

7.5 Silvicultural Strategy

The complexity in carrying out the practice of forest management has increased dramatically during the past decade. Forest Managers have an increasing challenge to balance the economic need to secure timber value from the forest with the myriad of other social, economic and environmental values that the forest provides. The portion of the forest landscape that is available to sustain the forest industry (production forest) is declining as managers work to also meet non-timber ecosystem values. Given that scenario, if we are to sustain forest related economic values and the associated social benefits and maintain forestry dependent communities, then we need to enhance productivity and timber yields from the production forest. Indeed, increasing productivity within the production forest allows greater flexibility to in-corporate other values on the landscape.

It is also important to maintain ecological functions and biodiversity within silviculturally treated areas. This section outlines the major silvicultural concerns in the District and the approach that will be taken in dealing with these issues to ensure a sustainable supply of fibre to the industry. Section 2.2.4 Ecological Protection and 7.3 Biodiversity Strategy outline the approach to ensure that biodiversity and ecological concerns receive greater emphasis in the future than during previous management regimes.

Silvicultural issue: Inadequate natural regeneration is providing a low stocking level of commercial tree species on some sites following harvesting due to poor seeding conditions, competition from shrub species and/or browsing by moose. These conditions occur on Kalmia-Black Spruce sites primarily in the Central Newfoundland Ecoregion and the North Shore Forest and on good sites due to raspberry competition and moose browsing, primarily in the Northeastern Barrens Sub-region. Kalmia is a particularly aggressive competing species and is very difficult to treat. Hardwood competition impedes development of plantations on some good sites primarily in the Northeastern Barrens and to a lesser extent in the Central Newfoundland Forest and North Shore Forest ecoregion.

Silviculture strategy: Sites that have low stocking levels and heavy duff conditions will be scarified and planted. Normally a hydraulic disc trencher is used to furrow the duff layer and improve the site for the establishment of young seedlings. Heavier scarification, such as the C&H plow, is necessary to establish a plantation in areas where severe Kalmia invasion has occurred. The possible current alternatives to heavy scarification in these areas are herbicide or intense Fire. The disadvantages of using both of these treatments are discussed below. Scarification may not be necessary for seedling establishment on sites with thin duff layers but it may be beneficial on these and other sites to align slash and improve movement of planters. Also, sites with thin duff are usually on the richer end of the nutrient scale and have better growing conditions for white birch. Scarification increases the regeneration success of that species (see below).

Following the site preparation treatment, these under-stocked sites will be reforested. Black Spruce, followed by White Spruce, from local natural seed sources are the predominant species that

will be used in the District's planting program. Red Pine, one of two native pine species, will be planted in high densities, replicating its natural occurrences, on suitable sites. White pine, the other native pine species, will be planted in low densities mixed with other softwoods on suitable sites. Eastern larch will form a small portion of the District's planting program. All species will be planted on ecologically suited sites.

As stated in previous sections, in-growth of hardwood and softwood species will be permitted to contribute to the biodiversity within our forest. However, if competing vegetation is threatening to stunt growth of the desired crop trees and extend the forest rotation age, then some form of stand tending may be necessary for crop tree release. If stand tending is required, there are two options available: manual or chemical plantation maintenance. Manual tending is more expensive but has three distinct advantages: (1.) It is highly labour intensive; (2.) It is specific to the target vegetation, allowing planners control of post treatment species composition; (3.) It is more readily accepted by the public. Chemical maintenance (ie. herbicide) has been used vary sparingly in District 2. Only 32 hectares of forest, representing 7/1000ths of one percent of the total surface area within the District, have been treated with herbicide for forestry purposes during the history of the District. Apart from the public concern with herbicide, the huge disadvantage with this treatment from an ecosystem approach is that it is not species specific and will usually kill a whole suite of hardwood plants and shrubs. It will be difficult to meet biodiversity objectives if herbicide is used on a large scale across the landscape. Also, hardwoods are known to have many positive impacts on the development of richness in soils and can lead to a long term improvement in site productivity. Herbicide will only be used on a very site specific basis and will not be part of the District's annual silviculture program. Moose browsing has been effective in reducing the hardwood and hardwood scrub component of the forest in many areas. Browsing density will be monitored throughout plantations and may prevent the need for plantation maintenance. However, the down side of moose browsing from a timber value perspective is that desirable crop trees (eg. White birch) also receive extensive damage. Moose browsing also reduces biodiversity within a stand and may reduce productivity.

