The Hewsaw works on the principle of chipping off the outside material to leave a square and then cutting it horizontally with one or more pairs of thin kerf blades. This system gives a recovery of about 40%. The cutting specification can be changed without interrupting the flow rate of 50 metres a minute. Milled lumber goes to an auto sticking-out room, with packs stacked out in the yard to dry. The milled timber sells from the yard at about A\$400/m<sup>3</sup> gross. The Hewsaw's flexibility allows the milling of smaller volumes of specific sizes, allowing some contract supply at higher prices.

The mill by-product is carted out constantly. Some sawdust is used to fire a kiln, with the rest of the milling waste product being sold as well-graded bark, sawdust or clean chip. One load a day of bark goes as fuel for other mills and to Denmark for making horticultural mulch. One to two loads of sawdust a day goes to farmers for dairy bedding or for pelleting for heating fuel. Three loads of chip go to Sodra plants for paper making.

In Sweden overall sawmill byproduct supports the large and growing biomass energy and power production industry. While about 70 terawatt-hours of energy come from the seven remaining nuclear reactors (two have recently been closed), 40 terawatt-hours come from biomass. For further information on bio-energy in Sweden see [www.svebio.se](http://www.svebio.se).

### **3. Lithuania. Useful information from the IUFRO conference.**

At this conference with the title ' Small-scale forestry in a changing environment', I found I was the only person talking on the actual practical production, value-adding and marketing activity of a NIPF association. I was also the only person there who wasn't attached to a university, forestry research institute, or government forestry extension service. Predictably the papers presented were generally academic, and though many contained useful technical and economic information, they didn't yield immediate answers, though provided good contacts for further investigation. However I interrogated the Irish contingent, among others, at some length, as they have some of our problems and are also seeking answers, particularly in relation to cost-effective harvest systems for thinning.

#### **Ireland. Teagasc - the Irish Forestry Development Unit – *seeking the same solutions for cost-effective thinning, bioenergy production, small diameter log processing.***

Ireland is one of the least forested countries of Europe with about 10.5% forest cover, or about 650,000 hectares. This has risen from about 1% at the start of the 20<sup>th</sup> century. . Since the late 1980's most afforestation has been carried out by private farmers with no previous tree planting experience. There are now about 14,000 private forest owners, controlling about 300,000ha in 2004. Many of the west county owners are members of the cooperatives that have formed to help owners manage thinning and marketing. Ireland has a population of about 4 million.

NIPF makes up about 42% of the area with an average area per owner of about 10ha. The plantings are generally relatively productive at about 18m<sup>3</sup>/ha/year. Much of the earlier plantings, principally

of sitka spruce, were on less productive sites. Harvest access is often difficult, with peaty soils rapidly becoming churned by wheeled traffic. Thinning work is imminent or overdue, specially on the early sites, but the returns for the thinnings do not allow cost-neutral harvesting. While much of the pine in private hands is in the north west and western counties, the industries buying pine thinnings are mostly in the south west or south. Freight cost becomes a major factor in achieving cost-neutral thinning .

New plantings are about 10-15,000ha/year with an emphasis on hardwoods.

The planting level is affected by many factors ;

- ❑ The high land value of about 14,000euro/ha or about A\$20,000/ha.
- ❑ Ageing farmers
- ❑ Better support networks and cooperatives
- ❑ EU incentive payments for putting grazing land into forestry

A major impediment to private forestry expansion is the difficulty of making better than 7% internal rates of return. One issue at present is the need for a cost effective thinning system that has a minimal impact on ground surface.

So Ireland has planted a potentially valuable timber resource, which is rapidly being added to. In a generation it has changed the culture among farmers toward forestry. But the harvesting and value-adding of the resource is presenting some problems. Interestingly many of them are our problems. The Irish need a cheaper efficient system for getting thinnings out of pine plantations, and a system for milling or processing this diameter material with good margins. One possibility is biomass power generation. Meanwhile Sweden is harvesting and milling similar diameter material and exporting at least some as dried building framing to Ireland, which has a housing and economic boom. 80% of Ireland's building timbers are imported. Most of Ireland's energy is imported or generated locally from fossil fuels. There seems good scope for developing value-adding and processing industries (including biomass power generation) provided the supply volumes are adequate. Ongoing communications with the Irish participants will yield useful information for our cooperative from their experiences, and vice versa.

**3. Denmark. No government extension service, almost no forestry subsidies – showing how extension can be both largely self funding, yet more effective. Government legislation framework for renewable energy, waste recycling and forestry development.**

Denmark has about 12% of its land area forested, up from about 2% in 1900. The total is slowly growing with both state and private plantings. The Danish state has made major policy decisions to encourage further planting, and stimulate the activity and financial stability of a number of forest grower associations. All of these share an office building in an outer suburb of Copenhagen close to the Agricultural and Veterinary University.

The association dealing with Danish smaller-scale forest owners is Skovdyrkerforeningen (SDS) - Forest owners extension service. SDS is actually nine independent branches that each contribute to maintain a staff of five in the Copenhagen office, to perform the central functions. The branches have a total of about 50 employees who provide extension services, and manage harvest and sales. Since the government itself provides no extension, it does provide some payment to extension providers.

In Denmark any certified individual or business can provide forestry extension, and SDS is the principal supplier. The income to the associations from government cannot be larger than the association fee for extension services. So the branches run as commercial enterprises, aiming to make a small profit annually, and build their business. Income sources are as follows.

