# SIMCOE COUNTY FOREST

# 2011 - 2030

*Revised 2023*

# Land Acknowledgement

The County of Simcoe acknowledges that for millennia, the land and waters now called Simcoe County have been the home of many Indigenous communities.  Simcoe County includes the traditional territory and treaty lands of the Williams Treaties First Nations, the ancestral homeland of the Huron-Wendat Nation, the traditional territory of the Saugeen Ojibway Nation, and the home of the historic Métis community in Penetanguishene and is within the traditional harvesting territory of the Georgian Bay Traditional Territory Métis.

It is further acknowledged that additional consultation and relationship building is necessary to ensure that Indigenous Peoples customary rights are identified and upheld with respect to the use and management of the Simcoe County Forest. It is recognized that ongoing engagement is important to contribute to improved understanding, and that new information gathered as a result may necessitate revisions to this plan. This plan does not limit or supersede any recognized constitutional rights of Indigenous Peoples to hunt, fish or gather within the Simcoe County Forest.

# Acknowledgements

This document is an update of the 20-Year Simcoe County Forest Management Plan approved in 2011. The acknowledgements within that plan are still very much applicable today.

Particular thanks go to:

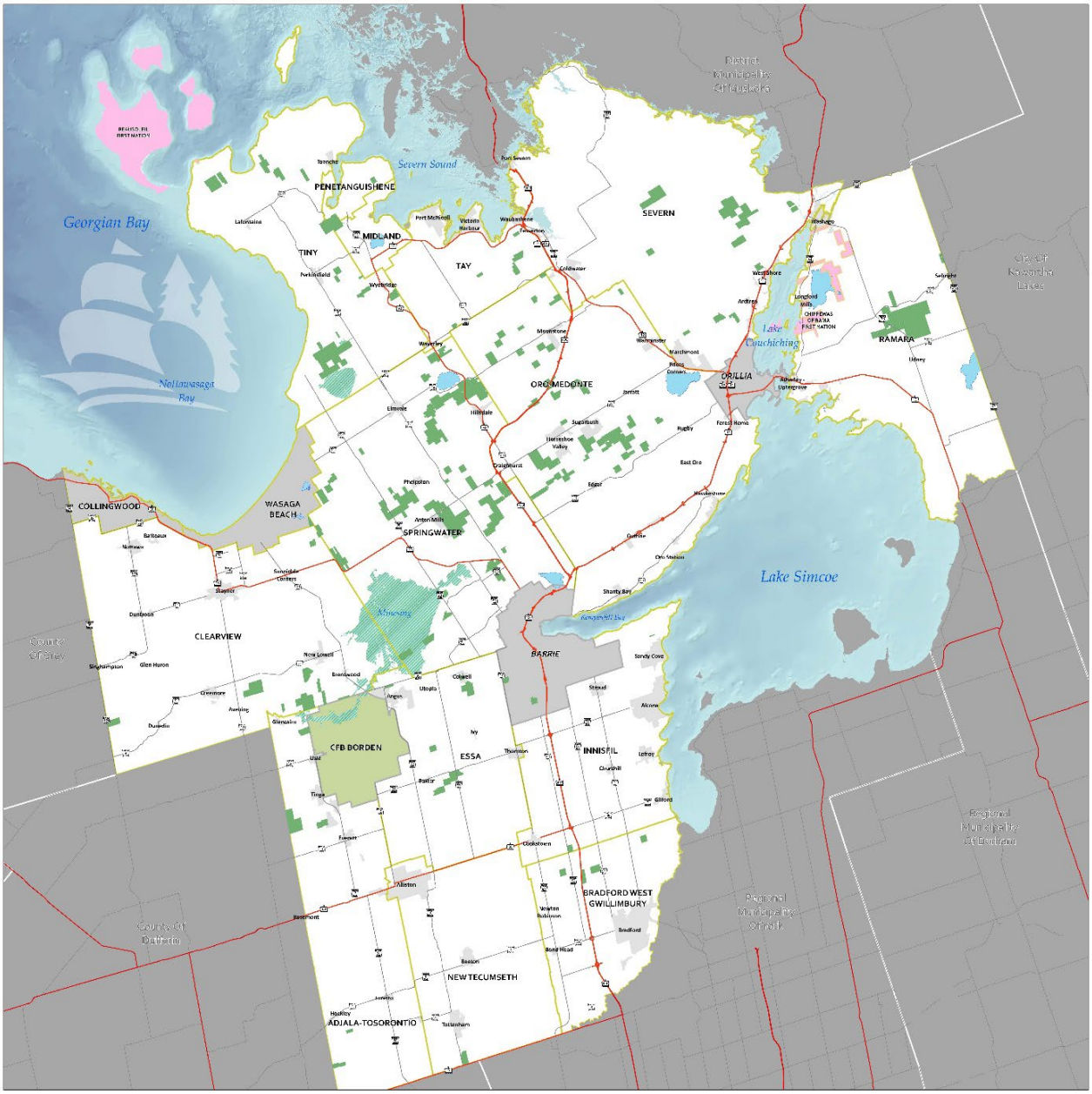
County of Simcoe Forestry and Geographic Information Systems staff;

County Council, both past and present, who have supported the ideals and objectives of the Simcoe County Forest for over 100 years; and

The foresight, dedication and commitment of many past individuals including managers, professional foresters, technicians, and others has resulted in today's Simcoe County Forest. Without their contribution this plan would not have been possible.

*Effective forest management planning can only be achieved when the experience, values, and opinions of a wide variety of interested parties come together to formulate a vision for the future. The knowledge and expertise of professionals must be combined with the needs and values of people who earn their living from the forest, those who recreate in it, and those who have a spiritual attachment to it. Special thanks to all those who have contributed to this plan.*

# Table of Contents


Georgian Bay
Severn Sound
Nottawasaga Bay
Lake Simcoe
Lake Couchiching
PENETANGUISHENE
MIDLAND
TINY
TAY
SEVERN
ORO-MEDONTE
ORILLIA
RAMARA
COLLINGWOOD
WASAGA BEACH
SPRINGWATER
CLEARVIEW
BARRIE
CFB BORDEN
ESSA
INNISFIL
BRADFORD WEST GWILLIMBURY
NEW TECUMSETH
ADJALA-TOSORONTIO
District Municipality of Muskoka
City of Kawartha Lakes
County of Simcoe
County of Dufferin
Regional Municipality of Durham
Regional Municipality of York

# PART 1 INTRODUCTION

## Preface

In 2010, Simcoe County staff prepared a management plan for the Simcoe County Forest (SCF) for the 20-year period from 2011-2030. This plan detailed the current state of the forest, objectives and provided future projections based on sound forest modelling and the data currently available at the time. However, forests are not static, they are ever changing; they are continually growing, interacting with their surroundings, being impacted by insects, weather and human use.

It is for this reason that the 20-year management plan highlighted the need for an assessment at regular intervals with a plan review and update scheduled every 5 years.

The following plan update is the second review of the 2011-2030 management plan and an opportunity to assess the first 10 years of activity to determine if objectives and targets are on track and where modifications may be required. The review also provides an opportunity to look forward into the next decade of the forest and update objectives and projections accordingly.

This updated plan will follow the structure and scope of the original 2010 document.

As some of the objectives and information is more permanent such as soil and topography, parts remain unchanged from the original plan; other sections are modified as required. Discussion will also be included where necessary, detailing trends, plan modifications and other information.

## 1.1 Purpose and Scope

The wise use and stewardship of our forests is essential to our quality of life. Decisions made and actions taken today in the Simcoe County Forest (SCF) can affect a wide range of economic, environmental, and social values both now and into the future.

Forest management planning has traditionally been conducted on a 20-year planning horizon due to the time required for forests to develop and grow. Forests are not static; long-range planning is vital to foresee trends and make adjustments to current operations as required.

Previous 20-year plans have been completed for the SCF in 1962 and 1983, and there have been many changes which have occurred since the last Forest Management Plan (FMP) was completed:

- The SCF was an ‘Agreement Forest’ until 1996, with all planning and operations conducted by the Ministry of Natural Resources and Forestry;
- Continued expansion and acquisition of properties;
- Many of the oldest plantations are at or nearing the end of rotation age;
- Invasive exotic species introductions and management;
- Enhanced protection of ecological values;
- Significant technological advances including Geographic Information Systems (GIS) technology;
- Changing timber values and market opportunities;
- Increased recreational use;
- Public perceptions and values have changed along with increased expectations of transparency;
- Increasing concerns with respect to liability;
- Climate change implications; both from an adaptation and mitigation perspective;
- The trend toward certification of forest management enterprises (the SCF has been certified to Forest Stewardship Council standards since 2010).

Recreational use of the forest is governed by a separate policy and is not within the scope of this plan. The first SCF Recreation Policy was approved in 2006 and updated in 2018 along with Recreation By-law 6753. The Recreation Policy Summary is provided as Appendix 8.1.

This Plan applies to all parcels of land currently owned by the County and identified as a ‘County Forest’ in addition to lands acquired in subsequent years. It is intended to complement the County of Simcoe Official Plan and ensure that the goals and objectives for the County Forest align with the strategic directions identified within the County’s Strategic Plan.

Forests must be seen as ecosystems, not just trees. Forest ecosystems, while dominated by trees, also include many other components including shrubs, herbaceous plants, mammals, reptiles, birds, microscopic creatures, soil, air and water. As such, subsequent references to the *forest* will encompass all aspects of forest ecosystems which are all critical components of a healthy, functioning and sustainable ecosystem.

# 1.2 Historical Influences on Forest Development

## 1.2.1 Soils and Climate

The characteristics of today's forest ecosystems have been shaped by many factors since the retreat of the last glacier. Moisture and temperature comprise the climatic conditions which enable, or limit, the development and growth of living organisms. In a forest system, the soils which are such a critical component are a result of the interaction between the plants and animals, climate, and the geological materials. Just as the trees and forest are not static, the soil also changes and develops over time.

Simcoe County is predominantly underlain by limestone and shale parent material, with the surface geology and soils formed largely by the action of ice and water following the last ice age:

- Much of the heavier and more fertile soils are the result of lake deposits from glacial Lake Algonquin. These areas consist largely of Lacustrine silts and clays and offshore sands with some tills reworked by water of Lake Algonquin, mainly of loam and clay loam texture. Much of this area, generally described as the Simcoe Lowlands, is maintained in agricultural production today.
- The dominant soil type on upland sites is well-drained stony or sandy loam. These areas resulted from islands in Lake Algonquin and include at least one interlobate moraine and several till plains. The resulting soils are moderately acidic with low fertility and very well-drained. The County Forests are predominantly located on these sites.

The climate of Simcoe County is relatively humid with large seasonal variations moderated by the great lakes. Minor variations occur due to changes in topography including elevated areas such as the Oro Moraine and the Nottawasaga Valley, impacted by higher elevations to the west. Summers are warm and humid with a significant percentage of rain often occurring during storm events. Winter seasons are highly variable but significant snowfall is common due to 'lake effect' snow.

## 1.2.2 Human Impacts

**Pre-European**

Most would suggest that it was the arrival of the European settlers in the 19th century that shaped the landscape in South Central Ontario, yet human influence played a pivotal role for hundreds of years prior to that time. In fact, the 'virgin' stands of white pine encountered by the early settlers were not what most people think.

Humans first appeared in Ontario approximately 12,000 years ago, although any substantive impact to the forest didn't occur until much later. In Southern Ontario, agricultural use began between 1,500 and 3,000 years ago, initially with corn and followed by other basic crops. By about 800 years ago it was generally widespread, and with it came a significant increase in population. 'It is at this time that the first major human cultural impacts occurred on Ontario's forests, setting in place land use patterns that have had an influence to this day.' (Armson, K.A., 2001). Estimates based upon records compiled from Champlain and missionaries in the early 1600's indicate that the Huron nation, which occupied much of the area today called 'Huronia', totaled 20-30,000 or more. Villages were constructed and abandoned every 8 to 12 years because of decreasing soil fertility and increasing distances for firewood and timber for construction. Evidence exists to suggest that areas were re-colonized every 60 years. As such the landscape of Simcoe County during this period was dominated by agricultural lands and young forests in various stages of succession with only small pockets of mature trees. It was not until the near collapse of the Aboriginal population in the 1600's from war and disease that much of Simcoe County reverted to forest. Thus, much of what was perceived by the early European settlers as 'virgin' forest had in fact resulted from the abandonment of agricultural lands less than 200 years prior. The forested landscape of Simcoe County has been heavily influenced by human occupation for at least 800 years.

**European Settlement**

European settlement in the Simcoe County area began in the late 1700's; impacts to the forest were renewed with the clearing of land for agriculture and the production of timber and firewood. The Napoleonic Wars in the early 1800's created a huge demand for the 'virgin' white and red pine, much of which was squared and shipped to Britain. The push for settlement and agricultural expansion accelerated throughout the 1800's with the forest often viewed more as an impediment. Much of the hardwood timber at the time was burned with the resulting potash used for making soap. Although the original white pine was viewed as 'inexhaustible' by the first timber barons, it was eliminated in less than 100 years, and by the late 1800's most of the cultivated lands had already been cleared by settlers.

**A Conservation Ethic Begins**

As early as the 1870's, concern was growing that the forest was being cleared with no forethought regarding both the future supply of timber and the potential impacts to the landscape. In 1879, a report from the Fruit Growers Association of Ontario indicated the

need to '*carefully instruct the farming community how much depends on the judicious planting of forest trees, their presence producing abundant rainfall, preserving and distributing moisture and thereby forming a preventative against drought and devastating floods'*. In some areas of Ontario, large tracts of land that had once supported thriving farms had become wastelands as the sandy soils could not support the agricultural practices of the day.

A preliminary effort of the Ontario Legislature in the late 1800's resulted in the planting of many of the roadside maple trees that we see today. In the early 1900's, momentum began to build toward a more substantial effort to increase tree cover in critical areas of the province, including several areas identified within Simcoe County. Two key figures; E.J. Zavitz, the Provincial Forester, and E.C. Drury, who would become Premier in 1919, were instrumental in identifying the need and developing the framework to not only assist farmers replant waste land, but also to establish 'forest reserves' in key areas throughout Southern Ontario.

In 1909, Zavitz authored a government report entitled "Reforestation of Waste Lands in Southern Ontario". The report identified and mapped the most problematic areas which had been devastated by a lack of tree cover and recommended that assistance be provided to private landowners to protect remaining woodlands and replant marginal lands. He also recommended that the large 'wastelands' identified should be publicly owned and managed for the greater good. The final paragraph states:

*'The policy of putting these lands under forest management has many arguments in its favour. It will pay as a financial investment; assist in ensuring a wood supply; protect the headwaters of streams; provide breeding ground for wild game; provide object lessons in forestry; and prevent citizens from developing under conditions which can end only in failure.'*

In 1921 the Reforestation Act was passed which enabled the Minister of Lands and Forests to enter into agreements for reforesting, developing and managing lands held by counties. In 1922, Simcoe County led the way and was the first to enter into an agreement. County officials bought the land and the government planted and managed the trees. The Hendrie Tract, 1000 acres located on Concession VI in Vespra Township, was the first property to be planted beginning on May 8, 1922.