It is important to state that the practice of plantation maintenance has not been used on a broad scale in this District. Stand tending will be a treatment of last resort in favor of maintaining biodiversity values.

Silviculture Issue: With the removal of fire as a primary force driving succession in the District, balsam fir regeneration is becoming more common and black spruce less common on disturbed sites. In the absence of adelgid, the District would promote an aggressive pre-commercial thinning program to treat these dense young balsam fir stands. As discussed further below, balsam woolly adelgid is prevalent in high numbers throughout most areas in District 02. More than 60% of sites field-checked during the summer of 2005 had moderate to severe levels of adelgid damage in the fir component of the forest. Previously thinned stands appeared to have a more severe impact from adelgid than did adjoining unthinned stands. There is a high level of financial as well as growth and yield risk associated with making silvicultural investments (PCT) in these stands. Therefore the District will use alternative silvicultural treatments to deal with this issue.

Silviculture Strategy: The District does not consider balsam fir to be acceptable regeneration to meet its timber objectives. In the absence of fire, the species is occupying sites that it would normally not occupy. Balsam fir has a high incidence of adelgid across a broad range of sites that it does occupy.

Newly disturbed sites will be scarified and planted with a mixture of adelgid resistant species. This will include predominately black or white spruce mixed with a percentage of white pine. Norway spruce will be planted on richer sites; eastern or Japanese larch on wetter sites; and red pine on dry upland sites. Young balsam fir stands that are more advanced in development but have evident high levels of adelgid will be strip cleared and planted in alternate strips with a fast growing species, such as Norway or white spruce.

Silviculture Issue: Pure white birch stands comprise only a small proportion (approximately 300 ha) of the production forest in District 02. Mixed hardwood-softwood stands also make up a relatively small proportion (1548 ha or 1.5%) of the production forest. White birch sawlog is the highest valued timber product that is currently produced in our forest. Inadequate regeneration coupled with heavy moose browsing is threatening the already small hardwood component of the Districts' forest.

Silviculture Strategy: The District will use enhanced scarification techniques on all hardwood, hardwood-softwood and softwood-hardwood sites to promote hardwood regeneration. White birch seed trees will be left throughout the cut-over. A mixture of softwood will be planted throughout these sites to increase biodiversity and to improve the quality of the future birch sawlog crop trees. The District will explore and promote management efforts to control moose populations within high valued hardwood sites that are managed for birch sawlogs.

Silviculture issue: In the absence of heavy moose browsing or severe kalmia invasion, most Fir sites and many Spruce sites will develop natural dense stands following harvesting. In many cases, stocking levels will range as high as 30-40,000 stems per hectare and have been known to exceed 100,000 stems per hectare. Due to the fierce competition that occurs within these stands, merchantable crop trees are slow to develop. Clear-cut operations were introduced in this District through site-reclamation projects in the 1980's. This silvicultural practice, combined with increasing clear-cut harvesting through the 1990's, has contributed to the availability of dense young stands that are logistically suited for thinning treatments. There are also many instances where dense regeneration occurs to fill in small gaps created by high-grading but logistical problems (ie. small area size and scattered) prevents the operability of these sites in a silviculture program.

In the past, pre-commercial thinning treatments were designed to leave a density of crop trees in the range of 2000-2500 trees per hectare. Also, hardwoods were considered to be unwanted "weed" species. Leaving a higher density of crop trees provides a number of important benefits. For example, it is ecologically friendlier to allow crown closure to reoccur quicker, which benefits cover seeking mammals and birds and helps to reduce the spread of kalmia. Leaving higher densities provides greater management options in the future. Also, some forest scientist hold the view that open young Fir stands may aid the spread of Balsam wooly adelgid - increased post-treatment densities and, subsequently, earlier crown closure will help to alleviate that problem. Likewise, leaving hardwoods within thinned stands has a number of very positive aspects from several perspectives - from an ecological perspective: hardwoods help to maintain the biodiversity of plant and animal life within the stand; from a productivity perspective: hardwoods contribute to the nutritional richness of soils; from an economic perspective: hardwoods provide value added forest products opportunities; from a social perspective:

hardwoods contribute greatly to the aesthetic appearance of the landscape. In the future, District 2 will commit to leaving a higher density of crop trees in its thinning program (3-4000 stems per hectare) and will maintain a composition of hardwoods equal to or greater than the percentage of hardwoods pre-treatment.

