The Winston Churchill Memorial Trust of Australia

Report by

Andy Warner   2001 Churchill Fellow

The Gallaugher Bequest Churchill Fellowship to examine private forestry extension services in the South Eastern USA to be implemented by private growers in Tasmania
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EXECUTIVE SUMMARY

Private forests in South Eastern USA have benefited over the past 20 years from a range of State and federal extension programs, that can provide valuable lessons in and innovative methods for successful and sustainable private forest land management in Tasmania and more generally in Australia.

The Gallaugher Bequest Churchill Fellowship enabled me to spend 6 weeks from May to July, 2001 in 5 South Eastern states in the USA - Georgia, South Carolina, North Carolina, Virginia and Tennessee. - where there is an extensive and well developed network of farm forestry extension agents and landowners.

Through sharing their experiences and seeing the results on ground, I was able to interact with a wide range of people who like me are involved in developing, delivering and implementing sustainable private forest management advice covering the full range of land uses including wood production, conservation and water quality.

The major conclusion from the study tour is that there are many benefits to be gained from the experiences and activities inspected and discussed in the South Eastern USA. There are no quick fix solutions, but there is widespread agreement on the importance of developing a culture of private forest management that is based on sustainable management plans and sound technical advice.

Information and contacts obtained via the Fellowship will be used to improve, refine and expand farm forestry extension services in Tasmania specifically and where applicable more broadly within Australia.

Andy Warner
29 Hogg Street
WYNYARD, Tasmania 7325

Regional Private Forester
Private Forests Tasmania
Ph (03) 6434 6319 email Andy.Warner@privateforests.tas.gov.au
INTRODUCTION

Tasmania’s private landowners control over 40% of the State’s native forests and plantations that are vital not only for the sustainable supply of wood products, but also equally for conservation and water quality. Recent Commonwealth and State government initiatives have increased the interest in and demand for more active management of private forests by expanding landowners’ knowledge, skills and opportunities.

Private forests in the USA, (especially in the south east) have benefited over the past 20 years from a range of State and federal extension programs, that can provide valuable lessons in and innovative methods for successful and sustainable private forest land management in Australia.

The Gallaugher Bequest Churchill Fellowship enabled me to spend 6 weeks from May to July, 2001 in 5 South Eastern states in the USA where there is an extensive and well developed network of farm forestry extension agents and landowners. Through sharing their experiences and seeing the results on ground, I was able to interact with a wide range of people who like me are involved in developing, delivering and implementing sustainable private forest management advice covering the full range of land uses including wood production, conservation and water quality. Information and contacts obtained via the Fellowship will be used to improve, refine and expand farm forestry extension services in Tasmania specifically and where applicable more broadly within Australia.

I gratefully acknowledge the financial support and assistance provided by the Gallaugher Bequest Churchill Fellowship and the additional support given by my employer, Private Forests Tasmania.

I wish to also recognise the hospitality, expertise and enthusiasm that over eighty American hosts provided throughout my 6 week study tour. In many cases and in many places, extension agents and landowners provided a level of assistance and support that will form the basis for ongoing contact and friendship.

Without the love and support of my wife Anne I would not have been able to have undertaken this outstanding experience.
PROGRAMME

From late May until early July, I travelled through five South Eastern States in the USA visiting specialists in the development, delivery and implementation of sustainable private forest management advice covering the full range of land uses including wood production, conservation and water quality.

The heritage of private forest ownership in this part of continental North America is substantial and unique, with nearly 70% owned by non industrial private landowners. These lands are mostly small tracts managed for a variety of purposes.

Where possible, I visited landowners and inspected examples of the programs, outcomes and highlights and problems that were identified through the extensive discussions.

Map 1 shows the major sites visited during the Fellowship.

Appendix 1 summarises the people and organisations visited.

An overview of the main points is provided below in State order. Many of the main observations and points of potential relevance to incorporating into farm forestry extension activity in Tasmania and Australia have been drawn together in the Recommendations Section based on a synthesis of discussion with many people often in different States.

Georgia

The largest State east of the Mississippi, Georgia has a population in excess of 7 million and an area of more than 15 million hectares - about twice the size of Tasmania.

Forestry is the number 1 crop and manufacturing industry in the State – mainly pulpwood. It contributes over US$10 billion annually.

In the early 1920’s, only 20% of the State was forested due to extensive broad scale subsistence cotton farming with widespread topsoil erosion and depleted soil nutrient levels (nearly 1 million hectares). Active promotion of reforestation and natural regeneration have resulted in over 80% of the State being forested.