- ❑ 40% of income to the associations is from marketing member's product.
- ❑ 40% is from extension services, including the membership fees (about 20%) and other fee-for-service jobs and includes an 11% government subsidy.
- ❑ 20% is from contractor services, sale of seedlings and other management jobs.

Branches provide monthly information newsletters for members, plus organise forest walks, information days and meetings. More specific training of forest owners is done in association with the Forestry College in northern Zealand (connected with the Agricultural University).

To date, forestry certification is at a very low level with only about 10,000ha PEFC certified and about 500ha under FSC. SDS is ready for a greater level of certification, and will be the umbrella body for smaller growers. Forest management plans are subsidised by government and cost about A\$40/ha.

There is no subsidy of forest operations, except for some incentives to ensure full regeneration. Marketing of member's tops and thinnings is at market value, with firewood selling into a free market (currently at about 100 Euro/solid m<sup>3</sup>). Thinning is by chainsaw or machine and are chipped at site. All chip goes for heating and to industry. Tops and small branches from harvest are also normally chipped on site at harvest time.

About 400,000 tonnes a year of chip goes into energy production in Denmark, which has a policy of no nuclear power. Denmark is a leader in biomass power generation from biomass including straw and from methane from manure digesters. The country's thousands of wind generators supply a significant fraction of the national electricity requirement.

The building SDS occupies also has the central office of Juletraesforeningen - the christmas tree and foliage producers; and Danskeskovforeningen, the organisation that deals with the largest owners and the state's forests. The efficiencies of having all NIPF organisations in the one building are obvious. Everyone is in touch, contact with government is rationalised, and functions and services can be shared.

Web sites – [www.skovdyrkerforeningen.dk](http://www.skovdyrkerforeningen.dk), [www.jultraesforeningen.dk](http://www.jultraesforeningen.dk), [www.danskeskovforeningen.dk](http://www.danskeskovforeningen.dk), [www.wasteinfo.dk](http://www.wasteinfo.dk). (All have English options). For bioenergy search 'bioenergy in denmark'

#### **4. Wisconsin - value-adding the northern broadleaf forest species – options for value adding at the single farm level, from the harvested tree to the installed floor.**

Scandinavians and northern Europeans flooded into Wisconsin and the surrounding states from 1840 onwards, lured by the promise of cheap farm land, and to escape poverty and overcrowding at home. The memorials to the civil war show ample evidence of the origins of much of the state's population at the time.

In the southwest of the state, the land they settled was far less forested than at present, and was a mix of oak savanna and prairie grassland. Now after 160 years it is largely forested on the high ground, with 30-40% overall land cover of mixed species of conifers and broadleaves. Many of the species are premium forestry timbers, including the oaks, red and white pine, hemlock, cherry, walnut and sugar maple. This is prime value-adding country.

Among these forested valleys I visited Jim Birkemeier, who is a leading figure in the private forestry value-adding movement. Jim has since the 1970's been vocal and undiplomatic enough to have alienated many in the government and university forestry research and extension circles. He had been trying as a young consulting forester to change the system away from commercial high grading of private forests. He became increasingly frustrated that even with the best management farmers could not realise enough money from sale of logs. He reasoned that it was necessary for the farm forester to not sell logs, but either join in groups and manage together value add their timber into lumber, or to individually value-add timber on farm, to at least air-dried lumber stage.

He moved to the 120 hectare (300 acre) family farm and set about making a living from the 80 ha (200 acre) of forest by putting his theory to work, and develop proven operating principles.

Jim mills a mix of species from the farm forest, kiln dries the timber in solar kilns of his own design (plans available from his website), machines the product mainly into flooring, and contracts to lay most of this himself. He maintains he can make a good living with this value-adding process by only milling one tree per acre a year.

In reality, most of the timber he mills comes from trees that either are windthrown, dying, or of poor form. His milling system - an LT40 electric Woodmiser mill, a 'Rippet' twin edger, and a horizontal bandsaw, allow him to recover good quality board from even the poorer trees providing the wood is sound. The fact that he dries and machines and lays his flooring himself means that he can value-add to logs that would be rejected out-of-hand by a commercial milling operation. He normally mills all logs, including bent ones, into 1" oversize slabs, and then trims the sapwood edges with the twin edger. This useful A\$9,000 machine uses one fixed and one movable 8" circular saw to trim boards carried through between rollers and a moving belt. Slabs can be cut into a wide board with two offcuts, or two boards and one offcut. Jim normally retains more rough edge than conventional. His approach is to only semi-size the boards at this stage, and do the final sizing when dry to maximise recovery.

Jim's forest is serviced by a series of well-laid-out logging trails. He removes logs in drier periods when trails will not be cut about. His main logging equipment is a 60 HP farm tractor with a front end loader and linkage mounted 1975 Finnish-made Farmi cable winch fitted with an aftermarket wireless remote control. An Iron Mule, one of the first forwarders made (which is a 60 HP Massey Ferguson tractor adapted almost out of recognition) is his log transporter. A part of Jim's approach is to have as little impact as possible in the forest, so the cable winch means he never has to take heavy equipment off the trails. He further reduces damage within the forest by using wheeled log arches, to lift the lead end of the log.