Even though the benefit of implementing a thinning program is usually positive from a timber supply perspective, there is a caveat that severely limits the real opportunity to embark on a broad-scale thinning program in District 02. Field reconnaissance has shown that balsam woolly adelgid has spread prolifically throughout the District. Young fir stands that were thinned during the early to mid-1990s now show extensive damage from high adelgid populations (refer to Figure 7.35.). There is concern that an aggressive thinning program in fir dominated stands will help propagate the adelgid problem and lead to long term productivity losses. Therefore, the District will refrain from thinning in these conditions unless there is a high stocking level of adelgid resistant species such as black or white spruce that can form the new post-treatment stand. The strategy to deal with dense young fir stands is discussed above.



Figure 7.35. Picture of Aedlgid Damage in Thinned Balsam Fir Stand

Silviculture issue: There are many stands in the District with low productivity as a result of one or more of the following stand disturbances: past insect feeding; repeated passes of selective cutting;

recent partial mature stand disturbance through selective cutting; wind-throw; and high current populations of Balsam wooly adelgid. Accumulatively, these stands affect the productivity of the forest in the District and restrict the commercial potential of the forest. Stands with repeated selective cutting disturbance usually have very mixed ages and have a multi-layered canopy. Others are even-aged mature forest with varying degrees of harvesting and insect disturbance and usually have high levels of wind-throw. Fir stands with adelgid exhibit very slow, stunted growth rates and a high degree of stem deformity.

Silviculture strategy: The silvicultural approach to take with low producing stands in the District depends on the specific site conditions. Stands that have a multi-layered crown cover and mixed ages are very difficult to treat from a silviculture perspective. From a timber value and wood supply perspective, if these stands contain a medium to high stocking level of healthy young and intermediate aged trees, than they are best treated through a selection harvest method (refer to section 7.1). In combination with selection harvest, gap planting will be used to reforest openings in these stands which are void of trees. Stands that contain primarily diseased and damaged or old trees should receive a stand clearing treatment in order to most effectively capture the long term potential of the site to produce timber. Follow up silviculture treatment in this situation would be a combination of scarification and planting or pre-commercial thinning, depending on the post-clearing regeneration response.

As indicated in Section 7.1, the Forestry and Wildlife Branch will offer to work with individual operators who wish to practice selection harvesting in stand conditions where this practice will provide the best silvicultural benefit. That said, no commercial permit holders expressed an interest in conducting selection harvesting during the previous planning period. The Department will conduct stand improvement in instances where selection harvesting is not viable. The Department will encourage integrated operators to clear cut these under-performing stands where it is evident that this approach will provide the greatest long term silvicultural benefit. The Department will use volume incentives to encourage harvesting in these areas. The aggressive reforestation program in the District is providing gains in the sustainable harvest level. These gains will be allocated in under-producing stands to further help improve productivity in the Districts forests. DNR may exercise the option to use hands on Departmental stand reclamation projects to remove diseased and damaged forests that are not viable for clearing by commercial operators.

Stand reclamation is a very important program in terms of meeting the objectives stated in section 5.2 (Healthy Forest) of the Ecosystem Strategy Document. These objectives include: (1.) Prevention of long-term change in natural processes, such as creation of kalmia heath or alder beds after harvesting. (2.) To ensure that the productivity of forest sites in terms of timber yield is not reduced from natural levels as a result of human related intervention.

Silviculture issue: Some areas in the District have very heavy slash loads (ie. logging debris-tops and branches). This may hinder the establishment of natural regeneration and prevent access for planting.