Over 700,000 non industrial private landowners own over 7 million hectares or 70% of the commercial forests.

The major native forest species on the coastal plains and lowlands are softwood and are known generally as the southern yellow pines - Loblolly pine, Slash pine, Longleaf pine, Shortleaf pine. There are many native hardwood species especially inland at higher elevations, including hickory, maple and many species of oak. See Appendix 3 for a list of the scientific names for tree species.

Georgia Main Points

Thirteen of the southern States have land grant universities set up by President Lincoln to help improve the well being of the citizens through teaching, research and extension. The extension occurs across a wide range of disciplines including forestry, agriculture, family services, health and business. The county agent is a focus point for local activity.

In Georgia, the extension services are delivered by a network of professional agents employed by the university but paid for with State funds. They are based in each of the 100 plus counties. Forestry is often a minor component as many extension agents are agriculturally trained with expertise in the main crops of
cotton, corn, peanuts and tobacco.

1. Web based information dissemination to county agents and to the landowners in general is encouraged and there is a greater familiarity with and use of web based tools by American landowners than in Tasmania.

2. Water quality issues are becoming increasingly important as a result of increased agricultural mechanisation and reliance on chemicals. The promotion of Best Management Practice for private forestry activity provides some practical guidelines for landowners.

3. Certification of forest products is being encouraged, with some processors refusing to accept produce delivered by non certified contractors.

4. Development of marketing information that is accessible on a users pay basis has been initiated (see Timbermart-South website www.timbermart-south.com).

I attended a review meeting involving extension specialists from the 13 land grant States. The meeting reviewed the Master Tree Farmer course run for the past 2 years involving a satellite link up with over 4,000 people participating. Information is provided to participants attending over 60 sites through out the southern USA over 7 once week evening sessions totalling 21 hours of live satellite education. A detailed manual and field trips are also included in the Program.

5. Course fee of US$100 per person covered Manual (2,600 printed), but overheads of technical delivery via satellite involved in excess of US$300,000 of sponsorship (State and federal funds) and large amounts of in kind support from extension agents. Problems identified included:
   - one course being required to suit a wide range of participant base knowledge.
   - the difficulty of using locally relevant examples.
   - Attendees were predominantly white middle class, computer literate – representing 2% of the available landowners.

The course provides one way of presenting information and is pioneering many new techniques, with potential to provide pre recorded field based video footage to a large number of people who cannot attend in person. The use of field days, printed notes, manuals and practical worksheets are seen as continuing to be essential – “there is no silver bullet solution!”

6. State and federal assistance programs have provided a substantial incentive to encourage more active management of replanted agricultural land. There are often multiple land use benefits sought under these programs. Typical funding support up to 70% of the cost of reforesting is provided subject to specialist extension advice being sought and included in a written management plan. Where wildlife conservation outcomes are a high priority, there may be some constraints on early harvesting. Because the subsidies have been provided for many years, they are now seen as necessary to maintain current levels of reforestation in many areas.
7. Landowner inspections included alternative crops such as growing Christmas trees, with Fraser fir being the most popular species. Another option involved raking pine needles for “pine straw” bales used as ground cover in the horticultural industry in nearby major population centres such as Atlanta. This provides in excess of $20/ha per yr without affecting wood production. However, cheap Mexican labour and proximity to major population centres were considered necessary for the operation to be commercially viable.

8. Management for hunting values was an important factor for many landowners. Revenue from hunting deer, quail, turkey, ducks and from fishing in dams and ponds can be substantial and hunting is a popular hobby for many landowners. Often, better management of stands for soil, water and wood production outcomes provides enhanced game habitat, with many management plans using game management to encourage more sustainable land management. Native oaks are especially useful as acorn production provides important forage material for most game species. So even where the primary forest management activity focuses on the southern pine species, hardwood management in the wetter “bottoms” and planted grass on access tracks often aim to encourage game.

South Carolina

With an area of about 8 million hectares, this State is about the same size as Tasmania, but with a population of 3.8 million.

Forestry is an important land use, with non industrial private land providing about 66% of the State’s roundwood harvest of 19 million cubic metres (Australia produces annually about 10 million cubic metres of sawlog and pulpwood).

Loblolly and Slash pine account for about 90% of the softwood harvested with the oaks, poplars and sweetgums accounting for about 75% of the hardwoods.

Hurricanes have caused widespread damage in the State with Hurricane Hugo in 1989 and more recently Fran in 1996.