During the rest of the 1920s, 1930s and 1940s several additional large tracts were purchased. These included Orr Lake, Waverley, Tosorontio, Drury, Barr and Wildman. Much of the land put under agreement, originally submarginal farmland either too light or too stony to farm, was reforested with over 20 million trees. Many properties also included remnant woodlots which had been poorly managed and were unproductive.

During the 1970s less emphasis was placed on reforestation; instead, increasing focus was placed on purchasing land that was already naturally forested. In 1974 the County

incorporated the townships of Rama and Mara, adding an additional 3,525 acres of forest and provincially significant wetlands to the SCF.

Land prices rose dramatically in the late 1970's and purchasing additional lands for forestry purposes was questioned. However, by 1980 revenue exceeded expenses and the County had purchased and or acquired approximately 10,525 hectares of land. In 1982, the year that marked the 60th anniversary of the Agreement Forest Program, the Canadian Forestry Association chose the County as the "Forestry Capital of Canada", a well-deserved honour.

Grants from the provincial government were discontinued in 1991 because of a lack of funding.

In 1996 the province was winding down most active involvement in forest management in Southern Ontario, and the agreement with Simcoe County to manage the County Forest reached an end. With a large, productive land base and key former MNRF forestry personnel joining the County, however, a successful transition County management was facilitated. Consistency in applying a science-based approach to management, with a commitment made at that time to reinvest all revenues from the forest back into the forest, led to continued success and growth.

### 1.2.3 Natural Disturbance Factors

Although it is not clearly evident, forests are always in transition. The geological forces of the past several thousand years combined with human intervention for at least 800 years have formed the landscape of Simcoe County as we know it today. However, localized natural disturbances including wind, water, fire, insects and/or disease also play a role in the collapse, regeneration, and growth of forest ecosystems. Natural disturbance 'patterns' in the Simcoe County area are not as well understood as is the case further north in the boreal region, partly because of the level of human disturbance described earlier, but also due to the much larger scale of collapse and regeneration which is typical of the boreal region.

**Wind:**

Impacts from wind events, although common, are most often quite localized. Occurrences are generally due to severe summer storms when cold fronts collide with a hot, humid air mass. In most cases wind events create small openings in the canopy by removing large, over-mature individual trees with structural weakness or compromised root systems. This is a common disturbance associated with mature broadleaf forests in the region and contributes to an accumulation of woody debris and partial mixing and

disturbance of soil layers. It also provides openings in the canopy to allow for diverse tree regeneration. Tornadoes do occur on an infrequent basis. Over the 2012-2021 period approximately 12 tornadoes were reported within the County of Simcoe. Many of these are EF0 tornadoes which usually cause minor damage and do not travel long distances. There were, however, two EF2 tornadoes over the same period. The Angus tornado (2014) and the Barrie tornado (2021). Resulting impacts to forests from wind events are infrequent but can result in large openings of forests of any age, usually characterized by stem breakage. A recent wind event occurred in the Corry Tract of the SCF which resulted in the complete loss of several hectares of mature hardwood forest.

**Ice/snow:**

Ice and /or snow may also combine with wind to become more destructive. Light ice storms or heavy wet snow are not unusual in Simcoe County particularly in early winter, but the result is generally limited to the pruning of dead or dying branches. Occasionally, however, ice or snow can result in significant impacts as occurred in Eastern Ontario in 1998. In Simcoe County, on November 15$^{th}$, 2008, a heavy wet snowfall event occurred in the central area of the County. The weight which accumulated on tree branches was followed by much colder temperatures and additional snow, freezing the weight to the branches. The pine plantations prevalent throughout much of the SCF were particularly hard hit by the event. The most affected stands were in the 30-to-50-year age group, although some losses occurred in more mature stands also. Damage ranged from scattered individual trees, to patches of up to several acres, to the complete loss of plantations in isolated cases. As a result of this storm event approximately 500 ha (12% of total plantation area) was impacted sufficiently to warrant salvage operations. Of this, 120 ha (3% of total plantation area) was totally lost to future red pine production.

**Fire:**

Fire has played a critical role in the development of forests throughout Ontario. Fire influences the composition, structure, and pattern of vegetation by reducing competition, creating seedbeds, releasing nutrients, and triggering seed release or vegetative reproduction. (Van Sleeuwen, 2006). As described earlier, the Aboriginal use of fire was a significant factor, but its extent and impact are not well understood.

Whether or not influenced by the Hurons, the white and red pine dominated forests encountered by the first European settlers were primarily of fire origin. A literature review by Van Sleeuwen indicates that these stands historically experienced low intensity fires at short intervals (12 to 37 years) and high-intensity stand-replacing fires at longer intervals of 46 to 85 years. Fire has also been integral to the occurrence of red oak in the area due to its inability to compete under low light conditions with more shade tolerant species.

More recently, human impact has been due to the suppression of fire. In the SCF specifically, fire suppression was a prominent issue during the early years of reforesting substantial forest blocks. Fire occurrences and impacts have been very modest because of the substantial resources allocated to fire control including fires guards, monitoring, staff training, and equipment.

**Insects and disease:**

Like fire, insect infestations have historically affected huge areas of the spruce, pine, and fir forests of the boreal region, leading to the renewal and regeneration of vast areas of even-aged forests. Again, due to the differences in topography, forest types, and diversity typical of the Great Lakes St.-Lawrence Forest, impacts from insects and disease in this region are much more localized. A wide variety of insects and diseases in the Simcoe County area have impacted the cycle of decline and renewal in localized areas for centuries.

**Climate Change:**

Climate was historically thought of as something that was variable but consistent. The weather might change from day to day and month to month, but on a year-to-year basis, averages and trends fit within a certain boundary, a certain expectation that plants and animals could rely on. These normal expectations and trends are less certain in the face of a rapidly changing climate. They have added another layer of complexity into forest management. Forest management decisions involve modelling which help the manager understand the longer-term outcome of their activities. Models are built on decades and centuries of observation; a changing climate now adds further complexity and uncertainty to these models.

Traditional tree planting practices stressed the importance of planting local seed which was naturally suited to the local climate. Not only is seed source selection being reconsidered, but the planting of some tree species is being reconsidered.

Some species that are currently at the southern limits of their natural range in our region are and will continue to face a climate they do not prefer, and many new climate models suggest some of the tree species common to the SCF may no longer be suitable to the area due to climate change in the upcoming decades.

Climate change is also altering the frequency, intensity, duration, and timing of a variety of extreme weather events.

Projected climate trend includes:

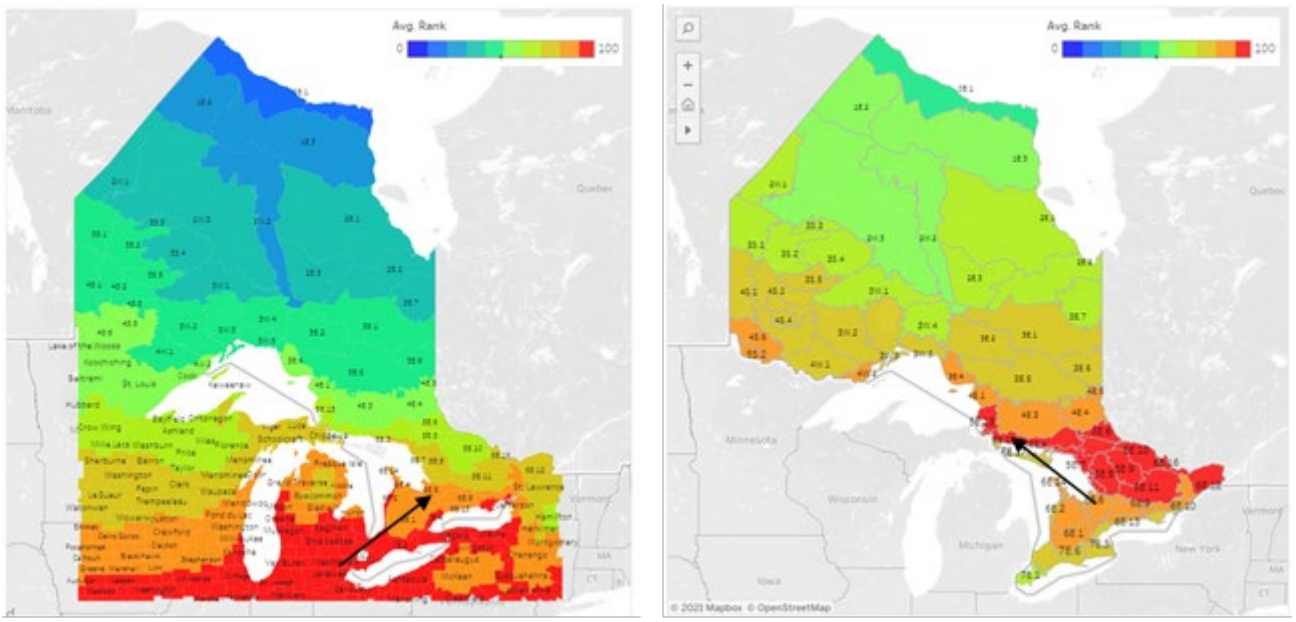
- Increase in drought and flood events;
- Increase in strong wind events;

- Increase in average temperatures;
- Increase in record heat and duration;
- More mixed winter precipitation;
- Decrease in cold weather.

Several tools and models are now available to assist in forest management planning in a changing climate.

'SeedWhere' is a tool developed to support decisions for seed movement in sustainable forest management. 'SeedWhere' uses past, present and forecasted climate changes to show where the most suitable seed source is for a particular area and where any harvested seed is best suited to be planted. The tool suggests the ideal location for seed collection to be planted in the SCF (in ) Eco district 6E-6 would come from Southern Ontario and the Northern US (red area in below seed collection map) and ideal seed deployment from the SCF (Eco district 6E-6) would be planted in central Ontario and Sault Ste. Marie (red area in below seed deployment map). This is a change from past thinking where local seed was always considered the best option.

The Ministry of Natural Resources and Forestry (MNRF) has developed the Ontario Seed Transfer Policy detailing new best practices for seed collection and dispersal.




SeedWhere modelling suggests suitable seed for the SCF should come from Michigan and Southern Ontario, while seed collected from the SCF would ideally be planted in central Ontario up to Sault Ste. Marie.

Recommendations and considerations for forest management due to climate change impacts:

- Shorter rotation age;
    - Consider shorter rotation age of forest types that are expected to be most affected by a changing climate such as spruce
- Species range considerations, assisted migration;
    - Encourage and promote species such as oak and pine that are more resilient to a changing climate through silvicultural practices
    - Encourage range increase of species that are at the northern limit of their range such as hickory and walnut to help diversify forests while replace species that are being pushed north
- Manage for wind events – consider wind firmness, salvage operations;
    - Improve wind firmness by maintaining proper thinning interventions in plantations and by selective harvesting of susceptible trees in natural forest types
    - Plan for and respond to disturbances;
- Seed zone locations;

    - Source seed from proper seed locations following seed transfer policy and other best practices, assist to make seed available for other regions
- Increased risk of impacts from invasive plants and insects;
    - Continued monitoring and management of present invasive species and of new threats
- Grow resilient, diverse and healthy forests;
    - Maintain forest health through monitoring and management, encourage species diversity while ensuring that a high component of forest types consist of ‘climate proof’ species
- Increase in growing season could increase volume growth and productivity;
    - Continue permanent sample plot measurements and analysis to understand current growth rates of forest types
- Difficulty in winter harvesting.
    - Provide flexibility and extended operating periods for areas that require forest management to be completed in frozen soil conditions and/or re-consider the classification of these areas as productive forest

# PART 2 FEATURES OF THE COUNTY

## 2.1 Physical Geography

The following description is composed of excerpts from the report "Development of a Natural Heritage System for the County of Simcoe", one of the background reports for the Official Plan preparation:

Simcoe County is one of the most geologically diverse areas in Ontario, containing a wide array of prominent physiographic features. Two areas of high topographic relief, the Niagara Escarpment and the Oak Ridges Moraine, form much of the County's western and southern boundaries, respectively. The Oro or Bass Lake Moraine is the dominant landform northwest of Lake Simcoe, while on the east side of the lake is an extensive limestone plain. Granitic bedrock at surface occupies the northeast quadrant of the County. The interior is characterized by a mix of till plains south of the City of Barrie, and sand plains, till plains, and clay plains to the north of Barrie. Several of the larger river systems that drain north into Georgian Bay, notably the Nottawasaga and Wye, occupy wide, flat valleys underlain by extensive beds of silt and organic deposits which in turn give rise to several large wetlands such as Minesing Wetland and Wye Marsh.

In terms of life science, Simcoe County is home to over 1500 species of vascular plants, over 150 species of nesting birds, 50 mammals, and 33 reptiles and amphibians. It supports specialized vegetation communities adapted to unique habitats such as coastal plains, prairies, and savannas, alvars, bogs and fens, the Great Lakes shoreline, and Niagara Escarpment cliff faces and talus slopes.

The County contains provincially significant wetlands, provincially significant Areas of Natural and Scientific Interest, and over 60 species of plants and animals considered to be vulnerable, threatened, or endangered in Ontario and/or Canada. Extensive tracts of undisturbed forest in the north and east of the County are habitats for forest interior bird species and mammals such as Black Bear, Marten, and Fisher. Because the County is situated at the contact zone between the Precambrian Shield and till/morainal deposits to the south it has elements of both Boreal Forest and Great Lakes-St. Lawrence Forest represented together. This results in an unusual mix of northern species of plants and animals at the southern edge of their ranges coexisting with southern species at or near their northern limits. This area known as the ‘Land Between’ forms the northern part of the County’s landscape bordering the Severn River and extending east of Lake Couchiching. It represents a thin strip of unique habitat that runs between the two major ecozones and contains its own unique habitat and landscape characteristics and features an uncommonly high degree of ecological diversity.

The County contains features which have received international recognition for their environmental significance: Minesing Wetland, Matchedash Bay and the Niagara Escarpment.

The County also contains extensive shoreline areas, as it borders the major water bodies of Georgian Bay, Lake Simcoe, Lake Couchiching, the Trent-Severn Waterway and several smaller lakes.

## 2.2 Settlement and Growth

The County of Simcoe had a permanent 2006 population of 272,200 which grew to 307,050 by 2016. In addition, about 172,600 people reside in the adjacent cities of Barrie and Orillia. The County is projected to grow to 416,000 in 2031. Thus, the population located in the separated cities of Barrie and Orillia combined with the population of the County, would bring the total population of the region to 667,000 by 2031.

Population density in general and urban development is greater in the southern portion of the County. This is due to economic and employment links with the highly urbanized Greater Toronto Area immediately south of Simcoe County. Residential development has also been attracted to the shores of Georgian Bay and Lake Simcoe. This development is a mixture of permanent and seasonal occupancy. In summer months, seasonal occupancy swells the population of the County well above the permanent population.