Silviculture strategy: Prescribed Fire is a silviculturally suitable means of removing heavy slash loads and preparing a site for the establishment of a new forest. Prescribed burning has not been

carried out in this District before, although the District has conducted some wind-row burning. In addition to removing slash loads, fire can be a very effective means of eradicating kalmia. However, intense fire is needed to accomplish that and the fire indices required to achieve deep burning may be too hazardous to include in the burning window for the District. Consequently, the District will attempt to conduct some slash burning during the fall season, when the hazard of wildfire is minimal. Meanwhile, the District will follow closely the development of a prescribed fire program in neighboring TNNP. District staff will evaluate the potential to deliver a modest prescribe fire program during the planning period.

7.5.1 Silviculture Plan

A summary of the proposed silviculture activity for the District for the next five years is given by year in Table 7.11 and by treatment in Table 7.12. Appendix 14 shows the location of all silviculture proposals for the next 5 years and the location of the planned treatments.

As discussed above, reforestation continues to be the priority treatment in the District's silviculture program. A total of 1600 hectares is proposed for planting during the 2006-10 planning period. This will be supported by the scarification of some 1200 hectares of cut-over. An additional 250 hectares of gap planting is proposed in the plan. These include pockets of terrain that were missed during scarification due to operability constraints and other pockets of NSR dispersed throughout naturally regenerated areas. Larger planting stock will be used on these sites to provide an edge against vegetative competition. District 02 is providing an incentive to clear decrepit and under-producing forest. This five year plan is targeting to clear 500ha of these damaged and disturbed forests under its Disturbed Stand Volume Removal Program. It is further planning to rehabilitate 250 hectares of forest which has moderate to severe damage from balsam woolly adelgid. There will be minimal opportunity to conduct pre-commercial thinning within the District due to the level of adelgid populations throughout the District. The plan targets 125 hectares of thinning within the District during the next five years, but this target will be difficult to achieve in reality. This planning document has committed to improving the productivity of the forest in Ecosystem Management District 02. The silviculture program outlined above will be key in delivering on this objective and in maintaining a long term sustainable supply of fibre for the local industry.

Table 7.11 Summary of District 02 Silviculture Proposals by Year: 2006-2011

Year	Treatment	Area (ha)
2006	Planting	500
	Site Preparation	150
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	<u>25</u>
	Sub-Total	<u>725</u>
2007	Planting	200
	Site Preparation	300
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	<u>25</u>
	Sub-Total	<u>725</u>
2008	Planting	300
	Site Preparation	300
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	<u>25</u>
	Sub-Total	825
2009	Planting	300
	Site Preparation	300
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	<u>25</u>
	Sub-Total	825
2010	Planting	300
	Site Preparation	300
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	<u>25</u>
	Sub-Total	825

2011	Planting	300
	Site Preparation	300
	Disturbed Stand Volume Removal	100
	Rehabilitation of Adelgid Damaged Stands	50
	Gap Planting	50
	Pre-Commercial Thinning	25
	Sub-Total	825
	TOTAL	4900

Table 7.12 Summary of District 02 Silviculture Proposals by Treatment: 2006-2011

Treatment	Area
Planting	1900
Site Preparation	1650
Disturbed Stand volume Removal	600
Rehabilitation Adelgid Damaged Stands	300
Gap Planting	300
Pre-Commercial Thinning	150
Total	4900

7.6 Other Values

7.6.1 Protected Water Supplies

District 2 has a total of 18 protected water supplies which provide community drinking water to many of the residents of the Bonavista Peninsula. The map series in Appendix _____ shows the location of all of the protected water supplies in the District. Water Resources Division of the Department of Environment and Lands has the authority to regulate all the development activity within these areas. All development activity, including commercial/domestic logging and silviculture proposals, must be submitted in application to that division for approval. In addition, an agreement between the Department of Forest Resources and Agrifoods and the Water Resources Division prescribes guidelines which forest management activity must follow (refer to Appendix 2.5). These guidelines include wider no-cut buffers on all water bodies upstream of the intake pond to protect the water quality. These buffers vary from a minimum of 30 metres at distance from the water supply intake to a maximum of 150 metres within close proximity of the intake.

7.6.2 Recreational Trails

This plan has committed to monitoring the development of recreational trails in the District as an objective in Section 5.5 (Sustainable Forest Management: Values, Goals,

Indicators). As one of the referral agencies for Crown Land development, the Department of Natural Resources has an important role in the approval of these trail systems. Ultimately, the Department also plays an important role in the maintenance of the trails through enforcement of its cutting of timber regulations - which is critical in controlling indiscriminate cutting of the treed buffers and preserving the natural aesthetics of selected trail systems.