South Carolina Main Points

Forest Stewardship is emphasised as a means of encouraging longer term native forest management in a State where many of the native stands of softwood have a high commercial wood value as well as substantial wildlife and ecosystem values. Many landowners have a high regard for their role as stewards and wish to improve the overall assets on their land during their tenure.

Game management often involves protecting newly planted trees from browsing. Plantings associated with streamside management for improved water quality usually include exclusion fencing for cattle as well.

1. Successful long term forest management was evident where the landowner had clear goals and a written plan for reference. This work was more likely to have been carried out with larger landowners who had substantial areas being managed for either wood production or for game management, with both goals often required.
Burning to control weed growth and native scrub competition is common on many private blocks. There are increasing concerns where smoke hazards may impact on nearby expressways or the expanding urban residential areas. The risk of a law suit is requiring increased planning and management of hazard reduction burning.

Landowners are very wary of committing their time and especially their money, so that most successful farm forestry development work has involved developing information that provides “bite sized” pieces of information.

2. Information needs to be able to be provided to landowners without much experience in farm forestry, so that these newcomers are not put off by too much detail. However, the challenge is to ensure that there is sufficient information so that they can progress to the next stage of learning with a reasonable understanding of what is required. This is a challenge as most landowners want multiple outcomes often associated with both wildlife and wood management and this may require complex management options.

Southern pine bark beetle can cause extensive damage to stands that are under stress. This can be reduced by thinning to allow remaining trees to grow more actively. However, a lack of active management so that the decision is not made to thin or the lack of a commercial market to take the thinned material increases the potential for an even greater expansion of the beetle infestations.

Landowners do not readily exchange information with neighbours in some parts of the State and so newsletters and a good relationship with the local county agent are seen as important ways of getting accurate and timely advice. Many landowners have soil knowledge from growing crops and so do not attend some courses because they are bored by parts of the presentation on aspects they already understand.

3. Important details on critical aspects necessary for successful farm forestry outcomes need to be very carefully presented, so that key messages are not misinterpreted.

**North Carolina**

The population of the State is about 7.5 million, with an area of 14 million hectares.

About 8 million hectares or 60% of the State is forested, with non industrial private ownership accounting for 76%. Over half of the ownership is in tracts less than about 40 hectares.

There are over 180 tree species with about 30 commercial hardwood tree species in the state, dominating the mountainous western part of the State. White oak is the most common hardwood.

**North Carolina Main Points**

There are strong links between extension and the North Carolina State University based at Raleigh.

The Division of Forest Resources within the Dept of Environment and Natural Resources is responsible for the Forest Stewardship Program that encourages private landowners to develop a management plan for their forests. 2,400 landowners have voluntarily committed over 125,000 hectares to the Program with over 180 contractors trained as part of the Program.

1. Funding support has been primarily for new plantings as harvesting is expected to yield some revenue of which some should be set aside for re-
establishment. However, salvage harvesting of unmanaged stands may generate little revenue. Cost share programs utilising federal and state funding can provide up to 60% of the regeneration costs for hardwood and 40% for softwood stands. Examples include:

- Forestry Incentives Program – 50% regeneration costs paid;
- Environmental Quality Incentives Program – mainly agriculture and looking at waste management;
- CRP – Conservation Reserve Program and CREP Conservation Reserve Environmental Program – $2.5 million funding to assist in watercourse buffer planting with a management plan required.
- Fran Recovery Regeneration Program – 1996 hurricane relief program that is now winding down.
- Wetlands Reserve Program – 30 yr or permanent caveat produced 75% payment of value in a lump sum;
- Stand Incentives Program – no funds provided in recent times, so not much success;
- Wildlife Habitat Incentive Program – limited funding for wildlife values – prescribed burning to encourage longleaf pine regeneration as an important wildlife habitat component.
- Forest Legacy Program – provides for the purchase of permanent conservation easements on private land.

2. A history of extensive burning to control understorey competition has resulted in longleaf pine with its fire tolerance in the seedling “grass” stage being a principal pioneer species on the coastal and piedmont regions. It played a major role in the supply of “naval stores” with tar, turpentine and other products distilled from its sap that was collected much like rubber. Burning Manager programs provide landowners with 2 days of training and a fast track for permits to burn.

3. A large number of management plans are developed in response to landowners wanting to receive county tax reductions and this has resulted in over 7,000 plans per annum in recent times.

Fertilising is widely used to promote a growth response following thinning in the pine stands.