Much development is currently focused in numerous settlement areas, ranging in size from about 20,000 people to small hamlets of only a few dozen people. However, thousands are also housed in country residential or cottage clusters, or isolated lots, found throughout the County.

Agricultural use is found in many places throughout the County, except in the Precambrian Shield at the northern end of the County.

Settlement of the County by First Nations and Metis, and subsequently by non-aboriginal settlers has resulted in a wealth of cultural heritage resources.

## 2.3 The County Forest – Significance within the County

The physiographic regions of Simcoe County have been broadly summarized and described as the ‘Simcoe Uplands’ and ‘Simcoe Lowlands’. Most recently this

classification was utilized to assess forest cover in the County for the purposes of the official plan update in 2008, specifically to enable a more realistic assessment of woodland significance with respect to percent forest cover and woodland patch size.

The uplands, which include the well-forested areas of the Georgian Bay fringe and the Oro Moraine, consist of approximately 51% forest cover; the lowlands are approximately 27% forested. The uplands also consist of a higher percentage of larger patch sizes, increasing interior forest habitat. The percentage of County Forest within these two broad classifications mirrors the percent forest cover on the landscape.

The current total area of the SCF of 13,468 ha is 8% of the total forested area of 166,935 ha; a significant contribution to the natural and cultural heritage values of the County. Also, due to the long history of good forestry practices, the contribution to total wood volume produced from the SCF is significantly higher.

The SCF provides a positive example of good forest stewardship for landowners and a chance to visualize their forests' potential development for a range of management options. For many residents and visitors, the SCF is their only chance to view actively managed forests; as such, it provides an important opportunity to increase the awareness and value of forests.

Privately-held forest resources are also critical to the health and vitality of the County. Protection of significant forest areas throughout the County is also afforded through the planning process and the continued development, promotion, and enforcement of progressive Forest Conservation By-laws enacted since 1974.

Collectively, the forested landscape plays a vital role in the hydrologic cycle and the protection and enhancement of our water and soil resources. As detailed in Section 1.2.2, we need only look back to a recent time in our history to understand the importance of healthy forest cover. This critical role should not be taken for granted today. More recently, the function that forests play in mitigating climate change, particularly in the sequestration of carbon, is better understood and highly valued.

The County Forest contributes directly to the economic, environmental, and social aspirations as determined and stated within the County of Simcoe Official Plan. Specifically, four of the six goals of the plan are:

- To protect, conserve, and enhance the County's natural and cultural heritage;
- To achieve wise management and use of the County’s resources;
- To further community economic development which promotes economic sustainability in Simcoe County communities, providing employment and business opportunities; and
- To promote, protect and enhance public health and safety.

# PART 3 CURRENT STATE OF THE FOREST

## 3.1 Historical Context

### 3.1.1 Land Acquisition and Tree Planting

Simcoe County began purchasing land for reforestation in 1920, two years before the Agreement Forest program began. In 1922 the first agreement was signed between the Province and Simcoe County whereby the County purchased land and the province conducted forest management including tree planting. The first trees were planted on May 8 of that year on land now known as the Hendrie Tract.

Hendrie was typical of most properties purchased for reforestation in the program's early years. Following the timbering of the early 1800's and subsequent grazing, attempts to farm and wildfires, the property was reduced to a barren 'wasteland'.

Land rehabilitation remained the primary objective in the early years; during the 1920's 30's and 40's several of the largest tracts were purchased including Hendrie, Orr Lake, Waverley, Tosorontio, Drury, Barr and Wildman. All consisted of very light sandy soils which had proven unsuitable for farming.

In the 1950's land prices tripled to an average of almost $25.00/acre, but the County continued with a similar volume of acquisitions. Although land rehabilitation was still important, the initial urgency had abated, and other considerations began to be included in purchasing decisions. New properties tended to be more scattered across the County but viable for forest management and with soil quality often better than the early purchases.

With the escalation of land prices, in 1961 the province began to make grants available to municipalities to encourage continued purchases for forestry purposes. Expansion of the managed forest land base was considered a priority at the provincial level and the agreement forest program was an important part of the strategy for Southern Ontario. Grants were 50% of the purchase price.

In the 1970's land purchases continued but with more focus on lands which were already in forest cover. A higher priority at that time was placed on the supply of wood fiber to the forest industry and revenue generation. 1974 saw the incorporation of Rama and Mara townships into the County and with them 3,525 acres of County Forest. By the late 1970's, land values had risen to the point where many County Councilors began to question the validity of purchasing more land for objectives which they perceived to be more provincial in scope.

In 1980 revenue from the forest exceeded expenses for the first time, which provided some incentive for the County to continue purchasing land, although additions were reduced and more selective. Grants from the province were discontinued in 1991 due to a lack of funding.

The 1990's was a decade of transition, with the Ministry of Natural Resources and Forestry funding reductions resulting in reduced capabilities and eventually the withdrawal from the agreement forest program in 1996. This, combined with the transition of management responsibilities to the County, resulted in a limited focus on continued acquisitions during this period. Acquisition principles were first established in 1996. This specified for the first time that priority be given to the purchase of properties that contribute to both natural heritage values and other forestry purposes. These principles were updated in 2020 with The County Forest Growth, Investment & Protection Policy which provides clear direction to staff regarding priorities for future acquisitions. Increasing revenues and continued commitment from County Council in the first two decades of the new millennium resulted in a renewed focus on the continued expansion of the largest and most productive 'community forest' in Ontario. Unfortunately, elevated land values initiated during the Covid pandemic has slowed property acquisitions during the early years of this decade.

| Decade | Land Purchased | | Average Price | | Trees Planted |
|---|---|---|---|---|---|
| | Hectares | Acres | $/ha | $/acre | |
| 1920 - 1929 | 575 | 1,420 | 16 | 6 | 2,014,200 |
| 1930 - 1939 | 1,539 | 3,800 | 16 | 6 | 4,079,855 |
| 1940 - 1949 | 2,152 | 5,314 | 20 | 8 | 5,050,270 |
| 1950 - 1959 | 1,992 | 4,919 | 60 | 24 | 3,686,450 |
| 1960 - 1969 | 1,944 | 4,800 | 96 | 39 | 3,191,245 |
| 1970 - 1979 | 1,301 | 3,213 | 313 | 127 | 1,715,240 |
| 1974* | 1,428 | 3,525 | | | |
| 1980 - 1989 | 208 | 514 | 1,217 | 493 | 406,350 |
| 1990 - 1999 | 488 | 1,206 | 1,537 | 622 | 49,400 |
| 2000 - 2009 | 1,119 | 2,763 | 7,484 | 3,030 | 47,600 |
| 2010 - 2019 | 859 | 2,123 | 8,334 | 3,373 | 555,625 |
| 2020 - 2021 | 109 | 269 | 8,435 | 3,414 | 29,850 |

* area added due to inclusion of Rama and Mara townships

Including a small number of land swaps, sales, and further acquisitions, the area of the County Forest at the end of 2021 totaled 13,468 ha (33,280 acres).

Tree planting levels coincided with the volumes of lands purchased; the lower numbers of trees being planted beginning in the 1970's is indicative of the trend toward adding properties which were already forested. This downward trend of afforestation and reforestation that began following the 1970's did change course over the past decade. There was a substantial increase in trees planted from 2010 to 2019 with 555,625 trees planted (548,275 from 2012-2021). This is the highest number of trees planted since the 1970's. This is primarily a result of increased acquisitions of unforested lands. Available tree planting project funding through multiple agencies also contributed to the increase in tree planting. Of all the trees planted from 2012-2021, funding was received for 434,000 trees or 79%. Trees planted to date in the SCF total 20.8 million trees.

### 3.1.2 Comparison to past plans

While many reports have documented the management of the SCF, only three full-scale management plans have been written since its inception: 1962-1982, 1983-2003 and 2011-2030. The first two were produced as part of the 'agreement forest' process and under the guidance of provincial forest management planning standards with the third being produced by the County of Simcoe.

The management objectives outlined in the 1962 plan mirrored the definition of 'forestry purposes' in the Forestry Act: "Forestry purposes means primarily the production of wood and wood products and includes such secondary purposes as proper environmental conditions for wildlife, protection against floods and erosion, recreation, and protection and production of water supplies. The plan in 1983 reaffirmed these objectives and clarified the strategies to achieve the desired results. The success of the SCF today is a result of these early plans, and the current plan tries to build on them.

Expectations regarding the protection and enhancement of environmental values are more rigorous today than in the past, and with the benefit of modern digital mapping technology it has become much easier to ensure that all available data is included and accurate. Of note in the table below is the difference in the percentage of productive area currently versus the earlier plans. This is partly due to the emphasis placed on timber production and improved mapping. In practice, this difference is not as pronounced as it appears, as a substantial amount of the 'protection' and 'non-productive' areas currently identified in 2010 have not been harvested in the past as it was not economically feasible.

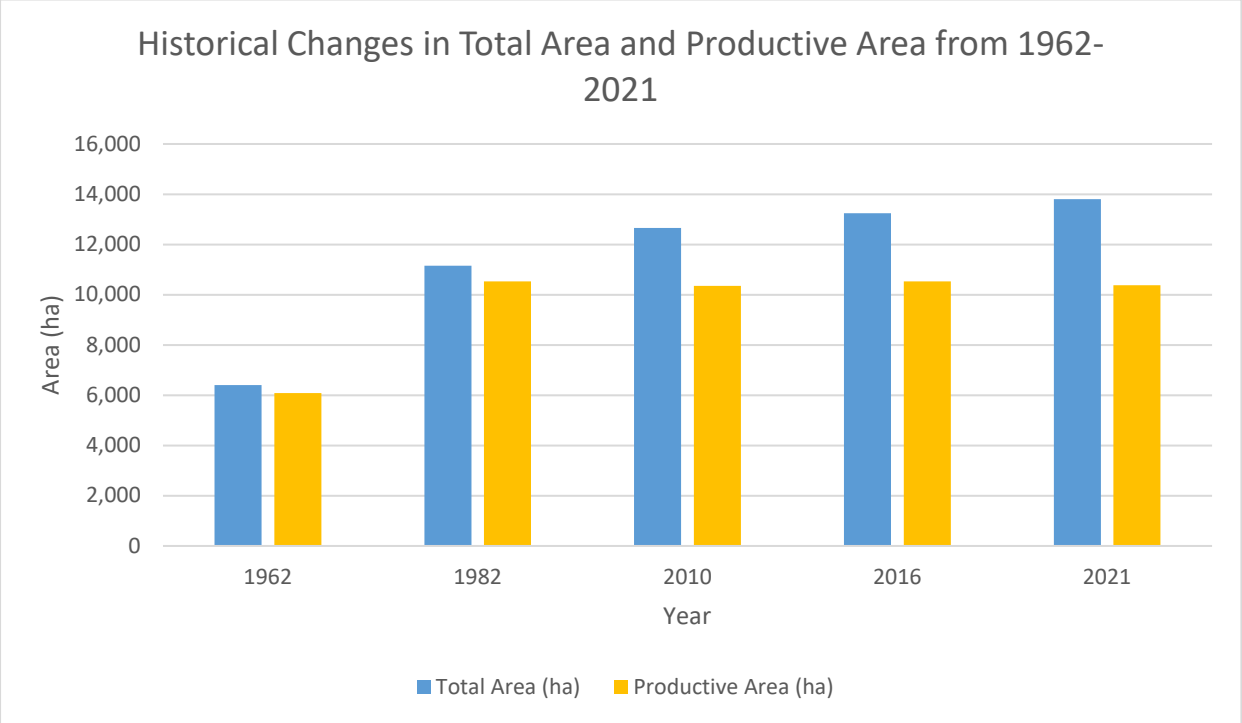
The most current data indicates a further decrease in the percentage of total area that is classified as productive. This is primarily a result of further improvements in forest

inventories and the reclassification of areas not suitable for active forest management. Other changes in productive areas are related to the continued increase in land area. As illustrated in section 3.2, significant land purchases were made over the last 10 years and some of this land area was wetlands or other natural features that were classified as non-productive.

It should be noted that 'non-productive' does not necessarily mean the land is not productive. Some forests classified as non-productive can grow large volumes of good timber. Non-productive means that the area is excluded from the present forest management area and is not scheduled for timber harvesting.

While the total land area of the SCF has been continually increasing since inception, the area classified as productive has been relatively steady since 1980. It is, however, once again worth noting that the historic 'productive area' was not necessarily realistic as much of the area was not managed as productive forest.

The 5-year period from 2016 to 2021 saw an overall increase in the size of the Simcoe County Forest of 222 ha but a slight decrease in the overall productive area from 10,536 ha in 2016 to 10,375 ha in 2021. Continued improvements to forest inventories have again moved some forest compartments into the non-productive forest classification.



| Year | Total Area (ha) | Non-Forest (ha) | Protection (ha) | Other Non-Productive (ha) | Productive (ha) | Percent Productive Area |
|---|---|---|---|---|---|---|
| 1962 | 6,400 | 208 | 60 | 45 | 6,088 | 95% |
| 1982 | 11,157 | 175 | 7 | 442 | 10,533 | 94% |
| 2010 | 12,663 | 28 | 1,582 | 703 | 10,349 | 82% |
| 2016 | 13,246 | 34 | 1,495 | 1,180 | 10,536 | 80% |
| 2021 | 13,468 | 49 | 1,790 | 1,254 | 10,375 | 77% |

Notes:

- 2021 NON-FOREST includes gravel pits, agricultural, hydro and pipeline easements
- 2021 PROTECTION includes wetland, riparian, steep slopes and other natural protection areas
- 2021 OTHER NON-PRODUCTIVE includes poorly drained sites, shallow soils, barrens/alvar and non-accessible areas

## 3.2 Area and Distribution

County Forest tracts are present in 15 of 16 area municipalities and in the City of Barrie. Representation is much higher where the most significant soil erosion and deforestation impacts were occurring early in the 20$^{th}$ century. Acquisitions in more recent decades have also occurred more often in the central and north portions of the County due to the much higher percentage of productive agricultural lands in the south.

Land acquisitions are considered on a strategic basis (as detailed in the County Forest Growth, Investment & Protection Policy) and increasing tree cover in areas with low cover is one of several priorities. The persistent increase in property values and development within the County continues to limit the opportunities for acquisitions, especially in the more populous and southern areas that typically have lower tree cover.