Request for recreational trails arise from a number of stakeholders: including cabin associations; cross-country ski trail associations; municipalities; snowmobile associations; and tourism development associations. In all instances, these stake-holders are interested in preserving the aesthetics of well-travelled recreational routes. Most cabin associations which seek the designation of a buffered trail are located in remote locations accessed only by an ATV trail. Cross-country ski trails are generally circular routes near communities with a strong interest in this winter sport. Municipalities often ask for protection of popular hiking trails to points of interest near their communities. The most significant snowmobile trail through the District is the T'railway Provincial Park, which is an abandoned section of rail bed which generally runs parallel to the Trans Canada Highway between Come-by-Chance and Port Blandford, and makes up part of and, ultimately, a link with a trans Canada trail system. All known cross-country ski trails, hiking trails, ATV trails and snow-mobile trails are shown on the Map Series in Appendix 1.0.

The Discovery Trail Tourism Association has developed a series of scenic coastal hiking trails along the northeastern end of Bonavista Peninsula in an effort to offer new attractions in the area and help an already well-established and growing local tourism industry. These trail systems are particularly sensitive to indiscriminate cutting and, if properly protected, provide an opportunity to support further economic growth in the area. It is widely recognized in the tourism industry that growth of an area as a tourist destination and the duration of stay by visiting tourists is highly dependent on the number, the quality and the diversity of attractions in the area. The Bonavista Peninsula has an abundance of very attractive seascapes that are appealing to visiting non-residents and locals alike - and deserve to be given adequate protection for economic as well as social reasons. Indeed, there are 5-star inns on the Peninsula which include these trails, some of which have been recognized as world class, as recommended attractions for visiting guests' itineraries. It is important in growing our local tourism industry that these visitors, from all corners of the globe, leave as envoys who can spread a positive word about our unique landscapes.

The Department will assume a role in the future with regard to new trail approvals similar to its previous practise. During the referral process, DNR will consider the environmental impact, from an ecosystem perspective, and the impact on production forest of all new trail developments. All request for trail buffers will be carefully considered by Departmental staff. Approval will be granted for protected trail buffers if the trail locations are reasonable with respect to the impact on the District's production forest base. If there are request for recreational trail development within the District's production forest, then District staff will seek to find routes which will minimize the impact on the production forest and at the same time meet the needs of the stakeholders seeking the new trail approval. New trails will be included on the District's GIS system as they are developed.

7.6.3 Agriculture Development

Section 7.4 (Agriculture/Forestry Land-use Strategy) in the Ecosystem Strategy Document outlines the importance of maintaining the net production forest land-base in the District for three fundamental reasons: (1) Environmental - to maintain the District's contribution to global carbon cycling and to maintain important local ecological functions; (2) Social - to allow local residents the continued enjoyment of the variety of outdoor activities that are traditional in this District; and (3) Economic - to help sustain the forest industry and its associated economic/employment spin-offs. Agriculture development is also an important contributor to the economy of the Bonavista Peninsula and has a strong opportunity for expansion. Agricultural expansion is the most significant competitor for production forest land. Request for production forest land for agricultural expansion outside the designated Agricultural Development Area (ADA) will be carefully reviewed by the Forestry and Wildlife Branch. A review of agriculture developments with the planning team will be part of the monitoring process. . The Forestry and Wildlife Branch will make its best effort to replace potential loss of growing through agricultural expansion, through afforestation of abandoned agriculture land; through release of less suitable agriculture land within the ADA for long term forest management ; or through some other means, such as silvicultural gains.

7.6.4 Cottage Development

It has been recognized in this planning process that cottage development supports an important social value in this District, as throughout the Province. Newfoundlanders enjoy the out-doors and their out-door recreation, for many, is centred around their cabin get-a-way. A need to balance this important social value with potential economic/ ecological impacts has been discussed at length during the past two planning processes in District 02. It is also recognized that cottage development, coupled with the associated recreational activity, is an important economic generator in rural Newfoundland.