4. Challenges for extension forestry in the state include:
   - A reluctance by landowners to actively manage their native stands of either hardwood or softwood because of the perceived low value as a source of income. This has flowed on to a lack of interest in learning more about tree management.
   - The up front costs associated with site preparation to get a successful plantation established put off some landowners. “I'll do what my father did and just let it come up naturally” is a typical response.
There is a declining interest in managing smaller tracts of land that have been in tobacco, as they are not viable unless a niche product such as goats milk for the health food market can be captured. This provides a window of opportunity to encourage management for trees, to improve water quality along watercourses and also for wildlife as increasing population pressure in the state is generating a greater demand for hunting areas.

Agriculture is becoming a part time occupation in the piedmont with absentee landowners requiring different extension services compared to on-farm landowners. There is an increasing number of urban dwellers.

County forestry committees are seen as one means of improving the lack of landowner interest. Landowners assisting other landowners is seen as a promising model. For example in one county a farmer became involved with the Conservation Reserve Enhancement Program that provided assistance to fence and plant riparian strips and provide stock with off stream water troughs. He was able to reduce his vet bills as the cattle were less prone to foot diseases as access was more limited to the muddy banks and water of the streams. It was the reduction in vet fees that prompted his neighbours to also join the Program!

Developing information sheets that are on topics of interest to the landowner. Many landowner decisions regarding planning are made by the women in the family and so non economic factors may be highlighted as well as the financial aspects.

5. N Carolina has an active Prologger course run by an industry funded organisation. Over 3,700 people have undertaken logging and cartage training with workers attending evening classes two nights a week for three weeks. Promotion logos utilise the fact that the front number plate is not used on vehicles in the State and so special licence plates are issued to successful course attendees!

Best Management Practice provides a de facto Forest Practices Code for water quality, with the BMP manual under review.

I visited the Clemmons Educational State Forest Centre run by the Division of Forestry that used innovative information from “talking trees” along a forest walk, with good interpretation and liaison with local school groups.

Virginia

The population of the State is about 7 million, with an area of 11 million hectares.

The State’s forest resources provide over US$11.5 billion annually.

Commercial forest land makes up 61% of the State. Non industrial private forest landowners own 77% of this. However, in the south west of the State where there is a substantial amount of native hardwood, most landowners have less than 25 hectares and only 5% have any sort of management plan.
Over 60% of the State’s forests are hardwood, in contrast with the predominantly softwood forests of the Carolinas. Large areas were replanted following the failure of tobacco cropping.

**Virginia Main Points**

Again, county extension agents provide the main source of farm forestry advice. However, rather than being restricted to providing multi skill advice in one county, there are some specialist foresters who each operate over 5-10 counties, matching other regionally based agents with agricultural or business skills. Funding is a federal and State based responsibility, with reduced funding in recent years.

As with other States, there is a wide range of cost share assistance programs designed to help private landowners properly manage their land. For example, priorities for Stewardship Incentive Program (SIP) funding are associated with hardwood management and wildlife habitat management. Common practices include reforestation of streamside areas, prescribed burning to control understorey and encourage food and habitat for wildlife and creating wildlife openings in closed forest habitat. Landowners are eligible if they own less than 2,000 hectares and have a recognised management plan.

1. Water quality issues are being addressed through the application of Best Management Practice guidelines. While there is some degree of compulsory enforcement under certain conditions, this approach does not provide the same level of broad environmental management as the Tasmanian Forest Practices Code.

2. The forest industry pays a tax on roundwood harvest that is used to assist regeneration on private land, since this provides a substantial source of their raw material. Increased demand for private property pulpwood by new processing plants has increased the level of landowner interest in regeneration in the SW of the State.

3. Successful landowners visited had clear goals and a written plan. (One landowner ran a local grocery store and paralleled making every bit of his store floor space “earn its keep” to his desire to actively manage every acre of his land as well.) Many were actively planting up streamside areas with native hardwood species to increase food for game in winter. Funding under the Conservation Reserve Enhancement Program provided assistance with the cost of seedlings and materials and an annuity payment for up to 10 years to offset any lost grazing potential. The funding assistance was provided to reduce the access to watercourses by cattle, and so improve water quality in the catchment.

4. Information is provided to landowners through a range of options including formal courses, field days, newsletters and through an innovative series of photos that show what good and poorly managed forest look like. Scheduling of events with adequate time for promotion in local newspapers and newsletters was considered essential as the landowners have many demands on their time. An innovation is the use a web site for landowners to order seedlings for planting. The cost of ordering is reduced and orders can be more efficiently aggregated and cost reductions in delivery etc passed on to the landowners. Virginia emphasises hardwood management in the higher more mountainous western parts of the state. This requires more site specific knowledge and specialist skills compared to the faster growing ubiquitous pine species of the lowland areas.