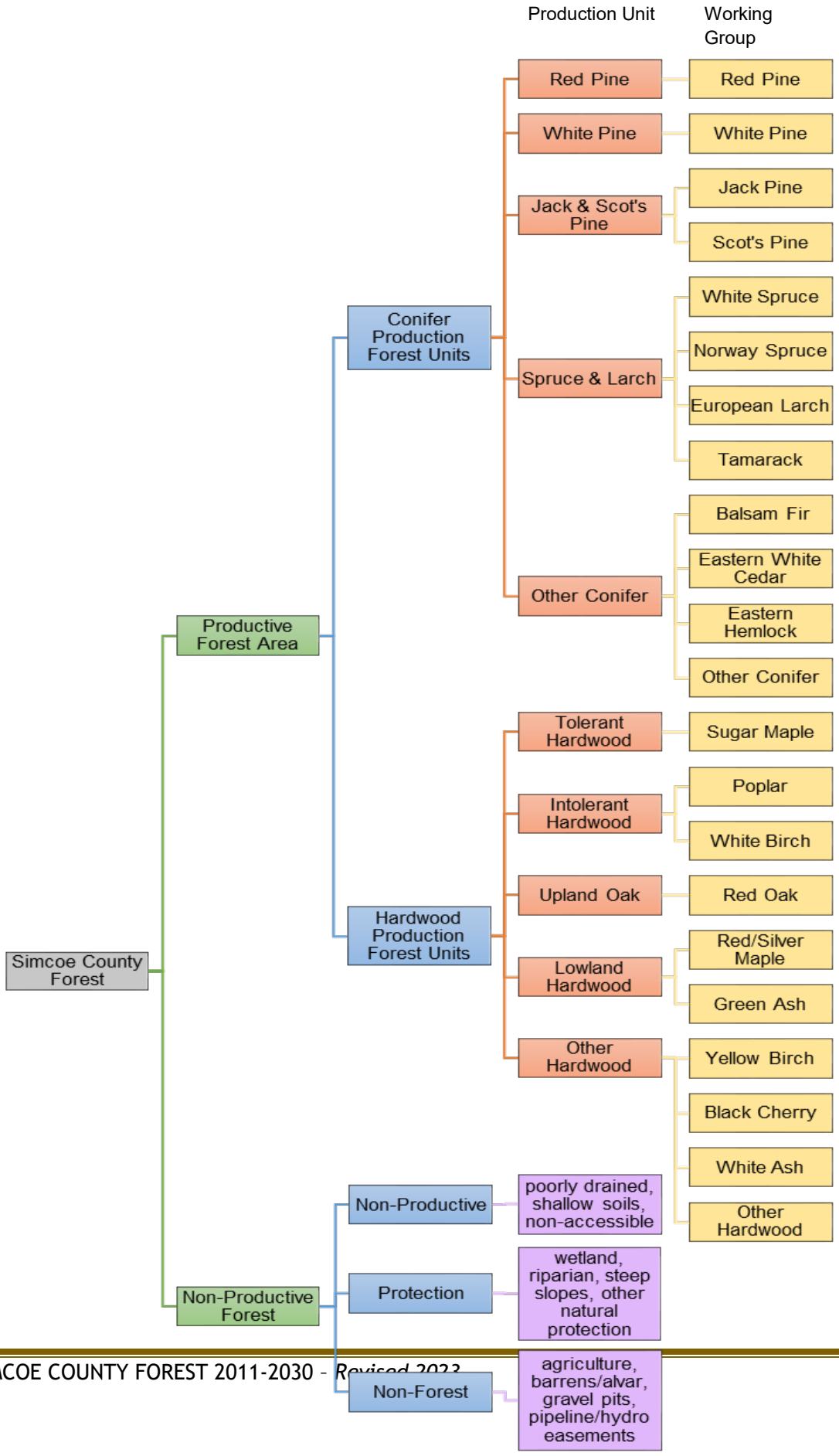
| Municipality | 2011 Area (ha) | 2021 Area (ha) | Change in area (ha) 2011-2021 |
|---|---|---|---|
| Adjala-Tosorontio | 459 | 459 | 0 |
| Barrie | 70 | 70 | 0 |
| Bradford-West Gwillimbury | 162 | 204 | 42 |
| Clearview | 732 | 775 | 43 |
| Essa | 368 | 411 | 43 |
| Innisfil | 48 | 40 | -9 |
| Midland | 0 | 107 | 107 |
| New Tecumseth | 78 | 78 | 0 |
| Oro Medonte | 2,438 | 2,548 | 110 |
| Penetanguishene | 74 | 74 | 0 |
| Ramara | 1,414 | 1,499 | 85 |
| Severn | 1,156 | 1,156 | 0 |
| Springwater | 4,056 | 4,360 | 304 |
| Tay | 178 | 178 | 0 |
| Tiny | 1,404 | 1,484 | 80 |
| Wasaga Beach | 27 | 27 | 0 |
| **Total** | **12,663** | **13,468** | **805** |

## 3.3 Forest Classification

The land base of the SCF is divided into several classifications for forest management purposes. At the micro scale, individual tree and site attributes are gathered to compile a forest inventory. Trees of similar age, species, and management objective are grouped together into a forest compartment (also referred to as forest stand). The primary species within a forest compartment (or the one being managed) are called the working group. Similar working groups are combined to make a production forest unit. Some production forest units consist of only one working group while other production forest

units consist of several working groups.  On the macro scale, the SCF land base is categorized into non-productive and productive lands.

**Simcoe County Forest Classification System**

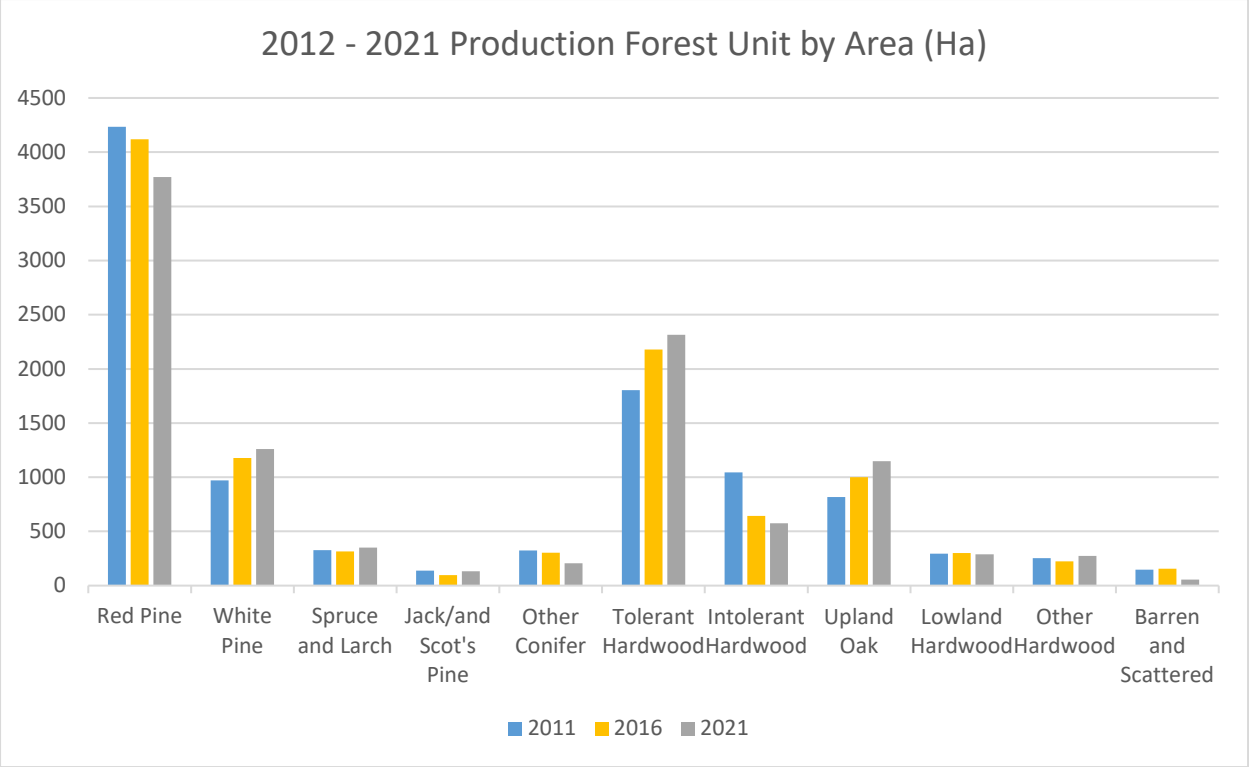

Production Unit
Working Group
Simcoe County Forest
Productive Forest Area
Conifer Production Forest Units
Red Pine
Red Pine
White Pine
White Pine
Jack & Scot's Pine
Jack Pine
Scot's Pine
Spruce & Larch
White Spruce
Norway Spruce
European Larch
Tamarack
Other Conifer
Balsam Fir
Eastern White Cedar
Eastern Hemlock
Other Conifer
Hardwood Production Forest Units
Tolerant Hardwood
Sugar Maple
Intolerant Hardwood
Poplar
White Birch
Upland Oak
Red Oak
Lowland Hardwood
Red/Silver Maple
Green Ash
Other Hardwood
Yellow Birch
Black Cherry
White Ash
Other Hardwood
Non-Productive Forest
Non-Productive
poorly drained, shallow soils, non-accessible
Protection
wetland, riparian, steep slopes, other natural protection
Non-Forest
agriculture, barrens/alvar, gravel pits, pipeline/hydro easements

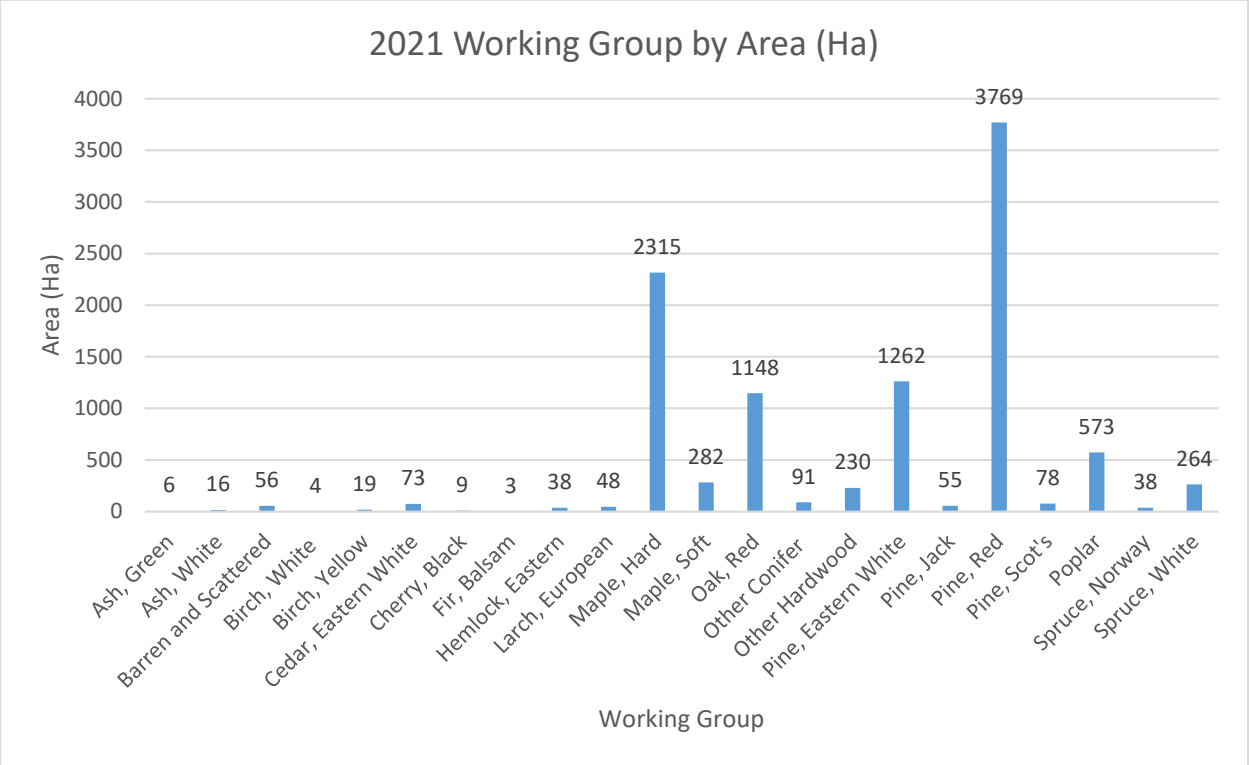
## 3.4 Production Units and Working Groups

The productive forest area is the area of the SCF which includes management for timber production. It currently accounts for about 75% of the total area of the SCF. The productive forest area is classified into ten production units (five conifer forest units and five hardwood forest units). The production units can further be divided into individual working groups. A working group is the species in which the forest compartment is primarily being managed and is usually the dominant species.

Forest compartment classifications change over time as forests grow and forest management activities are completed. Some anticipated trends were identified in the 2011-2030 SCF Management Plan. These expected trends included a reduction in red pine production unit due to an increased age of red pine and the final removal of some of these plantations. Removal of red pine plantations leads to a stand conversion to tolerant hardwood (46% of stand conversions from 2012-2021), white pine (26%) or to a lesser extent upland oak (12%) or lowland hardwood (14%) and intolerant hardwood (2%). This trend in a reduction in red pine production area was evident from 2011 to 2021, with a decrease of 464 ha over the 10-year period. An increase in white pine (291 ha), tolerant hardwood (511 ha) and upland oak (1148 ha) was observed in 2011-2021, this was due to several factors. While red pine stand conversions were a significant cause of these changes there were other factors contributing to this. Many new property acquisitions are forested lands, the productive portions of these lands are commonly tolerant hardwood. Another factor linked to the increase in the red oak area is an objective from the 2011-2030 management plan to diversify forest stands and encourage red oak where opportunities existed.

A decrease in Other Conifer and Intolerant Hardwood production forest units is from improved inventories and re-classification of production status to non-productive in some cases.