Cottage development is a permanent fixture on the landscape. It commands a sphere of influence which usually extends far beyond the boundaries of development, whether that development is a designated cottage area or a remote cabin. Cottage owners, individually or collectively, often place demands on other ecosystem values. Cottage development impacts economic values by directly removing production forest from the industrial forest land-base and through demands to maintain aesthetic buffers adjacent to cottage development areas. There are examples in the province where cottage development has led to crowding and diminished tourism development opportunities. Cottage development impacts ecological values by increasing pressure on fish and wildlife resources, potentially impacting wildlife habitat or, in the case of remote development, encouraging access into formally pristine areas. There are examples in District 02 where remote cottage development and, subsequently ATV access, has occurred within sensitive waterfowl breeding and caribou calving areas.

Discussions have been initiated with Crown Lands Division to develop a cottage development strategy for the District which considers other forest ecosystem values. This process will continue through the forthcoming planning period.

7.6.5 Tourism

Tourism is recognized as a sunrise industry in Newfoundland and Labrador with great potential for growth in the national and international marketplace. Newfoundland is considered to have a unique cultural and natural history product – friendly people, laid-back lifestyle, scenic and wild coastal vistas, whales, ice-burgs, trophy fish and big-game racks. There has been considerable investment in accommodations and activities infrastructure during the past five years in this District, particularly in popular tourist destinations like Trinity, Bonavista and Port Blandford. Continued growth in the tourism sector is heralded by today's government as one of the opportunities for economic growth in rural Newfoundland.

Similar to cottage development, tourism infrastructure is a permanent fixture on the landscape. Most accommodations and some activities occur within residential areas and have minimal impact on other ecosystem values. Other developments, such as golf courses and hiking trails, directly impact the forest industry by removing productive forest landbase from the system. In addition, the tourism industry also commands a sphere of influence which extends far beyond the land occupied by tangible tourism assets. Hiking trails, golf courses, coastal routes and popular travel corridors often require adjacent uncut buffers or modified harvesting approaches on sensitive viewsapes to maintain the ambience of these tourism assets. Increased tourist visitation can also contribute to increased traffic within ecologically sensitive areas or pressure on fish and game resources.

Tourism values are identified in Appendix 1.0. Travel corridors, coastal boat-tour/kayaking routes and hiking trails are particularly sensitive to industrial and domestic harvesting activity. The Department is committed to working with tourism stake-holders to identify sensitive viewsapes and develop reasonable approaches to mitigate impacts. As during the previous planning period and discussed in Section 5.5, value 5.7, the District will modify its approach in areas which have visually sensitive landscapes vis a vis tourism values. This will include planning harvesting in a temporal time-frame which will allow sequential clear-cutting/green-up during extended time-frames (up to thirty years). This will have minimal (if any) impact on wood-supply in the District but will increase short-term cost of providing access road infrastructure. As during the past planning period, the Department will share the financial burden of adopting this approach. Distant clear-cut areas are difficult to distinguish from natural disturbances or, indeed, from barren or bog land and should be viewed differently than areas which are in close proximity to popular viewpoints. Reasonable approaches have to be cognizant of scale and of the impact of tourism development on forest and other ecosystem values.

The Department of Tourism has identified a group of ponds between Blue Gull Pond and Trouty Pond as having potential for remote out-door recreational development. It has been suggested that this area can possibly extend on the product offering of the nearby well-established Trinity tourism destination. The Department of Natural Resources will adopt a management strategy in this area aimed at mitigating potential negative impacts of its activity on tourism development. In particular, the District will discuss with the Department of Tourism the requirement to modify its access into the area with respect to proximity to strategic water bodies. The Department is prepared to decommission access if it is required to meet long term tourism

objectives. The District will also conduct creel surveys in the area to evaluate, and monitor through time, fish success rates in the local watersheds.

The Department of Tourism identified a number of coastal areas that are important for long-term tourism development in District 02. These include Clode Sound, Sweet Bay and Smith Sound. There are a number of commercial operating areas proposed within these water-ways. The Forest Service will monitor harvesting within these blocks and employ modified harvesting techniques if necessary to meet long-term tourism objectives.