5. There is progressive implementation of charges for services, with State funding being concentrated on maintaining the framework of information services and specialist skills. There is some concern that this is reducing the willingness of landowners to seek professional advice.

6. 25 regions in the State have landowner committees that provide a useful forum for designing information dissemination to meet the differing regional local demands. Forest mentors are being tried to provide new farm foresters with local successful landowners who can be used as an additional source of advice. There has been a good reaction to placing stories of successful farm forestry activities on the web.
7. The Tree Farm Program provides a certificate for landowners who have an approved management plan and more than 10 acres of forest. A free inspection and assistance with drawing up the plan is part of the deal. The major incentive is to be recognised as a good steward for the land. There is also some expectation that this process may play a role in future certification systems associated with any forest products taken in accordance with the approved management plan.

A niche market that has provided local employment and several million dollars annually involves cutting the tips of the pine branches and weaving them into bands used to produce Christmas wreaths. The best quality tips are obtained from White pine stands aged from 7 to 10 years with US$100 per hectare being returned to the landowner as stumpage.

In the Loudon county area there are increasing water quality issues due to urban sprawl from Washington DC and rural subdivisions into 1 acre blocks. There is increasing pressure on water quality from local streams for domestic consumption where previously the major use was for watering livestock.

8. Water quality is becoming an increasingly important issue with traditional farming practices under critical review. Sustainable forestry is being promoted as an acceptable land use and there is more landowner interest in commercial forestry development. Some landowners however, are not planning past the harvest of native hardwood to help offset farm debts and this often means reduced returns and increased reforestation costs.

9. A general observation made by several extension agents was that it takes time to change landowner perceptions. Fencing off watercourses is something that is being accepted more, but was considered “a waste of time” when suggested about 10 years ago. It is necessary to use long periods of time to measure the success of some processes, especially where conservative landowner opinion is involved!

10. Reduced taxes (up to 50%) for forested areas with an approved management plan are helping to encourage better catchment management.

I attended a Society of American Foresters Regional Summer Seminar over 2 days. The program provided an opportunity to interact with about 35 professionals in land management, with the program including updates on a range of locally relevant issues and a field trip to examine research trials into the controlled use of fire to enhance regeneration of high value red oak in native hardwood stands. A major personal benefit was the opportunity to develop additional contacts on wildlife, land management and urban development.

There was an interesting inspection of one of the largest flooring manufacturing plants in the world - the Mullican Flooring plant. Of note was the innovative use of scored rack sticks to reduce the potential for staining of the boards in the kiln and also improve the air flow through the stacked boards in the kiln.

**Tennessee**

The population of the State is about 5.5 million, with an area of 11 million hectares.

There are 5.5 million hectares or 52% of the State forested, with non industrial private ownership accounting for 78%.

Tennessee has a major hardwood resource as well as substantial softwoods. There are about 60 native tree species in the state, with 10 of major commercial importance.

**Tennessee Main Points**
Extension forestry in the State is delivered via 33 regionally based professionals, with strong linkages to the University of Tennessee. Records indicate there are 1500 to 2500 “assists” annually since 1977, with the average landowner assisted having about 40 hectares.

1. Challenges identified in discussions with extension staff were:
   - Providing a wide range of services to satisfy landowner requests and political initiatives meant that often limited resources (both personnel and dollars) were stretched thinly.
   - Identifying some simple activities that landowners can relate to as a means of improving private forest management.
   - Ensuring that a written management plan is developed to provide some focus for future activity by the landowner.
   - Water quality issues are becoming more important and sustainable forest management on private land will play a deciding role in achieving long term improvements, although agricultural practices impact more adversely on watercourses.
   - Development of follow up courses to Master Forest Grower and the Master Logger Program. There are a large number of people who would benefit from the first round of these courses, with more developed program content required for those who have done the initial courses and now wish to develop their skills further and have appropriate reinforcement of skills learnt.
   - Encouraging more active management of slower growing and less commercially valuable hardwood stands.
   - The increased mobility of experienced staff means that there is an increasing need for improved documentation of processes and a better management of data to optimise the learning process for new staff.
   - The challenge of engaging and educating children on the need for sustainable forestry activity, incorporating wood production, conservation and other values.