He has three solar kilns, a planer and a moulder. Most of his milled timber at any time is air-drying or drying in the kilns - about 36,000 board feet (about 100m<sup>3</sup>). A board foot is our old super foot measurement, and by my crude calculations there are about 370 board feet to a m<sup>3</sup>). His barn loft holds his 20,000 board feet (54m<sup>3</sup>) of a good range of species and dimensions of dried timber and moulded flooring at a stable low moisture content.

Jim installs about 20,000 board feet a year. His cost of production is about US\$3 per bdft (A\$1480.00/m<sup>3</sup>), and he charges about US\$9/bdft laid (A\$4440/m<sup>3</sup>). Jim says that the 20,000 board feet level adequately keeps him, and employs his part time logger, and occasionally his father. His gross return is approx. A\$240,000, using the \$9/bdft figure.

The Timbergreen farm forest yields red oak, white oak, black oak, some burr oak, elm, ash and hickory. Jim occasionally combines all the porous hardwoods together in feature floors. He also mills some aspen, and red and white pine. The white pine he has skip dressed and laid as wide v-grooved boards for a heritage rough-sawn look, at a comparable price to fully processed oak flooring.

Jim's forest management has resulted in a healthy, diverse and highly productive 200 acre forest where the better trees are retained to keep increasing in value. While 20,000 board feet a year are being sold, the forest is increasing annually by an estimated 80,000 board feet (so about 3m<sup>3</sup>/ha/year. Not so bad for mature forest with a growing period of maybe 7 months).

Solar kilns are a feature of Timbergreen forestry's approach. He has developed a kiln design using warm air forced into the kiln room from the heated roof cavity. Through refining his design he claims to have reduced the drying cost from an initial 1c/ board foot (A\$4.50/m<sup>3</sup>) down to 0.1c/ board, with timber pre-dried to about 10% over summer. His kiln uses two equal chambers facing the prevailing winds. At any time one is pre-drier with through airflow, and the other is closed and drying. A sliding door allows either to be the drying chamber.

Jim kilns inch-thick boards of the porous hardwood species down to 12% in 12 weeks, even in winter. Fully dried flooring moisture content is down to about 6%. The solar kilns can drop the moisture in boards 1% a day, when properly set up. To build a kiln with capacity for 12,000 board feet (32 m<sup>3</sup>) in strapped packs costs about A\$18,600 for materials, including a concrete slab, plus a contractor's labour. The kiln construction is quite simple. Use of solar heating means the timber is able to equalise overnight, and there is minimal checking. The only power required is for two 1 hp fans. Jim is developing more refined use of photovoltaic cells to operate insulated vent shutters to improve heat retention overnight.

Jim maintains an informative website that gives him contact and influence far beyond the alleys of south-west Wisconsin. He says, "forestry does not have to be made complex. I can teach a farm forester the basic elements of good practical forestry management in three hours".

His kilns are built all over the world, and people come to Timbergreen farm to learn his approach. While I was there Scott, a young American farming in southern Chile, was doing a three day intensive course on all aspects of management, milling and value-adding. He was learning innovative and effective ways of sustainably managing the forest on his land while deriving good returns from it.

Jim's approach is low cost, quite labour-intensive, and deals in relatively small volumes. The work is satisfying, creative and varied, and can fit in with other farm enterprises. Importantly, most if not all of the income produced remains on the farm.

Jim's website is [www.timbergreenforestry.com](http://www.timbergreenforestry.com) and the book of his experiences and philosophies '*Full Vigor Forestry. Sustainable forest management from the forest owner's point of view*', is coming out now in a third edition and is available from him at Timbergreen Forestry, Spring Green, Wisconsin 53588.

## **5. Wisconsin state forestry extension - the Department of Natural Resources.**

I was keen to learn more about the wider management of private forestry in Wisconsin after Jim Birkemeier's fairly jaundiced view of it. I made my way through back country roads and Amish communities to the small town of Gays Mills, picturesquely sited on the bank of the Kickapoo River in apple growing country.

Paul Harden, the forester in the Department of Natural Resources (DNR) office in the main street, ran me quickly through the background and the main issues from a state forester's viewpoint.

Wisconsin has 16 million acres (7 million ha) of forest and over half is NIPF. These private forests produce about 64% of timber input to the state's forest product industries, which employ directly and indirectly about 300,000 people.

DNR has about 230 state foresters and many of these are similarly stationed in rural areas to assist the 260,000 private forest owners. A private forest owner is entitled to up to 24 hours, or three working days of DNR forester service a year. Those with under 20 acres of saw timber to harvest can call on the DNR forester to set up and manage harvest. Annually the DNR foresters assist about 10,000 private forest owners.

In this part of Wisconsin there is generally one DNR forester per county. Paul mentioned that there were areas of overlap and responsibilities with forestry between township, county, Wisconsin DNR, University of Wisconsin, and the US Forest service (I let this one pass me by, life was complicated enough).

The area was settled in the 1850's when records indicate it was a more open oak savannah. While the average forest holding in Wisconsin overall is about 50 acres (20 ha) in this county it ranged from 2 to 3,000 acres, and mostly 80-150. There is an increasing number of smaller landowners, as dairy farmers sell up or split off parts of their farms. The new settlers are buying for second homes, for recreational space or retirement. Crawford County, Gary's area around Gays Mills, has 51% forest cover, so a considerable fraction of most farms is forest.