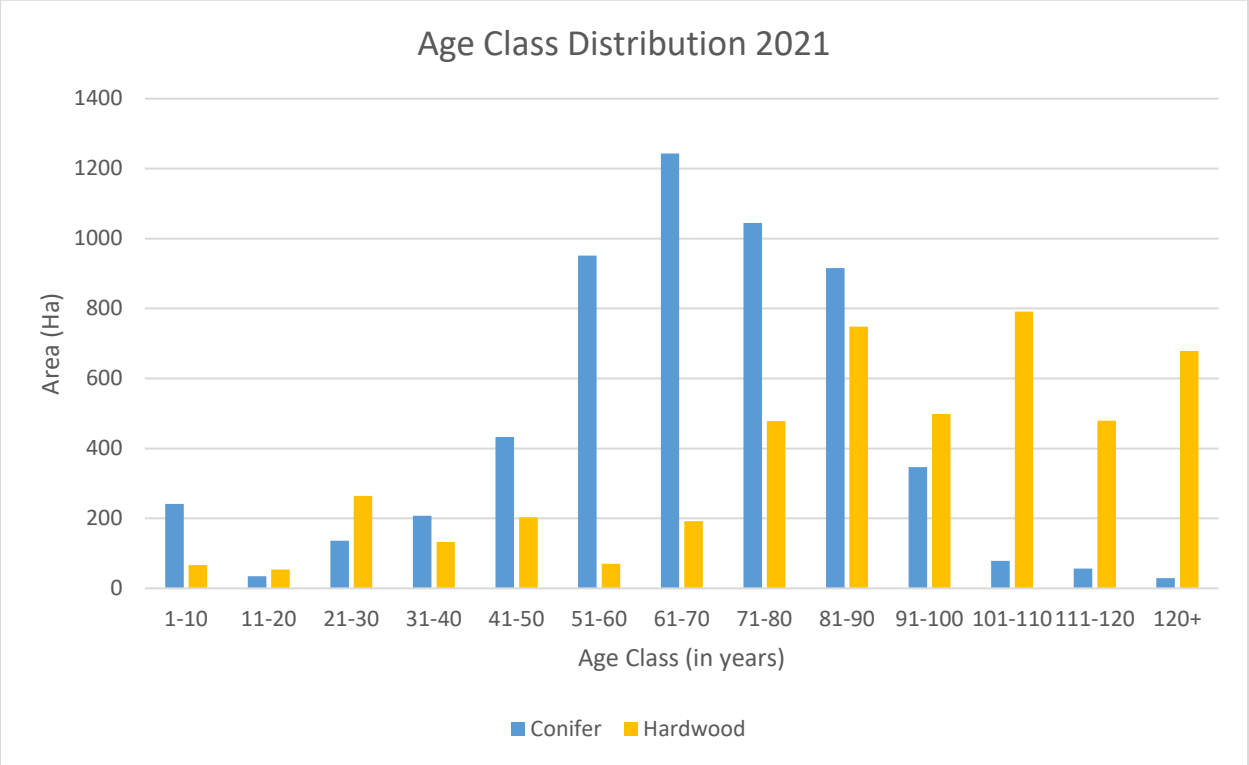

2012 - 2021 Production Forest Unit by Area (Ha)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Red Pine
White Pine
Spruce and Larch
Jack/and Scot's Pine
Other Conifer
Tolerant Hardwood
Intolerant Hardwood
Upland Oak
Lowland Hardwood
Other Hardwood
Barren and Scattered
2011
2016
2021


2021 Working Group by Area (Ha)
Area (Ha)
4000
3500
3000
2500
2000
1500
1000
500
0
6
16
56
4
19
73
9
3
38
48
2315
282
1148
91
230
1262
55
3769
78
573
38
264
Ash, Green
Ash, White
Barren and Scattered
Birch, White
Birch, Yellow
Cedar, Eastern White
Cherry, Black
Fir, Balsam
Hemlock, Eastern
Larch, European
Maple, Hard
Maple, Soft
Oak, Red
Other Conifer
Other Hardwood
Pine, Eastern White
Pine, Jack
Pine, Red
Pine, Scot's
Poplar
Spruce, Norway
Spruce, White
Working Group

## 3.5 Age Class Structure

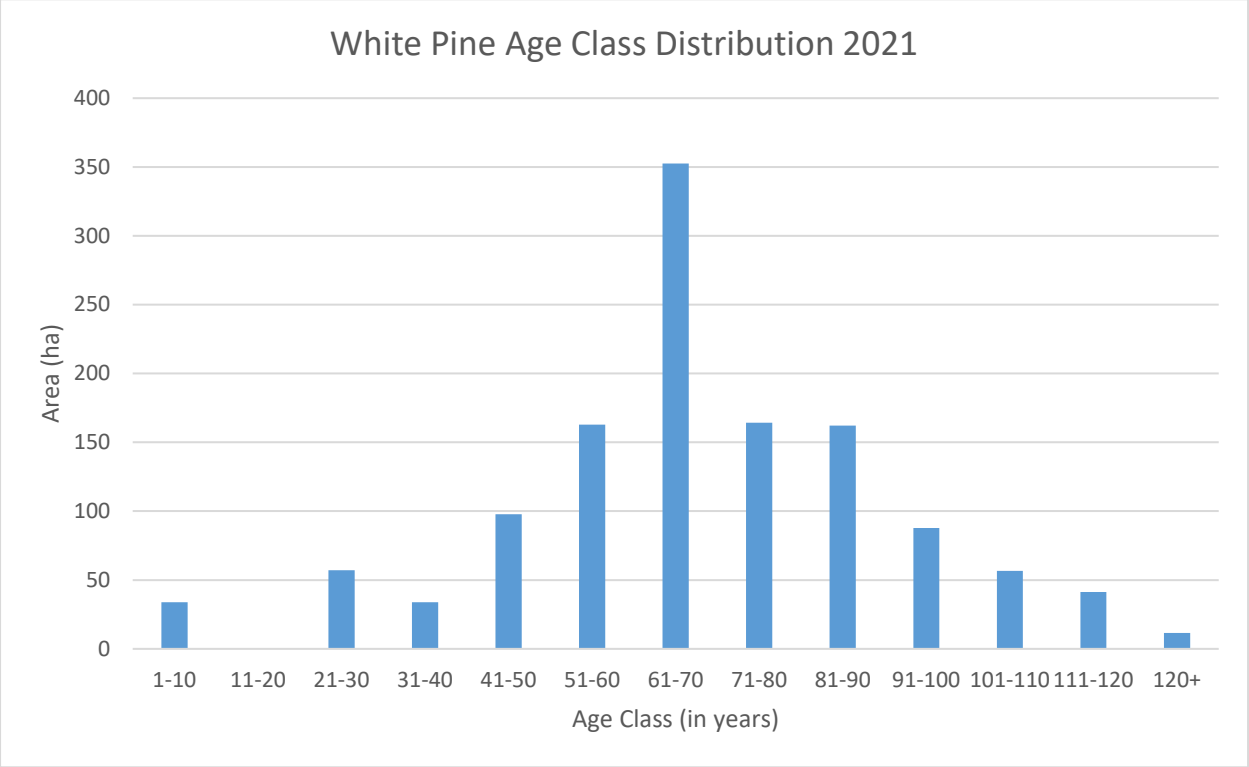
The current age structure of the SCF is similar to that detailed in 2010 (with the obvious shift of ages being 10 years older). Most conifer plantations were established from 1920-1969 and about 80% of current plantations are in this age class range of 50-100 years old. Most hardwood stands are older as these were often natural forests. However, ages for hardwood stands, especially when they are of uneven ages, are difficult to calculate and the ages may not be fully accurate. There is also a small but noticeable amount of younger hardwood, especially in upland oak. Some of these younger stands are a result of the final removal of older conifer plantations.

The average red pine compartments age is 65 and white pine is 66. Hardwood stands are older with the average age of tolerant hardwood stands being 93 and upland oak being 83 years old.

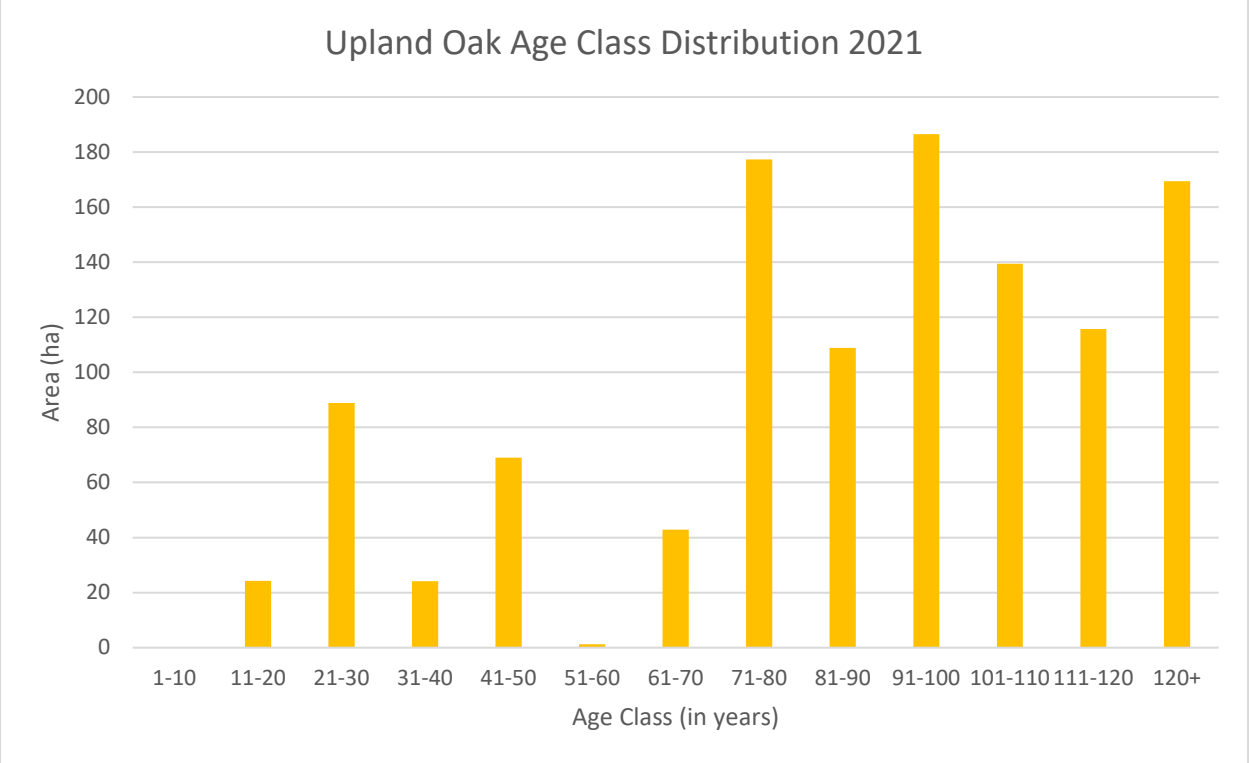



Conifer and hardwood age classes are further separated into major production units below.


Red Pine Age Class Distribution 2021
900
800
700
600
500
400
300
200
100
0
Area (Ha)
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
120+
Age Class (in years)


White Pine Age Class Distribution 2021
400
350
300
250
200
150
100
50
0
Area (ha)
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
120+
Age Class (in years)


Tolerant Hardwood Age Class Distribution 2021
600
500
400
300
200
100
0
Area (ha)
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
120+
Age Class (in years)


Upland Oak Age Class Distribution 2021
200
180
160
140
120
100
80
60
40
20
0
Area (ha)
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
101-110
111-120
120+
Age Class (in years)

## 3.6 Average Annual Timber Production

Timber volumes flowing from the SCF continue to be predominantly softwood; conifer plantation thinning during the 10-year period from 2012 to 2021 made up 81% of the total volume harvested (down from 92% in 2000-2009). The average annual conifer harvest during the 2012-2021 10-year period was 25,937 $m^3$ (which is slightly down from 26,325 $m^3$ from 2000-2009). The average annual hardwood harvest during the 2012-2021 10-year period was 6,142 $m^3$ (which is significantly up from 2,285 $m^3$ from 2000-2009).

The average annual hardwood harvest volumes from 2012 – 2021 increased 269% over 2000-2009 levels. Historically, harvesting activities have focused on ensuring that plantation thinning was completed on schedule as timely harvest intervals are much more important in plantations. This left some hardwood management objectives uncompleted. Market conditions have also historically favoured the sale of softwood. This has led to hardwood harvesting levels being low despite available timber. The total annual allowable cut in the 1982 forest management plan was estimated to be 7,341$m^3$, with an average annual harvest of only 2,285 $m^3$ from 2000-2009 or 31% of the total annual allowable cut.

Improving market conditions, particularly for firewood and lower grade hardwood along with increased staffing resources have resulted in increased hardwood harvest volumes in 2012-2021. The 2011-2030 forest management plan also identified the objective to improve the overall quality of hardwood stands *'to mitigate the impact of the variable age class structure of red pine.'* Improving these lower quality and marginal stands continues to be an objective not only to improve the overall health and quality of the SCF but also to lessen the economic impacts of the future trend of decreasing red pine volumes.

In the last 10 years, increased management of marginal hardwood stands has been a priority to improve quality and values over the long term. This priority has led to an increase in total annual hardwood harvest volume than in the past.

Harvest volumes on a m3/ha basis have decreased slightly from the 2000-2009 period to the 2012-2021 period with a 15% decrease in conifer harvest volume per hectare and a 5% decrease in hardwood harvest volume per hectare.

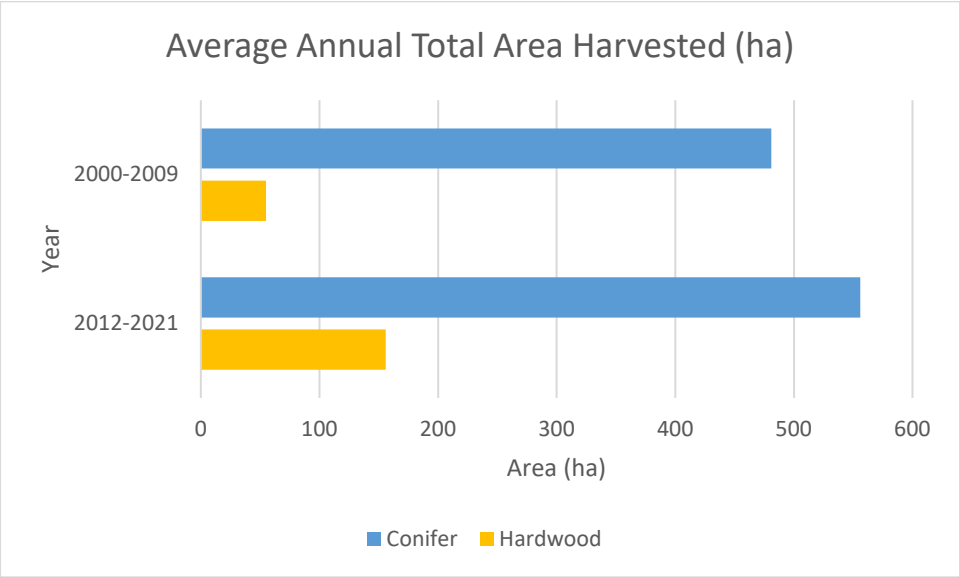
**Average Annual Harvest 2000 to 2009**

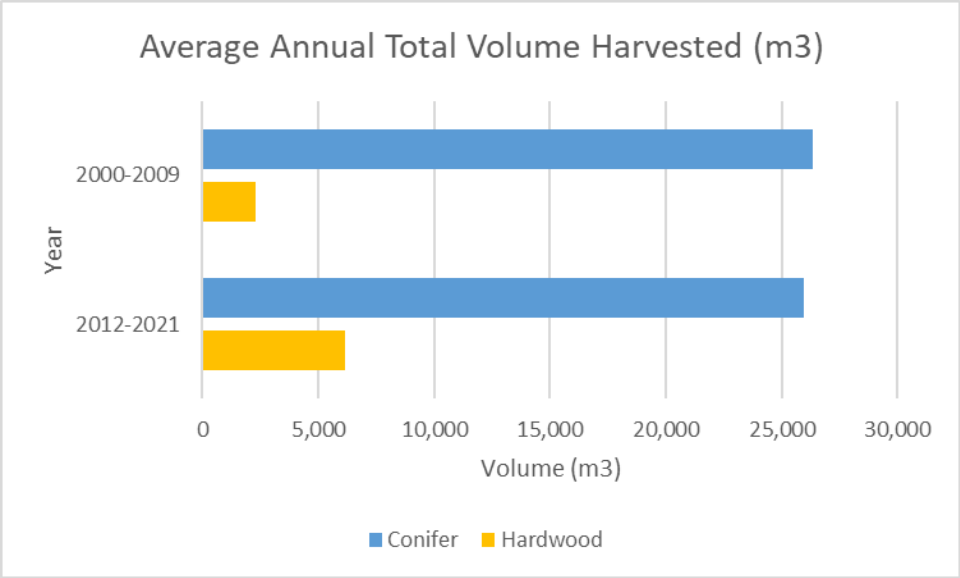
| Forest Type | Average Annual Harvest Area (ha) | Average Annual Harvest Volume ($m^3$) | Average Harvest Volume by Area ($m^3$/ha) |
|---|---|---|---|
| Conifer | 481 | 26,325 | 54.7 |
| Hardwood | 55 | 2,285 | 41.3 |