2. Whilst landowners still prefer “one on one” interaction with extension agents, this is often not possible because of the cost. The use of field days, printed material and the development of networks of landowners are all used to provide a multi facetted approach.

3. Urban forestry issues are becoming more critical with the spread of cities into surrounding rural areas. The 1990’s were seen as a time when change was expected to occur rapidly, with less time to consider the implications of rapid expansion.

4. The development of a Tree City USA program has encouraged city planners and managers to more actively consider trees in their activities. Promoting the use of trees for benefits includes: energy benefits as shading reduces air conditioning; storm water management with tree cover acting as a sponge to reduce peak flow – smaller pipes means cost saving; recreation benefits; and reduced heat damage - shading asphalt on roads can reduce degrade time – better car parks if shade etc. Assistance is also given to arboriculturalists, landscapers and grounds managers as well as individual landowners (although the latter are seen as more time consuming with a lower return for time invested usually). The program entails:
   - establishing a Tree Board/Commission – a citizen group with suitable broad membership.
   - Tree ordinance on protecting and controlling planting, maintaining and cutting down. This identifies who is responsible for street trees and address the negligence issue re maintenance.
   - $2/capita commitment annually – met easily by most cities.
   - Arbor day ceremony – run by a private group, not government.
   - City must re-apply for membership every year.
   - Primary activity is to build up competence to think about trees in normal service and planning activities. “Trees are part of the long term infrastructure” – “think beyond beautification”.

I attended the Society of American Foresters regional summer meeting at Jackson and provided an overview of farm forestry activity in Tasmania. Other interesting presentations and field inspections covered:
   - The reintroduction of elk into the state – with management plans to ensure natural seedling regeneration is not affected.
Inspection of the Bruce Flooring Company – handling 81 million board feet annually and a major employer in the area, with timber sourced from sawmills within a 300 mile radius. Emphasis on providing a high quality end product with flooring options including staining, sealing and different grades.

Field visit to a wetlands area – know locally as “bottoms” – where the flat topography means drainage is a major determinant of species, especially hardwoods. Selection harvesting with natural regeneration from seed is the main management regime. Clearing of upper catchment land for agriculture has increased the amount of soil deposited in streams and this has raised the river beds causing flooding of surrounding areas. One deluge caused an increase in the soil level of 4 feet over a 40 acre site. Better uplands management is seen as part of the solution and there are no short term solutions as many farmers in the catchment are at a subsistence level due to reduced crop prices.

Beaver damage through damming watercourses was inspected and options for control discussed. Beavers were likened to “40lb rats” and can rebuild a dam in 24 hours. Research into beaver behaviour is helping to develop more cost effective and lasting controls. Beavers are attracted to the sound of running water and one research trial resulted in a tape recording of running water being buried in mud by a beaver!

5. I inspected an area in Tennessee and Kentucky resulting from major dams on the Cumberland and Tennessee rivers (known as the Land between the Lakes). The area has an ongoing history of harvesting but is now also highly valued for its recreation value and provides over 60,000 hectares of land with over 450 km of shoreline. There are several information areas that provide details on the management. Buffalo and elk herds are managed, with browsing necessary to keep native grasslands reverting to woodlands via oak and other native species regeneration.

6. Westvaco, one of the large industrial forest companies in the state, has run a co-operative forest management program to assist private landowners with forest management. Westvaco sees private woodlots as a substantial part of their future wood source and so they are committed to providing ongoing assistance to landowners. The program which has been in operation for 30 years entails:
   - Development of a written plan incorporating the landowner’s goals, one of which must be wood production.
   - Provision of seedlings for replanting following harvest by the company.
   - A chance for the Company to bid for any timber sales from the plantation.

7. Several Paulownia stands were inspected. This species has been promoted for a niche market associated with quality craft and furniture work. The species grows well in the humid summer Tennessee climate. There has been some interest in Tasmania in this species, but the climatic conditions observed in Tennessee for good stand development are outside of the climatic options available in the cooler temperate climate of Tasmania.

8. The southern pine bark beetle has caused widespread damage through central Tennessee, with thousands of hectares of pines killed. This has reduced the commercial return for many landowners and also raised uncertainty about which species to replant. The species that are susceptible to the beetle are also those that provide the most financial return to landowners. However, the fact that an outbreak can be expected at least every 20 years, means that it is not possible to grown pines without expecting at least one attack during a sawlog rotation. This does however help highlight to landowners the importance of stand hygiene and the need for a well managed plan including thinning and active health monitoring programs. The Farm Forestry Toolbox developed in Tasmania includes such a tool to aid landowners identify potential problems and was of considerable interest to the extension people visited.
CONCLUSIONS

The major conclusion from the study tour is that there are many benefits to be gained from the experiences and activities inspected and discussed in the South Eastern USA. There are no quick fix solutions, but there is widespread general agreement on the importance of developing a culture of private forest management that is based on sustainable management plans and sound technical advice.