Loggers are active in the area and, on hearing of a sale, often will visit and offer to harvest forested sections in return for some ready money. While papermaking is big in the north and centre of Wisconsin, the timber industry in the south is mostly based on sawmilling. Species sought particularly are oak, maple and basswood (genus *Tilia*, the Linden). Some of the local sawmills are quite sizeable - the local Nelson Hardwoods mill produces 3 million board feet per year (about 8,000m<sup>3</sup>)- and there are year-round harvesting crews competing for work.

On private forest land there is effectively no regulation on logging practices, other than logging road specifications. There are restrictions on areas round known nesting sites of endangered bird species.

State (or DNR) foresters apparently do not have responsibility to prevent bad forestry practices. However they are generally the first point of contact for a new landowner wanting advice. Normally they will recommend to the landowner that they talk with private consulting foresters if they want someone to plan for, arrange, and manage any logging. DNR maintains a list of these forestry consultants who have agreed to adhere to a code of practice

It is the conventional wisdom that to have good management for oak establishment there needs to be clear felling at harvest, and that otherwise there will be a slow conversion to other lower value broadleaves which are shade tolerant. However in reality the felling only needs to be in patches of a few acres or less, or enough to let light into the stand.

A large part of the state forester's time, perhaps 60%, is involved with the Wisconsin Managed Forest Law. 20-30% of landholders have signed up to it, many presumably at least partly for the land tax concessions involved.

Paul also finds himself spending time developing planting schedules for landowners, and coordinating site ripping. The state seedling nurseries grow the main commercial species. He is also involved in paperwork for the state grant programs involved with private forestry. These are cost share programs for woodland improvement, tree planting, erosion control, wildlife habitat and other conservation projects.

More background on the state's forestry industry - in 1899 Wisconsin led the world in lumber production, and the wealth generated helped build the great cities of the Midwest, and provided an economic base for the state. A cynical forester put the view to me that it was actually a case of wholesale destruction of the state's forest resource by forestry giants like George Weyerhaeuser, who having stripped northern Wisconsin of all economic timber (leaving a wasteland known as 'the cutover'), steadily worked west, and are now performing a similar, though slightly more discrete, service in British Columbia.

One outcome of this deforestation was that settlers were induced by promises of cheap land to come to the state's deforested north, but agriculture on the 'cutover' was a failure, and accounts of the early 1900's tell that 'unemployment and tax delinquency plagued the north'.

In 1933 the Civilian Conservation Corp. was formed to rehabilitate the area, and the north was extensively re-forested. Wisconsin is still the nation's leading paper making state, and the forest industry is one of the top three employers in 42 of Wisconsin's 72 counties. It is the second largest employment sector overall.

## **6. Kickapoo Woods Co-operative. University, landowners, and the DNR combine. *Funding of a cooperative start-up largely by a university-managed bequest.***

The Kickapoo cooperative was included in my schedule on the suggestion of several members of the University of Wisconsin's forestry faculty, who were involved in providing extension services to it. The cooperative is within the Kickapoo River valley centred on the town of La Farge. Started in about 1999 it now has 110 members with 12,000 acres of forest. About 10% are traditional farmers, the balance are absentee landholders or retirees who have come to this area from larger urban centres.

About 60% of the Kickapoo catchment is forested, but has suffered from extensive high-grading. Much of the cooperative's focus is on restoring the member's forests. Harvesting work takes place on 10-12 properties a year, principally thinning of stands and removal of overmature trees. One member, who is a fifth generation farmer, actively produces lumber from his forest using a hired bandsaw, and his own solar kiln and moulder. Most logging is by chainsaw and cable skidders on slopes of up to 40%.

Value-adding is generally left up to the individual member. On average logs harvested from member's sites produce about 25,000 board feet (67m<sup>3</sup>) of log a year, and a range of 10,000-50,000 board feet (27-135m<sup>3</sup>). This translates into about income of US\$5-10,000 on average per harvest site. Logs are generally sold to local mills including 10 Amish-owned mills. These also mill on

contract. Generally the Amish mills are equipped with large bandsaws with 5' wheels and 10" bands, belt driven from diesel engines. The Amish mills are family businesses working dawn to dusk, six days a week, and are very competitive in the small to medium scale timber processing. The cooperative's manager, Paul Bader, has lived in the area since 1970 and is an active forester and planter. He has been a sawmill designer and structural engineer, and has had a long involvement with private forestry in this corner of Wisconsin.

A large part of his job is providing the cooperative member's forest management services. Because of the cooperative's structure it has been able to access generous funding through a bequest controlled by the University of Wisconsin. This pays for newsletters and the wages of a local coordinator, who provides and coordinates the extension and education services. These include 10-12 workshops annually on timber stand improvement, chainsaw courses and non-timber forest products.

Wisconsin in 1927 brought in its first forest land-tax relief legislation. In 1986 the Managed Forest Law (MFL) was introduced. It requires the participating landowner to perform certain on-going forest management such as removal of overmature timber, and planting. In return annual land taxes are reduced from \$25/acre/year for unmanaged forest to \$5/acre/year, comparable to the tax on arable land. Signing up to the MFL is for a period of 25-50 years

The cooperative requires a member to have completed a management or stewardship plan before doing any work on the property. Members who have approved stewardship plans can also apply for 60% government subsidies for non-income producing forest work. This includes thinning and tree planting.