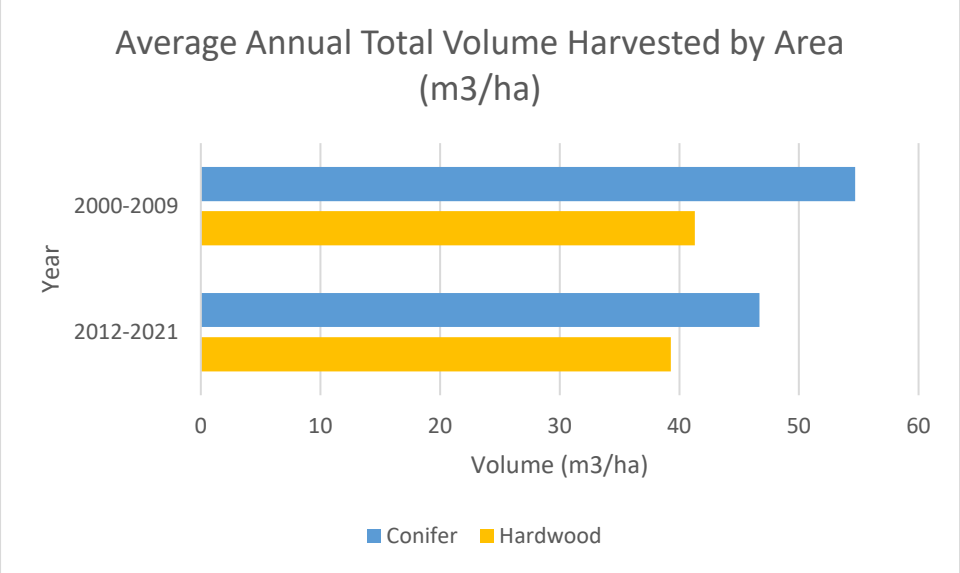
**Average Annual Harvest 2012 to 2021**

| Forest Type | Average Annual Harvest Area (ha) | Average Annual Harvest Volume ($m^3$ | Average Harvest Volume by Area($m^3$/ha) |
|---|---|---|---|
| Conifer | 556 | 25,937 | 46.7 |
| Hardwood | 156 | 6,142 | 39.3 |

During the 10-year period from 1990 to 1999, the average annual harvest of softwood plantations was much lower at 19,000 $m^3$. Substantial variations in volume occurred year over year due to other priorities of MNRF staff including private land extension work, structural changes within the MNRF in 1990/91 and the transition to full County responsibility in 1996. The volume of hardwood stands was higher during this period, averaging 4,900 $m^3$ per year.






## 3.7 Forest Health

Forest health is typically measured in relation to biotic and abiotic factors that affect the value, growth and survival of trees and forests. Biotic factors affecting forest health include forest insects and diseases, while abiotic factors include weather events and fire.

The overall health of the SCF is good, but there are stress agents that have the potential to cause significant mortality. The vast majority are of minor concern; others may have an impact on a cyclical basis.

As described in Section 1.2.3 most of these factors are part of the natural disturbance patterns typical in this type of forest environment. Rarely, however, situations occur which require some level of intervention to reduce the impact. Intervention is most associated with impacts from the introduction of invasive exotic species and are assessed individually.

Promoting species and age diversity and vigorous growth is the best defense against most forest health issues. Sustainable forest management practices are designed to maintain a diversity of healthy tree species growing on suitable sites and to favour natural regeneration of a wide range of species.

### 3.7.1 Primary Insect and disease factors

There are innumerable insects and diseases that exist in the forest system as an integral part of the cycle of growth and decay. Most continue with little notice or concern; occasionally conditions exist which favour the expansion of a particular organism which has a visible impact on the forest which attracts attention.

As indicated in Section 3.3, red pine dominated plantations are by far the most significant working group in the SCF; as such the County has a considerable interest in safeguarding this investment. Red pine decline, both in pockets and individual trees, has concerned forest managers in Ontario and surrounding areas for many years. In the SCF, early mortality has begun in some locations as early as 50-60 years of age; other plantations have begun exhibiting losses in the 80-year age class. Soil limitations, climate, and root diseases have all been identified as potential contributors to the problem.

A study looking into red pine decline by the MNRF and supported by various partners including Simcoe County, was completed in 2004 mostly within Simcoe County Forest sites. The study concluded that soil alkalinity is the major predisposing factor in determining red pine health. Red pine grows best in acidic soils; as such, plantations established on sites with an alkaline C-horizon are at elevated risk of declining health and damage from pathogens and insects. Rooting depth is limited to the upper more acidic soils, resulting in increased moisture stress and mortality caused by root disease. SCF staff provided modified management recommendations for varying levels of decline aimed at minimizing economic loss, maximizing timber harvest, and gradually converting red pine stands to mixed wood forests. Continued forecasting of red pine decline has continued including enhanced soil surveying in susceptible forest stands. The application of the biological control product, Rotstop C, to cut stumps was started in

2015. The application of this product reduces impacts to red pine stands from Heterobasidion Root Disease (HRD).

Many disease organisms are prevalent in the forests which have varying impacts on the health, structure, and ultimate decay of woody species. Of particular importance in the plantations of the SCF is a common root rot, *Armillaria obscura*. This species can attack all of Ontario's tree species, however it is particularly problematic in pine plantations where root systems tend to be interconnected through grafting, and where selective thinning can provide further opportunities to advance.

The greatest biotic threats to a wide range of forest species are introduced pests with few or no natural enemies. Pine False Webworm is an introduced pest first identified as a problem in mature pine plantations in the early 1990's in Simcoe and surrounding areas. The most severely affected pine plantations in the South Barr Tract were cleared in 1994 due to large-scale mortality. Operational aerial spraying was conducted throughout many locations centered in Oro-Medonte in 2001, with experimental work conducted in addition. Survey locations and protocols were established in 2001 and survey work continued until about 2010. Surveys showed population levels declined and have remained stable. No further impact on plantation health has resulted.

Several introduced pests and diseases were identified in the 2011-2030 forest management plan with emerald ash borer (*Agrilus planipennis*) and Asian long-horned beetle (*Anoplophora glabripennis*) being at the forefront.

Since then, emerald ash borer (EAB) has spread throughout the County of Simcoe beginning in 2013. It continues to cause mortality in ash trees province wide. Within the SCF, pre-emptive harvesting of ash trees during regular harvest operations has been a priority since 2008. This pre-emptive approach has significantly mitigated timber losses (and economic losses), maintained forest health and reduced hazard trees within the SCF.

Asian long-horned beetle (ALB) has been successfully eradicated twice in Toronto and does not currently pose a direct threat to the SCF. There are several active areas in the US where this species is being managed and several other areas where it has been successfully eradicated.

Other species that can potentially impacts the health of the SCF include:

- Sirex wood wasp (*Sirex noctilio*) has been confirmed in several red pine plantations in the SCF. Preliminary studies indicate however, that this pest may only cause mortality in suppressed or stressed trees.
- Spongy Moth (Lymantria dispar dispar) saw a large population increase from 2019 to 2021 and caused some areas of widespread defoliation, primarily of red

oak. This insect usually sees a population increase every 7-10 years that is followed by a population decline.

- Beech bark disease is causing significant mortality when bark, attacked and altered by the beech scale, *Cryptococcus fagisuga* Lind., is invaded and killed by fungi, primarily *Nectria coccinea* var. *faginata;*
- Butternut are now listed as an endangered species in Ontario due to Butternut canker (Sirococcus clavigignenti-juglandacearum) following introduction to the province in approximately 1990.

Since 2012, several other threats have been identified. These include:

- Hemlock Wholly Adelgid is a small aphid like sucking insect that feeds on Eastern Hemlock. It has been slowly spreading north from Virginia since the 1950's. It now has small populations in southern Ontario.
- Oak Wilt is a disease that impacts oak trees. The fungus *Bretziella fagacearum* restricts the flow of water and nutrients within a tree by growing on the sapwood of oaks. It causes the foliage to wilt. Although some trees may recover, it often can cause mortality, sometimes in as little as six weeks. Oak wilt was recently discovered in the Niagara region and the County of Simcoe.
- Sudden Oak Death is caused by the fungal like pathogen *Phytophthora ramorum. S*udden oak death is not yet present in Ontario but is found in some US states in the east and west. It has also been found in British Columbia. It is reported to impact red oak species more aggressively than white oak species
- Thousand Canker Disease has not been found in Canada but is in neighbouring US states to Ontario. The insect-fungus complex impacts Juglans spp. (Walnut species) with black walnut being the most susceptible. The disease can quickly kill infected trees in as little as 3 years. Walnut species are a very minor component in the SCF.
- Beech Leaf Disease is believed to be caused by an invasive nematode. The disease was first discovered in North America in 2012 and in Ontario in 2017. This disease has been spreading rapidly and can change the forest canopy and causes mortality in beech.

Although efforts have been stepped up at the national and international level to reduce new introductions of potentially problematic species, increased trade will continue to pose a problem and it is certain that new problems will arise. The Canadian Forest Service (CFS), Canadian Food Inspection Agency (CFIA) and MNRF continue to monitor local forest health conditions and provide updates and recommendations to local forest managers.

### 3.7.2 Abiotic factors

As described in Section 1.2.3, fire, wind, and water have all played a role in the development of the local forest environment and will continue to do so in future. Recent examples specific to the SCF include severe drought conditions in 2016, a late frost event in 2021, and several smaller scale wind events.

Projections from climate change suggest more frequent impacts to the forest from abiotic factors should be anticipated.

### 3.7.3 Invasive Plants

Invasive species are alien plants, animals, or micro-organisms that have been accidentally or deliberately introduced into areas beyond their natural range and negatively impact native biodiversity, the economy and/or society, including human health. While invasive plants are generally not of concern regarding the health of trees in isolation, these plants can affect the health and development of a forest ecosystem by outcompeting the native vegetation, often seriously impacting biological diversity.

The detection and mapping of invasive plants in the SCF began in 2008; as such it is not possible to determine when most introductions occurred and the rate of spread. The most significant species of concern are garlic mustard (*Alliaria petiolata)*, glossy buckthorn (*Frangula alnus*), common buckthorn (*Rhamnus cathartica)*, dog-strangling vine (*Vincetoxicum rossicum)*, Japanese Knotweed (*Reynoutria japonica*), Himalayan Balsam (*Impatiens glandulifera*), Common Reed (*Phragmites australis*), Giant Hogweed (*Heracleum mantegazzianum*) and Manitoba maple *(Acer negundo)*. The current impact to forest health from invasive plant speices was seen as negligible in the past. However, as invasive species become more prevalent throughout the region, their impacts continue to grow. The primary concerns regarding the establishment of invasive plants are the suppression of natural tree regeneration and a loss of overall biodiversity. Most of these non-native invasive plants are highly competitive and out-compete native plants on the landscape.

Management of invasive plants has increased substantially since 2011. These species have the potential to have profoundly serious long-term impacts if not controlled.

Increased recreational activities of all kinds within the forest will also continue to accelerate the introduction and spread of invasive plants. Further, several studies have indicated that climate change is expected to exacerbate the problem as many of these

species are better able to adapt to changing conditions more readily than our native varieties.

In 2018, the forestry department formalized an approach to invasive species monitoring and management in the ‘Simcoe County Forest Invasive Plant Management Strategy’. In addition to this strategy, an ‘Integrated Pest Management’ plan was developed in 2021. These documents detail the best practices to manage this threat.

# PART 4 DESIRED STATE / STRATEGIC DIRECTION

Strategic directions from County Council have been incorporated into a comprehensive 10-year Business Plan. This plan serves as a framework for County departments to align their long-term goals and strategies. Management of the SCF contributes directly to the following Strategic Direction:

**Environmental Sustainability:** *To preserve, conserve, and safeguard our natural resources, while recognizing opportunity, innovation, and the needs of our community.*

## 4.1 Mission Statement

*To promote excellence in the practice of forestry through continued growth and economic viability while contributing to environmental sustainability and our resident's quality of life.*

## 4.2 Principles

Sustainability of the forest is paramount.

Sustaining forests is fundamental to sustaining development based on forests.

Sustaining forests includes the maintenance of ecological processes and conservation of biological diversity.

Large, healthy, diverse, and productive forests are essential to our well-being, both now and in the future. The establishment and maintenance of representative protected forest lands is a critical component in the protection of our natural heritage.

## 4.3 Goals

**Economic Sustainability**

To ensure that the SCF remains economically self-sufficient and contributes to a healthy, viable wood using industry

**Environmental Enhancement**

To protect and enhance the Natural Heritage features of the County including flora, fauna, soils, and watershed health

**Social Benefit**

To protect the cultural and spiritual values provided by the SCF while making a positive contribution to tourism objectives

## 4.4 Strategies

### 4.4.1 Economic Sustainability

The SCF Forest Inventory and associated mapping will be updated and improved on a continual basis to provide accurate forecasting and aid in decision making.

The annual allowable harvest will be determined using the best available science and locally adapted growth and yield data.

Annual operating plans will strive to maintain a continuous supply of a range of timber products to the greatest degree possible.

Adjustments to annual plans may occur to optimize value, salvage declining timber, or respond to unforeseen events, which may require salvage operations.

A silvicultural prescription will be prepared and/or approved by a Registered Professional Forester for each harvest area.

Silvicultural prescriptions will be consistent with accepted forest management guidelines and practices and tailored to local forest conditions.

Management objectives will include an increase in the future value of the forest by retaining optimum levels of healthy growing stock, increasing residual quality, and encouraging the regeneration of tree species that are native to the County and appropriate for the site.

Trees will be marked for harvest by qualified tree markers as determined by the County and will be performed in accordance with the silvicultural prescription.