The following conclusions form the basis for the proposed actions in the Recommendations section included in this report.

1. Computer and world wide web based information dissemination is generally currently much more widely used in farm forestry extension in South Eastern USA than in Australia.

2. There is a wealth of information in South Eastern USA that has relevance to Tasmanian and Australian farm forestry extension.

3. The greater population in the South Eastern USA provides a large market for farm forest based outputs, especially wood products and hunting. There is also a substantial amount of the forested land that is privately owned.

   The combination of these factors is placing increasing pressure to sustainably manage the full range of outputs from these forests including: wood products, soil and water quality, game, flora and fauna conservation and recreation. Successful landowners had clear goals and a long term plan, regardless of the outputs being managed.

4. Farm forestry extension includes both plantation and native forest management in South Eastern USA. Today, much of the region’s private forests have resulted from regeneration on land previously cleared for cotton, tobacco or corn. The emphasis is on facilitating longer term planning and management of forest lands.

   The large percentage of the private forest estate that is in small holdings below 40 hectares means that despite having substantial resources in terms of staff and finances, only a very small percentage of landowners have to date been serviced.

5. Increasing financial constraints on farm forestry extension services are stimulating action to develop new approaches from the traditional “one on one” training. However, at this stage, no clear successful new processes have been identified.
RECOMMENDATIONS

1. Information from contacts made during the study tour should be considered for incorporation into Tasmanian extension material.
   Examples include:
   - NC Foresters Field Handbook information into the Farm Forestry Toolbox Version 4 and other generally distributed information to provide a single reference source for commonly used information.
   - Development of a “Biltmore stick” simple hand measurement aid for Tasmanian conditions to facilitate tree measurement for farm foresters.
   - Review of Extension components of Private Forests Tasmania website to include components of the websites listed in Appendix 2.
   - Review opportunities for the development of CD based information material such as the “North Carolina Forest Forever” and “Forest Stewardship Management Choices”.
   - Generic land management packages available from sources such as the USDA Forest Service stand visualisation system and forest vegetation simulator.
   - Utilise specialised brochures produced in the SE USA on niche market crops such as Christmas trees, or high value wood products as a means of investigating similar niche opportunities in Tasmania.
   - Use pest information formats to improve format of similar information provided through existing information sheets and Toolbox tools.
   - Tree City USA concept to encourage greater awareness of tree related management issues in larger towns
   - Investigate the suitability of regional landowner committees or mentors to help provide focussed information to specialist groups in the community and to link into existing specialised agricultural or landowner interest groups.

2. Disseminate collected information and contact details to other specialists working in related fields in Tasmania – including:
   - Educational material to the Forest Education Foundation,
   - Logging and safety information to the Logging Association and Farmwood,
   - A large number of web references have been collated in Appendix 2 that provide a starting point for accessing the wealth of South Eastern USA extension forestry information.

3. Maintain email based links with contacts in forestry extension to expand the information sources available for farm forestry in Tasmania.

4. There should be improved communication between farm forestry extension agents in different regions of Australia. Experience in the SE USA supports the observation that despite having some common programs there is often a lack of effective communication because extension agents tend to focus on the specifics of their own regions.
MAP 1 - Major Sites in SE USA visited during the Fellowship
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Appendix 2