The cooperative also earns some revenue from selling forestry equipment. This includes large capital items like tractor 3PL mounted Farmi winches which are bought at a wholesale rate, and sold at discount to normal retail. The cooperative also sells chainsaw gear, safety equipment, books and tree measuring sticks. A range of items is also available for hire, such as loppers, a polesaw and clinometers.

To join the cooperative involves US\$100 for a share. There is no annual fee. The cooperative operates in the black. New members are entitled to a free forest evaluation walk.

Wisconsin has the earliest forestry group certification system in the USA in the American Tree Farm System. All Managed Forest Law plans are immediately certified under the AFTS. AFTS is now the largest certifier of private forest in the USA and has recently become a recognised certification system along with FSC etc (state public forests are certified under FSC). The state pays all AFTS auditing costs, so a Kickapoo member can get a certified management plan for US\$300 less reduction.

The cooperative also is involved in the writing of stewardship plans, also recognised by the state. These cost up to US\$1000 and have much broader objectives including wildlife habitat and stream health protection.

The MFL shows one way government can use tax levers to change NIPF practices. This sort of thing is only as good as the underlying concepts and presumptions. The MFL can compel harvest of mature trees, and can lead to a continuation of the long established practice of high grading forest stands.

For a forest to receive a free AFTS certification of sustainability simply as a function of the landowner being a signatory to the MFL appears to be running dangerously close to a complete devaluation of the whole concept of certification.

The presence of the cooperative puts a landowner-driven education process and a united group attitude into the equation. The cooperative's system of earning income through doing the essential management required by the MFL means the cooperative has an interest in continuing with the status quo, regardless of its effectiveness for best NIPF management.

7. **Energy and bio-energy in SW Wisconsin** – *the early promotion of widespread cooperatives in the USA to drive decentralised development and modernisation.*

According to Paul Harden there is no organised woody biomass fueled bioenergy generation in the region, except at the individual sawmill level. With a petrol price of just above US\$1 a gallon (pre Hurricane Katrina) and with fuel oil and natural gas being priced similarly low, it is hard to see why anyone would be starting to look at bioenergy, unless perhaps the biomass was free at the site. However there are requirements of all states to produce a certain fraction of electricity from sustainable resource, and this is driven by substantial incentives. Most of what is listed as being produced from biomass is from landfill methane production, and the great majority of this 'green' electricity is from wind generators. Biomass-fueled power generation from all sources comes in well down the list after wind, solar and hydro.

The background to the electricity provision in rural USA is that in the 1930's the Rural Electric Association was formed to provide electricity to the rural and remote areas. A myriad of cooperatives were set up to manage the local generation and reticulation of electricity (telephone networks were stimulated the same way). They were subsidised by low interest infrastructure loans and operated under regulation. Many of these cooperatives still exist, and have a prominent position in the main street of little towns, and appear commercially prosperous. Some of the energy supply is by private corporations. The reticulation system in this rural area is controlled by a separate cooperative.

So in the area between the Kickapoo valley and the Mississippi valley the Dairyland Power Cooperative owns a 1000MW coal fueled plant. The cooperative has also financed a 2MW methane-fuelled generator on a major dairy farm, with the methane sourced from a manure digester. The same cooperative also owns a bank of wind generators in the neighbouring state of Minnesota. A private corporation at La Crosse, the main town of the area, owns a biomass-fuelled power plant supplying heavily subsidised power into the state grid.

The supply of funding directed at biomass-generated electricity is enough to stimulate some substantial areas of planting of hybrid willow solely as the source of biomass. The real cost of producing woody biomass as a fuel to produce electricity, and the large amounts of fossil fuels involved in the necessary site preparation, management, harvest, transport and chipping does not appear to perturb anyone.

The growing of biomass fuels was a topic discussed at the Rochester conference only in passing, among a host of other things.

9. **Minnesota. Aspects of the 9<sup>th</sup> North American Agroforestry conference.**

The outstanding feature of this conference was the lack of speakers on issues to do with economic farm production of sawlog, NIPF value-adding, and the existence and value of grower cooperatives. Grower cooperatives and independent farm foresters I visited in the two states before and after either were unaware of the conference, or were unprepared to attend to speak unless they were adequately reimbursed for their time, accommodation and travel.

Again I was the only speaker on actual issues of production, value-adding and economics of a real commercially-focussed, farm timber growers association. The conference topics were mainly academic research papers, or about extension issues, environmental management debate, and development of yet more government policy mostly to do with water quality and subsidising conservation planting.

However most of the participants appreciated hearing the Australian solution to the concerns over the sediment-heavy and nutrient-rich water of the Mississippi killing off much of the Gulf of Mexico - simply apply the Murray River management principles, and problem solved.

A major concern in the mid-west states is that agriculture is based on two main annual crops: soy beans and corn. This means that on much of the land for most of the year there is no photosynthesis, nor is it bound down by roots. A lot of research and extension activity is going into developing

options of hazelnuts and chestnuts as a third crop, that is perennial and can produce substantial income, plus improve or solve some economic and land management concerns.