Timber will be sold through an open bidding and 'upset price' system to ensure maximum and fair prices are attained relative to the current economic conditions.

Prior to harvest, a Timber Sale Contract will be signed between the Purchaser and the County to define responsibilities and provide protection to the County in case of a dispute or accident.

Harvesting operations will be regularly inspected to ensure compliance with the Timber Sale Contract Terms and Conditions and silvicultural prescription.

Post-harvest monitoring will be conducted to ensure that silvicultural objectives have been met. Where objectives are not met or potential improvements are identified, a modified management approach will ensure continual improvement.

Strategies will be implemented to mitigate the anticipated long-range decline of red pine timber and the associated revenue.

Protection of the timber resource will include measures to reduce potential losses from fire and theft. As most losses from insects and disease are part of the natural forest development process, intervention will only occur where the potential exists for significant loss of value and the cost versus benefit has been assessed.

Non-commercial operations will be considered where good opportunities exist to improve future commercial values.

Property acquisitions will consider future revenue potential and opportunities to reforest marginal farmlands.

The County will continue to support use of the SCF for research which enhances knowledge of the forest and its management. New science and technology will be incorporated into forest management processes as appropriate.

Opportunities to supplement revenue from non-timber sources will be maximized where appropriate and within the guidelines established in the Recreation Policy. New opportunities will be reviewed on a case-by-case basis.

Annual budgets for the management of the SCF will be prepared by staff and approved by Council. All revenues generated by the SCF will be credited to the County Forest Reserve Fund; management expenses will be debited as per the County Forest Growth, Investment & Protection Policy.

Certification of the SCF to Forest Stewardship Council standards will ensure continued market access.

### 4.4.2 Environmental Enhancement

Mapping enhancements occur on an ongoing basis to improve information on natural heritage features and will consider data from all available sources.

Management of all production forest areas encourages the regeneration of native species on appropriate sites and promotes a diversity of forest types and ages.

Plantations will be managed with the long-term goal of succeeding to mixed native species appropriate to the site, or in suitable circumstances, to re-establish even-aged conifer dominated stands to mimic historical impacts from forest fires or large-scale disturbances to contribute to a diverse regional landscape.

Silvicultural prescriptions will strive to mimic natural disturbance patterns.

Under-represented forest types will be maintained or expanded where possible. Specifically, where opportunities exist to promote the regeneration of white pine or red oak dominated forest systems on appropriate sites, group selection or shelterwood silvicultural systems will be employed. Prescribed fire will also be considered as a management tool to regenerate such forest ecosystems.

Wildlife habitat within each managed forest stand will be maintained by ensuring adequate structure including species diversity, cavity trees, snags, downed woody debris, super canopy trees, nut and berry producing trees, etc.

Forest areas containing or contributing to a range of significant features or functions may be defined as 'High Conservation Value Forests (HCVFs). HCVFs will be identified and mapped using all available data and updated on an ongoing basis. Management activities within HCVFs shall maintain or enhance the attributes which define such forests.

Roads, water crossings and access trails will be constructed, maintained and/or rehabilitated to minimize adverse impacts to HCVFs or other natural heritage features and will be consistent with local best management practices, the *Conservation Authorities Act* and the *Fisheries Act*. Applicable approvals and permits will be obtained prior to construction.

New access roads will generally be temporary; existing access roads will be reduced where possible to reduce unauthorized access.

To reduce environmental impacts, recreational uses will be discouraged or directed away from certain High Conservation Value (HCV) Forest Areas and/or sensitive natural heritage features.

The acquisition of additional lands will continue to focus on opportunities to connect or enlarge existing SCF tracts or other protected lands to enhance significant woodlands and forest cover within Greenlands areas.

### 4.4.3 Social Benefit

The SCF will be available for recreational activities as per the Recreation Policy. Exceptions to the policy will be made to enable access for disabled persons where appropriate.

The SCF will be available as part of a network of recreational trails if such activities are consistent with the Recreation Policy.

Access points will be adequately signed to encourage appropriate public use, to promote safety and to reduce incidents of trespass, vandalism and illegal dumping.

Property boundaries will be marked to discourage trespassing onto adjoining private lands and loss of timber from encroachment.

Property boundary fences will be maintained as needed consistent with the *Line Fences Act.*

The boundaries of forestry operations will be verified on the ground and adjacent landowners will be notified prior to start-up of harvest operations.

Forestry operations adjacent to forest access roads and trails designated through Property Use Agreements will be conducted with public safety in mind by installing warning signs, closing harvest blocks to public access, removing hazard trees and keeping access roads and trails free of logging debris where possible.

Modifications to the operating plan will be considered to treat all potential areas on a tract at the same time to minimize impact to users.

The County will strive to maintain positive relationships with neighbouring property owners.

The County will provide encouragement and support to private landowners and the logging community by providing an example of good forestry practices and wise stewardship.

The County will work to foster understanding and cooperation amongst users. Communication will include public outreach and regular contacts with user groups. The County will foster awareness and knowledge of the SCF, its natural and cultural heritage values, and its sustainable management.

# PART 5 IMPLEMENTATION

To achieve the stated goals of the Simcoe County Forest including forest health, growth, value, and regeneration, planned interventions or 'silvicultural treatments' are required. Silvicultural treatments are intended to emulate the natural disturbance patterns to which different forest types have become adapted while maintaining or enhancing structure and diversity.

Single-tree and group selection systems emulate the mortality of single trees or groups of trees that would succumb to competition, age, wind, insects, or disease. This is the most common approach utilized within natural stands commonly dominated by shade tolerant species. Larger openings are prescribed where the objectives include regenerating species less tolerant of shade like red oak. Shelterwood systems emulate ground fires that clear the understory and cause partial mortality of the overstory, allowing a new, even-aged stand to develop. This approach is utilized most to mimic the conditions required to regenerate white pine and, in some cases, red oak, and may also require prescribed burning to fully achieve objectives. Clearcutting emulates the larger scale stand, replacing disturbances such as severe windstorms and intense forest fires. It is applicable to boreal, even-aged forest types and is not prescribed here. Clearcutting could, however, be considered an option in the SCF where a severe insect or disease problem necessitates sanitation or eradication. Clear cutting may also be considered for broader landscape level reasons, as wildfires are controlled in the region, young even aged conifer forests are now uncommon. Clearcutting and replanting are an option to maintain some early successional forests on the landscape. These are a rare, yet important habitat type for many species. The final overstory removal in a pine plantation could also be considered clearcutting, however it is more closely aligned with the final harvest in a shelterwood operation. Plantation management, which is of primary importance for the SCF, is different due to the unique conditions. Objectives typically include the maximization of timber growth and quality while working toward the long-term conversion to a natural forest condition. Each silvicultural system has variations to address specific site characteristics and the composition of the tree species involved.

## 5.1 Production Forest Units, Objectives, and Management

The MNRF defines a forest unit as, "A classification system that aggregates forest stands for management purposes that will normally have similar species composition, will develop in a similar manner (both naturally and in response to silvicultural treatments), and will be managed under the same silvicultural system." (MNRF 2004).

The objectives for each production forest unit relate primarily to the strategies detailed in 4.4.1 (Economic Sustainability). Considerations regarding environmental enhancement strategies are considered as an integral part of all stand assessments and prescriptions as detailed in Section 5.3.

**Red Pine** (3769 ha / 36% of productive land base)

Red pine is the most significant species in the SCF in area, productivity, and revenue. All is of plantation origin; approximately 40% is in association with white pine, and lesser amounts of Scots pine, Jack pine and spruce are present in a declining number of stands as these species are generally removed in early operations. Most stands which contain a component of white pine will in time have a higher component of this species in the overstory and often as a subsequent forest type due to the good conditions for white pine regeneration. Most other red pine plantations will convert to tolerant or mixed hardwood forests depending upon seed availability.

An average cutting cycle of 9 years for red pine plantations has been utilized for several years after considering average growth rates and accelerating rates of decline in some older plantations. Sites with lower productivity may have an extended period unless decline is evident or stand conversion is a higher priority, and Section 5.2.4 describes where cutting cycles may be extended in mature plantations. Cutting cycles may also be shortened; a subsequent harvest may be prescribed in as little as 5 years following initial row removal, and salvage cutting may be prescribed where decline is advanced.

With the onset of decline in some older plantations, the oldest of which are now reaching 90 years of age or more, the final overstory removal and succession to other stand types dominated by sugar maple, red oak, white pine, or other species will become more common.

The area of red pine declined from 41% in 2011 to 36% in 2021, a decrease of 464 ha. The decline was attributed to the increasing age of these stands and the final overstory removal of stands of advanced age or suffering from declining health.

Objectives

- Production of high-quality timber;
- Eventual succession to a natural forest condition on most sites
    - Eventual conversion to white pine and/or red oak stand types will be favoured where possible on appropriate sites;
    - Where moderate to severe decline is evident, an accelerated conversion to alternate species is desirable.

- Where suitable site conditions exist, red pine will continue to be a primary species used in reforestation
- Under certain situations, red pine plantations may be regenerated or replanted into red pine forests for timber products, habitat, and landscape objectives

Management

- Crop planning will follow established silvicultural guidelines to facilitate optimum growth of the best quality stems;
- Cutting cycle will average 9 years;
- Rotation age will average 90 years;
- Modified management prescriptions will be employed on sites where decline is present or likely in the future due to adverse soil conditions.
- Continued monitoring of decline and mitigation including soil analysis, Rotstop C application and research support.

**White Pine** 1262 ha / 12% of productive land base)

White pine-dominated stands are mainly plantations. Higher quality white pine is produced when planted in association with other species; pure plantations often have poor form resulting from weevil damage. Historically, substantial investments were made in most white pine dominated plantations with the pruning of selected crop trees. Treatments were completed to ensure that maximum value is realized from the clear lumber which will be produced from these stands.

Early thinning of poor white pine can be difficult and often must be marketed in association with red pine to achieve silvicultural objectives. White pine is expected to thrive for a much longer period than red pine and historically were a much more significant forest component; as such it is a favoured species for long-term retention. Shelterwood treatments continue to be conducted to promote the regeneration of white pine, often in association with red oak.

The area of white pine increased from 9% in 2011 to 12% in 2021, an increase of 291 ha. The increase was mostly attributed to the final removal of red pine from previously mixed white and red pine stands.

Objectives

- Production of high-quality timber;
- Management will favour the long-term retention of a significant component of white pine.

Management

- Crop planning will typically follow established silvicultural guidelines to facilitate optimum growth of the best quality stems;
- Management in inferior quality plantations with excessive weevil damage will be tailored to promote white pine regeneration and succession to a mixed forest type;
- Cutting cycle of young plantations will average 9 years, however variations in the age of the initial thinning and subsequent treatments will vary depending upon species mixtures, stem quality and market availability;
- The uniform shelterwood system will be used to promote white pine regeneration in mature stands, in stands with limited potential for quality development, and where white pine regeneration is well-established.

**Spruce and Larch** (350 ha / 3% of productive land base)

This working group is comprised of small white spruce plantations and a small component of Norway spruce which were established on poorly drained soils. Growth is poor in comparison to pine, and often growth response following thinning has been poor. 48 ha of European larch is included within this group.

The spruce and larch area were stable from 2011 to 2021 with a slight 22 ha increase. The increase was primarily due to updated inventories.

Objectives

- Timber production;
- Conversion to a natural forest condition at the earliest opportunity.

Management

- Crop planning will follow similar guidelines to that used for red pine;
- Smaller average stand sizes and lower values will often necessitate adding spruce to other higher value sales.
- European larch may be thinned in association with red or white pine.
- European Larch and Norway Spruce will be eliminated over time.

**Jack and Scots Pine** (132 ha / 1% of productive land base)

Originally planted to stabilize fine sandy soils, minor jack pine remnants can still be found as indicators of former blow sand areas. Not planted for many years, jack pine was the dominant species planted as part of the Museum Tract restoration project to establish Kirtland's Warbler breeding habitat. Scots pine is today considered an invasive exotic species and efforts continue to reduce its prevalence. During this plan's term, these species will become less frequent as these stands continue to be converted to more appropriate species.

Jack and Scot's pine area decreased a negligible 6 ha from 2011 to 2021. The overall decrease would have been 41 ha, but as noted 35 ha area was reforested primarily with Jack pine in 2019 in the Museum Tract, thus offsetting the 41 ha decrease.

Objectives

- Conversion to site appropriate native species at the earliest opportunity.

Management

- While non-commercial in isolation, Scots and or jack pine timber may be included with other species to achieve silvicultural objectives;
- Wholesale stand conversion is generally not recommended until adequate natural regeneration is well advanced;
- Where decline is occurring naturally, stand conversion may be achieved without intervention.

**Other Conifer** (205 ha / 2% of productive land base)

This group comprises mainly natural lowland conifer stands dominated by white cedar with secondary species including balsam poplar, balsam fir, tamarack, white birch, red maple, and others. A small component of hemlock stands is included within this group. Much of the area occupied by other conifers is on wet sites and many were re-classified as non-productive. Very few operations have been conducted in these stands due to site and soil sensitivity and low timber values.

Other conifer declined from 3% in 2011 to 2% in 2021, a decrease of 119 ha. The decrease was primarily due to updated forest inventories and classification changes from productive forest area to non-productive forest area.

Objectives

- Watershed protection and /or wildlife habitat values are typically a higher priority than timber values;

- Timber production may be considered primarily within cedar and hemlock dominated stands.

**Tolerant Hardwood** (2315 ha / 22% of productive land base)

Sugar maple dominated forests are the most common forest type of natural origin on upland sites. Many other species are found in association including beech, red oak, white ash, basswood, white birch, poplar, black cherry, white pine, hemlock, and ironwood. Many stands were of very poor quality prior to inclusion in the SCF due to high grading, over cutting or grazing, however ongoing stand improvement has created an increasing percentage of good quality timber. As sugar maple regeneration is prevalent throughout many older plantations, this working group will continue to increase over time.

Tolerant hardwood area increased from 17% in 2011 to 22% in 2021, an increase of 511 ha. The increase was primarily related to new property acquisitions and red pine stand conversions.

Objectives

- Maintain a continuous forest canopy;
- Develop or maintain an all-aged forest condition;
- Improve timber quality;
- Promote the restoration of old-growth features in candidate stands or in portions of stands.

Management

- Single tree and group selection system;
- Cutting cycle will average 15 years.

**Intolerant Hardwood** (577 ha / 6% of productive land base)

These early successional forests typically developed after the clearing of nutrient poor sites for agricultural purposes which were subsequently abandoned. Large toothed and trembling aspen are the primary species with smaller components of white birch and balsam poplar on poorly drained sites. Most often in association with other species, some relatively pure stands exist. These stands are transitory by nature and may contain a well-stocked understory of good quality tolerant or mid-tolerant species. Although of minor importance for timber values, these stands provide certain habitat conditions which are of value in the landscape. As such the potential and objectives for any particular stand may vary widely.