**Websites on Extension Forestry for South Eastern USA**

- [www.afandpa.org/index.html](http://www.afandpa.org/index.html) – American Forest Products Association
- [www.cnr.vt.edu](http://www.cnr.vt.edu) - general website on extension at Virginia Tech
- [www.dof.state.va.us](http://www.dof.state.va.us) – Dept of Forestry in Virginia.
- [www.ext.vt.edu](http://www.ext.vt.edu) - general website on extension at Virginia Tech
- [www.fia.fs.fed.us](http://www.fia.fs.fed.us) – website for inventory information.
- [www.fnr.purdue.edu/ttax](http://www.fnr.purdue.edu/ttax) – an alternative access into the National Timber Tax website
- [www.forestland.org](http://www.forestland.org) – Forest Landowners Association
- [www.forestry.about.com](http://www.forestry.about.com) – private website with advert sponsored items but considered to be useful by USA extension agents.
- [www.forestryindex.net](http://www.forestryindex.net) – A moderated site with information checked prior to posting.
- [www.fs.fed.us](http://www.fs.fed.us) - information on national forests.
- [www.fs.fed.us/fire/](http://www.fs.fed.us/fire/) - fire website
- [www.fs.fed.us/people](http://www.fs.fed.us/people) – Overview of public programs, groups & initiatives.
- [www.fs.fed.us/people/employ/majororg.html](http://www.fs.fed.us/people/employ/majororg.html) – provides an overview of the Forest Service
- [www.fsa.usda.gov](http://www.fsa.usda.gov) – Farm Service Agency
- [www.gpstm.com](http://www.gpstm.com) – free software for GPS and other applications.
- [www.interfacesouth.org](http://www.interfacesouth.org) – urban forestry related matters.
- [www.isa-arbor.com](http://www.isa-arbor.com) – a guide for plant appraisal put out by Arboriculturalist society
- [www.lbl.org](http://www.lbl.org) – website for Land Between the Lakes reserve information.
- [www.maryland.edu](http://www.maryland.edu) – general website address.
- [www.nrcs.usda.gov](http://www.nrcs.usda.gov) – Natural Resources Conservation Service
- [www.pfmt.org](http://www.pfmt.org) – private forest management team website – Alabama based
- [www.plt.org](http://www.plt.org) - is an award-winning, interdisciplinary environmental education program for educators working with students in PreK through grade 12.
- [www.projectwild.org](http://www.projectwild.org) - Project WILD is one of the most widely-used USA conservation and environmental education programs for students in K through high school.
- [www.soforext.net](http://www.soforext.net) – Southern Forestry Extension
- [www.timbermart-south.com](http://www.timbermart-south.com) – timber marketing information
- [www.tnforestry.com](http://www.tnforestry.com) – Tennessee Forestry Association
- [www.uga.edu/wsfr](http://www.uga.edu/wsfr) University of Georgia Warnell School of Forest Resources – a good general website with links to other sites.
Appendix 3

List of Scientific Names for Tree Species

Loblolly Pine  
Longleaf Pine  
Eastern White Pine  
Shortleaf Pine  
Slash Pine  
Eastern Hemlock  
Fraser Fir  
Black Willow  
Eastern Cottonwood  
Black Walnut  
Shagbark Hickory  
Mockernut Hickory  
River Birch  
Yellow Birch  
Sweet Birch  
American Beech  
American Chestnut  
White Oak  
Post Oak  
Chestnut Oak  
Swamp Chestnut Oak  
Live Oak  
Northern Red Oak  
Southern Red Oak  
Cherrybark Oak  
Black Oak

*Pinus taeda*
*Pinus palustris*
*Pinus strobus*
*Pinus echinata*
*Pinus elliottii*
*Tsuga canadensis*
*Abies fraseri*
*Salix nigra*
*Populus deltoides*
*Juglans nigra*
*Carya ovata*
*Carya tomentosa*
*Betula nigra*
*Betula alleghaniensis*
*Betula lenta*
*Fagus grandifolia*
*Castanea dentata*
*Quercus alba*
*Quercus stellata*
*Quercus prinus*
*Quercus michauxii*
*Quercus virginiana*
*Quercus rubra*
*Quercus falcata*
*Quercus pagoda*
*Quercus velutina*
<table>
<thead>
<tr>
<th>Tree Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Elm</td>
<td>Ulmus rubra</td>
</tr>
<tr>
<td>Yellow Poplar</td>
<td>Liriodendron tulipifera</td>
</tr>
<tr>
<td>Sweetgum</td>
<td>Liquidambar styraciflua</td>
</tr>
<tr>
<td>American Sycamore</td>
<td>Platanus occidentalis</td>
</tr>
<tr>
<td>Black Cherry</td>
<td>Prunus serotina</td>
</tr>
<tr>
<td>Sugar Maple</td>
<td>Acer saccharum</td>
</tr>
<tr>
<td>Red Maple</td>
<td>Acer rubrum</td>
</tr>
<tr>
<td>White Ash</td>
<td>Fraxinus americana</td>
</tr>
<tr>
<td>Green Ash</td>
<td>Fraxinus pennslyvanica</td>
</tr>
<tr>
<td>Royal Paulownia</td>
<td>Paulownia tomentosa</td>
</tr>
</tbody>
</table>