When flying later from Minneapolis to Dallas, and then to Vancouver, the clear skies all the way let me confirm that for thousands of kilometers along this route there are no apparent woodlot plantings (indeed no farm forestry or forest of any size). The only visible trees from my window were the thin lines along waterways and drainage lines. From 32,000 feet any patches of trees wider than long strips of a few metres or larger than a quarter ha were clearly visible on the principally pale brown and pale green flat landscape.

Across these higher rainfall arable states (Minnesota and Iowa) of the Midwest there appeared to be two to four farms per square mile (the entire countryside was broken up into square mile blocks by the road grid). This high density, and therefore intensity of and investment in farming, means that to take arable land out of production for tree planting would not be an economic thing to do unless there was a major financial incentive.

Also a real surprise was the 5000foot thick band of white haze that covered the entire country, apparently mainly created from jet trails. Sunlight intensity below this haze was visibly significantly reduced.

Further south over Kansas, Oklahoma and into Texas, streams and rivers stood out due to the red colour of the suspended sediment. Only between the Texas-Oklahoma border and Dallas were there native stands of trees up to 30% of land cover, though major residential 'lifestyle' subdivision is occurring around Dallas covering many thousands of hectares.

Again, flying north west from Dallas there were no obvious farm forestry or plantings on agricultural land till well into Washington State. Even in the semi-arid south west states like Colorado, on the farms where major centre pivot irrigation systems were common, there were no windbreak or block plantings.

All this raises again the effectiveness of any other process of incentive and extension for NIPF other than that driven by the real market, and guided by and responsive to the growers. While the northern and central states of the USA have great need of forestry plantings, and there is industry to use the product, the essential incentive to make it happen on a large scale is obviously not there. Meanwhile runoff carries off the excess fertiliser applied to the intensive crop rotations, and sediments from the continually bared arable soils. However Minnesota and Wisconsin farmers cultivating hillier country had alternate contour plantings of alfalfa or perennial clover separating equal width bands of their annual crops. On less hilly but undulating sites grass was left on all creases in the fields that would act as drainage lines for runoff. This is apparently a widespread practice.

Long term the American Farm Bill, driven by the powerful farm lobby, is American agriculture's worst enemy, in perpetuating the cycle of subsidising agricultural product, and maintaining this propped-up rural prosperity at the expense of the environment, and postponement of rational reconstruction. The system must eventually crash. A prolonged dry period appears likely to see the 1930's dustbowl phenomenon repeated.

#### **10. Snowy Plains Reforestation. Western Minnesota value-adding**

Among the general lack of interest or understanding of the potential for value-adding the quality northern hardwoods on private land, was the occasional entrepreneur who was making a good living from private forestry.

Greg Nolan is a forester of over 25 years experience. He operates a family business, based near Browerville three hours northwest of Minneapolis, which mills, dries, profiles and installs timber products. The business, which employs himself, two grown sons and occasional casual help, also plants on contract around 100,000 trees a year on farms in the area. It does annually 15-40ha (40-100 acres) of timber stand improvement. This last principally involves thinning, and removal of overmature trees.

Greg was instrumental in helping two local NIPF cooperatives start up in the area. The Snowy Plains Forestry Cooperative has 30 members with about 1200 ha (3000 acres). Its members

currently harvest about 135m<sup>3</sup> of logs (50,000 board feet) a year. Nolan says that the cooperative could sustainably harvest up to ten times that amount but that the members are basically focussed on just producing their own families' needs. All are private farmers or owners of small forest parcels, mostly FSC certified.

While he initially milled on contract for the cooperative, it was unprofitable, and he now mills only for himself. His milling set up, installed about 15 years before, is about as low tech as it gets and is very accurate and cost effective. Power is by drive shaft from a ground-mounted diesel truck motor, and the cable driven log carriage with its ratchet worked log stage, and the breaking down saw, appear pre-WW2. A tractor with front-end loader, and several drying sheds complete the capital investment.

By the milling shed is the house that stores all the dry and processed timber. To maintain low moisture levels it has a solar heated slab, with power for pumps and processing machinery coming from a large photovoltaic array outside (this plus another similar array at his house produce 2.5KW in full sunlight with excess going into the grid). The storage is actually built as a solar-efficient house with subdivisions left out. As with other value-adding foresters I visited, Greg has done the great bulk of his construction himself, and to a professional standard. His house nearby is another example of this. His 18 year-old son is currently building his own house as a final year home schooling project.

About 25% of the family's income comes from treeplanting, 15% from timber stand improvement, and 30% from milling and selling green lumber. The remaining 30% is from the flooring side of the business.

Logs for the mill are primarily source through his timber stand improvement work, with many of them coming through salvage operations after storms. Otherwise he pays about A\$60/m<sup>3</sup> (US\$150/1000bdft) for windthrown logs. While I was there he was milling 250-300 mm white pine into inch oversize slabs. His annual milling output is about 70m<sup>3</sup> (25,000 bdft), spread over flooring decking and structural timbers. This might include timber for building some cabins on contract. A major income source for this family business is in producing and installing hardwood flooring. The flooring is dried down to 6%, and is strapped by Greg into easily handled bundles about 2 m long. 1 m<sup>3</sup> (53m<sup>2</sup>) of flooring is about A\$5,000 installed.

"With this packaging each bundle is US\$100 to buy and another \$100 to lay. I never sell flooring in truckloads, always as these little bundles from the back of the car. I say, 'here are your jewels, M'am, when we go you'll owe us \$1000.'"