7.7 Public Relations and Environmental (Ecosystem) Education

A good public relations and ecosystem education program is essential to improve the appreciation for the ecosystems in the area and general environmental awareness; increase the level of understanding of forestry/wildlife issues throughout the District and the importance of good management of values (often competing) on the landscape; to increase the level of acceptance of resource management policies; and to improve the profile and image of the Department.

During the past five years, the District made significant progress in delivering on its Public Relations and Ecosystem Education commitments despite significant internal challenges (declining Departmental budgetary support and leadership for information and education initiatives; staffing level reductions; expanded mandate in natural resource management responsibilities; collapse of a regional I&E development and planning team). During the past five years, the District's I&E program included the following dedicated activities: (1.) Delivery of curriculum dedicated talks on ecosystem management themes within local schools; (2.) Participation with natural resources booth and environmental hand-outs at local envirofests; (3.) Print of ecosystem management stories in local newspaper;; (5.) Presentations to special interest groups and, not to be understated, (6.) the endless one-on-one contact between DNR field staff and resource users/publics.

The District is a firm believer that increasing the environmental awareness of our youth is a positive approach in instilling a better long term appreciation for our ecosystems and the need for balanced resource management. Involvement in the schools was expanded during the past five years by sponsoring an annual environmental poster/writing contest for all school ages throughout the Vista School District. This was introduced each year as an activity during National Forest Week. It will be continued and enhanced during the coming five year planning period. In addition, District staff worked closely with educators at the high school level to incorporate field based curriculum (with direct involvement with District Conservation Officers) to help students understand some basic principles/ techniques in resource management. School students participated in ecosystem management research projects and field trips aimed at fostering a better understanding of sustainable resource management. (The District developed some curriculum through this approach which could be packaged and used more extensively throughout the Department.) The District will continue with this approach throughout the planning period.

In addition to these dedicated programs, the District was active in a number of other areas to promote the development and profile of Information and Education within the Department and

the community. The District has been active in promoting the development or improvement of interpretative hiking trails/facilities at various locations around the District. The District has had discussions with the Town of Clarendville w.r.t. co-operating in the development of interpretative signage on its municipal hiking rotaries; it has actively promoted and supported the concept of an interpretation forest in the Port Blandford area; and it is working to expand the environmental education offering at the Lethbridge interpretation centre. The District sponsored an eight person-month pilot project to develop practical learning tools that could be used to assist Conservation Officers in delivering ecosystem management presentations to groups of various ages. This program produced tangible results and was well accepted by local Conservation Officers. The reaction from local officers demonstrated the need for learning resource material and the potential to and benefit of developing these materials at the grass roots level. It also demonstrated an opportunity to develop a practical learning resource development program with some dedicated PREE funding to the District level (within the Departmental budgetary process.) The District opened dialogue with local educators (Vista School Board) on a co-operative approach to develop resource material which would both meet curricula objectives in the Province's schools and deliver environmental messages important in understanding and supporting DNR's mandate. The author strongly feels that the pilot project combined with the potential to develop environmental learning tools through a co-operative approach with the province's educational system presents an excellent opportunity to capitalize on the synergies possible between the education and natural resource management systems currently operating at the local level in this Province.

During the next five years the District will continue with its efforts to reach as many stakeholders, concerned public citizens, youth and the general population in the District with information regarding the management of the forest and wildlife resources in the District. The following priorities will guide the District during this planning period:

- The District will continue to promote the importance of a more focussed and better supported information and education program within the organization. It will continue to advance the need for better I and E delivery resources for use at the local level (ie. Audio-video aids; displays; inter-active programs; hand-outs; and other resource materials).
- The District will continue to promote and support the development of out-door classrooms within the District. Support will be both from a technical capacity as well as with direct tangible commitment.
- The District will be pro-active in seeking educational/information engagements with local schools and youth groups.
- The District will be pro-active in seeking information engagements with local service clubs, municipal groups, development groups and other non-government organizations throughout the District
- The District will prepare articles giving a summary of activities and issues for print in the local media on an annual basis.
- The District will hold public forums on at least an annual basis to present information

about on-going activities and resource management issues.

- The District will make its best effort to have public attitude surveys conducted within the District to better understand users/public's views of local resource management issues and demands from the local resource.

- The District will monitor all public relations related activity so that it can evaluate the effectiveness of its PR program.