"I have made this work in an area where countless others producing wood product have gone broke. Normally businesses get over extended and then get too committed to volume sales, and get trapped into always building volume, and eventually having to cut price. I don't want to get big. With our situation we are flexible and can survive any quiet spell by doing switching to other work. We've got a lot of skills. We can sell service- pull up a floor, install another, fix someone else's second-rate job. And then go off and do some more milling."

Greg is uncertain about the future in his area. Pressure for rural land from three regional cities has pushed local prices for houses or land up tenfold over 25 years, to around A\$2500/acre. He considers moving further out to a less populated state or region, and starting all over again, or migrating to somewhere like Australia.

### **11. The Headwaters Cooperative, Minnesota. Innovative timber drying options**

About 25 km south of Greg Nolan's base is the farm of Bob Krause, the chairman of the Headwaters Cooperative. This cooperative also had input from Greg Nolan in its early days and is now apparently an established though small producer. It started in 1999 with 22 members, from among local landowners. It has now grown to about 33, with about 1000ha of forest under management. Bob's land is in undulating land full of small wooded knolls, swampy flats and streams. He greets me by enthusiastically announcing he owns one of Australia's best and most renowned products. No prizes for guessing he must mean a Lucas mill. The Lucas model 827 mill has firmly established itself in the American market by cleaning up 'The 2003 Great Portable Sawmill Shootout' with 922

board feet (2.5m<sup>3</sup>) accurately milled in an hour. None of the dozens of American made mills came close, with the bandsaw mills particularly looking bad by comparison. It even beat many of the band mills in recovery, was only a third of the price of many, cheaper to run and more portable. Bob is the main sawmiller for the cooperative and had purchased his mill in 2001. He had been dissatisfied with the product that the cooperative had been getting from the contract mills locally. Now he mills up to 90% of the members' timber, and does other small contract jobs within a 50km radius. He charges a A\$65 set-up charge, A\$1/kilometer, and A\$100/m<sup>3</sup> (20c per board foot). He has a minimum job size of about 1.5m<sup>3</sup> (500 board feet). He claims he can be milling within 12 minutes of arrival at a site.

The Headwaters Cooperative does not own any timber, and outsources processing. The landowner-member retains ownership of the timber until sale. The cooperative has a policy that all members' timber should be value added. It has about 80m<sup>3</sup> (30,000 bdft) in inventory, mostly as 25mm (one inch) board. Bob further complicates my attempts to understand the timber volume units that the Americans insist on retaining, by switching occasionally into the unit of 'cords'.

"We measure logs by the cord or by board feet. One cord equals 500 board feet, and weighs about 2 tons green. Milled lumber is measured by the board foot which is a piece of lumber a foot long, a foot wide and an inch thick."

The real innovations of this cooperative are in its drying and holding storage systems and economics. One of the members had a disused battery hen shed on his farm, and agreed to make it available for a nominal rent. At 10m wide and 120m long, it is wide enough to use a forklift and can contain large volumes. Being insulated with a sealed off roof cavity it was able to be used as a drying kiln following basic works. The cages were removed, the three floor gutters were filled, and fans fitted to bring heated air from the roof cavity into the storage areas.

Bob Krause went to a kiln drying school and learned that to keep wood held at 7% required an ambient air temperature about 12C (20F) higher than outside temperature. A differential thermostat was installed to switch extractor fans on the ceiling on and off to maintain this. Power costs are minimal, and timber will dry from 20% down to 8% in 2 months.

Another member is a turkey farmer and allows the cooperative to put green sawn packs in his insulated turkey barn before chicks arrive. The barns run at about 41C (100F) for 5 weeks when the chicks first arrive, and this can dry packs down to 7-8%. The cooperative has had up to 8m<sup>3</sup> (3000 board feet) in a barn in packs of 1.35m<sup>3</sup> (500bdft).

The cooperative is looking at FSC certification. Many of the forest lots are individually certified under FSC. It currently is working through the neighbouring Aiken County which has about 50% forest cover and the county itself is FSC certified, and offers an FSC group certification overseen by its own forest manager. So Headwaters can get FSC cover for about \$200/year.

Cooperative income is from a 20% commission on sales. It also charges members for timber storage space. It is negotiating to supply FSC certified flooring to a seller of recycled timber.

## **12. Eco-Lumber Cooperative. From a bright idea to \$1million turnover in three years.**

Eco Lumber cooperative, like so many other outstanding developments in the story of the NIPF game, is all about one person backing their hunch that something will work and should be tried. In this case it was a member of the Silva Forest Foundation, Cam Brewer, who saw that there for the scattered private forestry cooperatives in British Columbia to make a real return for their timber there had to be a marketing outlet in Vancouver, the population centre. In 2002 he began to gather supporters and, more importantly, money. He set up the Ecolumber cooperative, and dedicated a year to getting it rolling. An office and warehouse was set up in the industrial area of Wimsor, on the south side of Vancouver on the Fraser River.

In 2003, its first full year of operation, it struggled to turn over C\$185,000. To make the wages of Cam, the manager, plus pay the overheads, it needed to be turning over C\$600,000. I visited at this time, while on a Churchill fellowship looking at NIPF association management and marketing. The financial outlook for Ecolumber was bleak.

At this time there was no real premium for FSC certified timber, and the member cooperatives were usually finding that, while they were committed to certification, the process was not viable economically. The products that Ecolumber was marketing were generally value-added material of Douglas fir - flooring, siding (cladding), plus some recycled material. They were also selling manufactured product like doors for a markup.

In 2005 I visited again, to find that the cooperative was financially healthy, and was on track to turn over about C\$1.25 million. The office that was a shell was well fitted out and full of demonstration product. The warehouse behind had now doubled in floor area with the addition of an adjoining building. Products had been rationalised. Cam explained that the real boost to business had come about through the introduction of a sustainably-sourced materials requirement in government buildings. As Cam Brewer explains, "The Canadian Green Buildings Council has completely changed the market for FSC certified wood products, through the LEED certification - Leadership in Energy and Environmental Design. The government now requires that 50% of their buildings are registered with LEED."

"The Vancouver Winter Olympics constructions will be all LEED certified. It is also showing up with many builders using LEED certification to differentiate their construction in the market place. In a buildings eligibility for certification only one point is for sustainably sourced timber, but that single point has absolutely changed the market for FSC certified timber products. So far the biggest bang for that point in building has been for FSC plywood."

Brewer says that he dropped carrying the recycled timber as it yielded too low a profit margin for the cooperative. There were just too many competitors. He carries on with the Douglas fir products from the member cooperatives as he is able to sell them into the market for an adequate return despite their extra cost of FSC certification. But his other major line is of cedar from an Indian community FSC certified forest on the west side of Vancouver Island. He buys this in as second grade and cuts clear wood out of it to order from architects and export clients.

"It's just a matter of doing it right. You can sell an awful lot of timber but make nothing out of it. With the cedar yesterday I sent out 80,000 board feet (216m<sup>3</sup>) of 6' or longer clears. 80% of our cedar is going to Europe. We just don't do anything on consignment any more. There are just too many expectations."

While Ecolumber still retails the timber from its member cooperatives, its financial viability comes from the volumes and the margins from buying FSC material wholesale and selling into the retail market. Without that turnover of over C\$600,000, no amount of good intentions would have kept this business there to provide its useful role as an outlet for community and first nation forests. Brewer now has other office staff to handle the administrative tasks and warehousing, freeing him to continue to build up the business. He continues to serve on the board of the Silva Foundation. The vast publicly-owned forests of BC (87% of the province's area) are being licensed out with inadequate oversight for logging by multinationals. It is in this scene of vast volumes of cheap wood that Ecolumber is making its good profits from product sourced from sustainably certified forest management.

For further information go to [www.ecolumber.ca](http://www.ecolumber.ca). For background on the Silva forest Foundation go to [www.silvafor.org](http://www.silvafor.org). For renewable energy in British Columbia go to BC sustainable energy association at [www.bcsea.org](http://www.bcsea.org). For information on the Harrop-Procter community forest, one of the Ecolumber cooperative's members go to [www.hpcommunityforest.org](http://www.hpcommunityforest.org). The website of BC's Coalition for sustainable forest solutions is [www.forestsolutions.ca](http://www.forestsolutions.ca).

## **Conclusions and recommendations**

Value adding is the key to non-industrial private forestry generating a commercial rate of return on the landowner or other investor's forestry investment, particularly for sawlogs and/or in lower rainfall zones (sub 700mm). This commercial return can thus drive the increased sustainably managed plantings that much of Australia's farming country needs as an extra farm diversification, as a boost to regional employment and economies, and for the environmental benefits.

While it is clearly possible to have a value-adding business generate an adequate income for an individual or family business, to achieve sustained commercial volumes and qualities requires a certain minimum scale of both plantings and financial turnover. This may come either from a large group or association of growers, with enough turnover to employ specialist staff, or a central marketing system that does the product aggregation, quality control and marketing for a number of smaller groups.

Either way, the process of achieving the requisite scale usually requires build-up years during which there is need for external support and expertise.

My key recommendations for the CCMA/CVFP area from this trip are

1. Greater priority and funding be given to developing reliable commercial provenances of native timber species, particularly those suited to lower rainfall sites
2. Support be given to developing and implementing a long term strategy of boosting private forestry plantings and using these to help solve NRM concerns.
3. Greater support and recognition be given to the value and potential of existing marketing groups and funding philosophies be modified to cater for their needs, and to encourage the development of similar groups, and their move toward providing extension services, in order to ensure best management practices in the expanded plantings in the area.
4. Support be provided to enable grower groups to commence and prove AFS group certification
5. Work begin on the economics of use of woody biomass as fuel for regionally-based bioenergy production plants of 1-20MW output, to see if it is feasible for the area to move toward CO<sub>2</sub> neutral status.

In this region farm plantation forestry is able to rapidly become the base for large dispersed estate of species, including those suited to lower rainfall zones, that can produce high quality timber. It requires committed and well-financed long-term practical support, of which these recommendations are important elements.

The Scandinavian countries show how regional or state commitment to sustainably managed private forestry can lead to major economic, social and environmental benefits. These include re-invigorated and diversified processing and manufacturing industries, farm enterprise diversification, a sustainable renewable energy source, and a solution to many pressing catchment NRM issues. In almost every aspect in implementing this we have in this area far fewer constraints than these countries face.

They also show clearly that a satisfactory way to implement it is through extension, management and marketing being provided by agencies answerable to the growers, and principally funded by the successfully providing these services.