Intolerant hardwood area decreased from 10% in 2011 to 6% in 2021, a decrease of 467 ha. The decrease is primarily due to updated forest inventories and classification changes from productive forest area to non-productive forest area.

Objectives

- Accelerate transition to tolerant or mid-tolerant species on productive sites with advanced regeneration; or
- Continue to allow natural succession to proceed on poorly drained or unproductive sites; or
- Promote the retention of a high component of intolerant species.

Management

- Generally single tree and group selection system;
- Shelterwood harvesting or patch cuts may be prescribed where the objective is to promote the retention of intolerant hardwoods, or release established mid-tolerant species particularly where opportunities exist to favour oak and / or white pine.

**Upland Oak** (1148 ha / 11% of productive land base)

Red oak is most prevalent on dry, upland sites with the highest concentrations in the SCF in the Wildman, Hendrie, Tosorontio and Cedar Point Tracts. It is most often growing in association with hard maple, beech, white ash, white birch, basswood, white pine and poplar. A valuable species for timber, red oak also provides significant value for wildlife. As a mid-tolerant species which tends to dominate a site following a major disturbance such as fire, its long-term retention can be difficult where sugar maple and other shade tolerant species become established in the understory particularly on more productive sites. Where opportunities exist to manage for red oak in the long-term, variable silvicultural practices will be required including shelterwood systems and prescribed fire.

Upland oak area increased from 8% in 2011 to 11% in 2021, an increase of 331 ha. An objective in the 2011 management plan was to encourage and manage for more red oak where opportunities exist in an effort to increase diversity. The implementation of this objective has fueled this increase. Stands of red pine that have a final overstory removal occasionally are also regenerating to red oak.

The very recent discovery of Oak wilt in Canada and in the County of Simcoe may require alterations to oak management in the County Forest. This may include restricting harvesting of oak to winter months when the likelihood of spreading the disease is reduced. Strategies may also consider encouraging more white oak, which is

less susceptible to oak wilt, or encouraging additional diversity of other tree species in upland oak production units.

Objectives

- Improve timber quality;
- Maintain / regenerate a component of minor tree species.

Management

- Single tree selection (or crop tree release) will be utilized in young stands to improve timber values where regeneration is not yet a consideration;
- The group selection system will be utilized where continuous forest cover is desired;
- The even aged shelterwood system is the preferred method where possible;
- Post-harvest monitoring and tending will be a priority to ensure successful regeneration.
- Potential seasonal restrictions to harvest activities to mitigate oak wilt spread

**Lowland Hardwood** (288 ha / 3% of productive land base)

Typically located on imperfectly to poorly drained soils, this forest type includes the silver maple, red maple and green ash working groups. These sites support a diverse group of tree species including basswood, ash, elm, cedar, poplar, hemlock, balsam, and others. Timber values are low and soil conditions may hinder harvesting, although the high productivity on some sites will warrant improvement work.

Lowland hardwood area decreased a negligible 6 ha from 2011 to 2021.

Objectives

- Continue to allow natural succession to proceed on poorly drained or unproductive sites;
- Improve timber quality;
- Maintain / regenerate a component of minor tree species; favour yellow birch where possible.

Management

- Single tree and group selection system;

- The uniform shelterwood system may be prescribed in even-aged soft maple stands or where mid-tolerant species are desired.

**Other Hardwood** (273 ha / 3% of productive land base)

This group is primarily comprised of early successional forests which developed after the clearing of nutrient poor sites for agricultural purposes. Primary species include white ash and black cherry. Also included are a few small stands of yellow birch.

Other hardwood area increased a negligible 19 ha from 2011 to 2021.

Objectives

- Develop or maintain an all-aged forest condition;
- Improve timber quality;
- Maintain / regenerate a component of minor tree species.

Management

- Single tree and group selection system.

**Barren & Scattered** (56 ha / 1% of productive land base)

This group is primarily comprised areas of shallow soils that do not support the growth of forests or are future reforestation sites.

Barren and Scattered area decreased 90 ha from 2011 to 2021. This is due to updated stand inventories. These updates either changed the area to another productive classification or to non-productive.

Objectives

- Establishment of productive forest plantations on appropriate sites.
- Maintain poor sites for habitat and landscape diversity

Management

- Planting will follow established protocols to most effectively establish economically viable plantations.

## 5.2 Projected Harvest

Allowable harvest calculations typically require demonstrating that harvest rates do not exceed projected growth rates while accounting for other losses. In an ideal situation, a

forest unit with a relatively equal age class distribution will provide a constant flow of timber from the forest which, if matched with growth rates, can be produced indefinitely. In the case of the SCF, however, due to the way in which it evolved from early acquisitions, planting, and management, the composition of the timber resource will change in coming decades.

Existing crop plans and thinning schedules are based on well-established science and protocols which are designed to maximize growth and yield at the stand level. Efforts are made to ensure a relatively constant supply of timber of a range of sizes and quality on a year over year basis, but it must be done without compromising the health or objectives of individual stands.

Due to anticipated changes in the total land base of the SCF and potential impacts from changing market conditions, unanticipated losses, or as revised growth and yield data becomes available, harvest levels will be assessed at five-year intervals.

### 5.2.1 Estimated Volume Growth

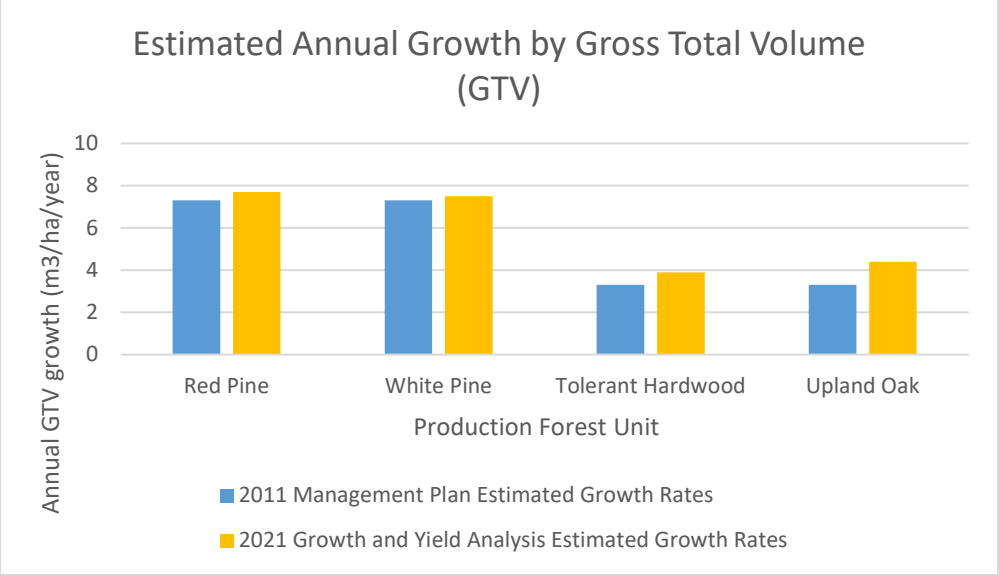
Ontario has an extensive network of forest research plots to measure the growth and yield of different forest types throughout the province with some of the oldest plots dating to the 1920's. Thirty active growth and yield plots are currently located within the Simcoe County Forest. This network of plots and the growth and yield program provides information that is essential to forest planning (Parton, 2018). Historically, the province completed measurement and analysis of data from these plots. However, the provincial growth and yield program in Ontario has waned with reduced resources available for the program (Penner & Pitt, 2019).

There was a commitment in 2011 by the County to collaborate with MNRF to assist with monitoring of existing permanent sample plots. This has provided additional growth and yield data over the last decade. The partnership agreement had county staff complete measurements of several forest plots annually and providing the data to the MNRF for analysis. Analysis from the MNRF is not yet available. In 2021, the Simcoe County Forestry department in partnership with the York Regional Forest completed its own growth and yield analysis. This project included the analysis of growth and yield plot data from 169 individual plots and totaled 860 different plot measurements. All plots were located within Simcoe County or site region 6e-6 or 6e-7. Measurements used in the analysis dated from 1963 to 2021.

The analysis looked specifically at the four main production units in the SCF which are red pine, white pine, tolerant hardwood and upland oak. Together these four production forest units make up 82% of the productive forest area in the SCF. The 2021 analysis

showed that average growth rates for all four production forest units were slightly higher than the growth rates provided in the 2011 forest management plan.

| Estimated Annual Growth Rate (GTV $m^3$/ha/year) | Red Pine | White Pine | Tolerant Hardwood | Upland Oak |
|---|---|---|---|---|
| 2011 Management Plan Estimated Growth Rates | 7.3 | 7.3 | 3.3 | 3.3 |
| 2021 Growth and Yield Analysis Estimated Growth Rates | 7.7 | 7.5 | 3.9 | 4.4 |




### Red Pine

The volume growth of red pine plantations in the 1982 management plan was estimated at 1 to 1.5 cords/acre/year (5.9 to 8.8 m3/ha/year), based on substantial growth and yield data collected up until then. An extensive analysis conducted in the United States (Buckman, R.E., et al, 2006) confirms that this is a reasonable and conservative estimate based upon a range of site types. Evidence from the US study, however, is consistent with local experience in that overall volume growth peaks and begins to decline at approximately 60 years of age.

The analysis of SCF and other regional plots estimated an average annual growth rate of 7.7$m^3$/ha/year. This analysis used data from 470 different plot measurements, of which 77 measurements were from the SCF. A separate analysis of the 77 measurements strictly located within the SCF estimated a higher growth rate of 8.5$m^3$/ha/year. This higher rate may be due to consistent and regularly timed forest management within the SCF. Estimated growth rates for 2022-2031 for red pine use the lower regional growth rate of 7.7$m^3$/ha/year. The 2021 analysis also reiterated a decreasing growth rate in m3/ha/year as stands age beyond 60-70 years.

### White Pine

As described in Section 5.1, crop planning for white pine plantations is like red pine at least during the first several thinnings. Many stands are also a red and white pine mix. Heavier cuts may occur where the primary objective is the release of white pine in the understory or a shelterwood approach is prescribed. For the 2011-2022 forecast, growth rates and projected volumes were aligned with red pine.

The analysis of SCF and other regional plots estimated the average annual growth rate of white pine to be very similar to red pine at 7.5$m^3$/ha/year. This analysis used data from 44 different plot measurements, of which 6 measurements were from within the SCF. A separate analysis of the 6 measurements from the SCF estimated a higher growth rate of 12.2m3/ha/year, but this sample size was small. This increase may be due to the consistent level of forest management within the SCF. Estimated growth rates for 2022-2031 for white pine use the lower regional growth rate of 7.5$m^3$/ha/year.

### Tolerant Hardwood

Previous studies have found a range of potential volume growth from hardwood stands in southern Ontario and the north-eastern United States. A review assumed volume growth rates are in the range of 500 - 1000 fbm/ha/year (2.2 – 4.4 $m^3$/ha/year) with the higher volumes resulting from proper management (Schwan and Elliott, 2010). The 2011-2020 estimated growth rate used for all hardwood species was 3.3$m^3$/ha/year

The 2021 analysis of SCF and other regional plots estimated an average annual growth rate for tolerant hardwood of 3.9$m^3$/ha/year. This analysis used data from 104 different plot measurements, of which 3 measurements were from the SCF. A separate analysis of the 3 measurements from within the SCF estimated a higher growth rate of 5.1$m^3$/ha/year. This increase may be due to the consistent level of forest management within the SCF, or an anomaly due to the small data set. Estimated growth rates for 2022-2031 for tolerant hardwood use the lower regional growth rate of 3.9$m^3$/ha/year.

### Upland Oak

The 2011-2020 SCF Management Plan utilized the estimated annual growth rate of 3.3$m^3$/ha/year as no specific growth rate for upland oak was available.

The 2021 analysis of SCF and other regional plots estimated an average annual growth rate for upland oak of 4.4$m^3$/ha/year. This analysis used data from 19 different plot measurements, of which 7 measurements were from the SCF. A separate analysis of the 7 measurements from within the SCF estimated a slightly lower growth rate of 4.0$m^3$/ha/year. The reason for the lower value in growth in the SCF is not certain, it may be due to a small sample size, site and soil conditions or past management activities. The estimated growth rates for 2022-2031 for upland oak use the regional growth rate of 4.4$m^3$/ha/year.

### Estimated Growth Rates for Other Production Forest Units

Analysis was not completed on the less common production forest units. Together these remaining three hardwood units and three conifer units make up approximately 18% of the total productive forest area. For other less common hardwood units, the lower hardwood growth rate of 3.9$m^3$/ha was used to estimate annual growth. For other less common conifer units, the lower conifer growth rate of 7.5$m^3$/ha/year was used to estimate annual growth.

### Estimated Annual Volume Growth 2021-2030

| Production Forest Unit | Total Productive Area | Available Area[a] | Avg Growth Rate (m3/ha/year) | Estimated Volume Growth (m3/year) |
|---|---|---|---|---|
| Red Pine | 3,769 | 3,586 | 7.7 | 29,023 |
| White Pine | 1,262 | 1,200 | 7.5 | 9,463 |
| Spruce and Larch | 350 | 350 | 7.5 | 2,623 |
| Jack and Scot's Pine | 132 | 75 | 7.5 | 990 |
| Other Conifer [b] | 205 | 182 | 7.5 | 1,540 |
| **Total Conifer** | **5,718** | **5,393** | | **43,640** |
| Tolerant Hardwood [c] | 2,315 | 2,205 | 3.9 | 9,030 |
| Intolerant Hardwood [d] | 577 | 530 | 3.9 | 2,249 |
| Upland Oak [e] | 1,148 | 1,011 | 4.4 | 5,050 |
| Lowland Hardwood [f] | 288 | 234 | 3.9 | 1,124 |
| Other Hardwood [g] | 273 | 146 | 3.9 | 1,064 |
| **Total Hardwood** | **4,601** | **4,126** | | **18,518** |

[a] Estimated growth is calculated from 'Total Productive Area'. 'Available Area' does not include productive stands that are <25 for conifer and <40 for hardwood and is for information purposes only.
[b] Other Conifer includes Bf, C, Cw, He working groups
[c] Tolerant Hardwood includes Mh working group
[d] Intolerant Hardwood includes Po, Bw working groups
[e] Upland Oak includes Or working group
[f] Lowland Hardwood includes Ag, Mr, Ms working groups
[g] Other Hardwood includes Aw, By, Cb, H working groups

### 5.2.2 Projected Average Annual Harvest 2022 – 2031

The method to project the average annual harvest for 2022-2031 is calculated differently than in the 2011 and 2016 projections.

**Past Projections**

Projections for average annual harvest area in 2011 and 2016 were calculated by using the available harvest area divided by the scheduled cutting cycle. Projections for average annual harvest volume were then calculated by using the average annual harvest area and multiplying it by the average volume harvested/ha from the last 10-year period. The results were then compared to overall estimated annual growth rates to ensure that harvesting levels were sustainable while accounting for other losses. This is a sound projection method. However, it has some limitations in providing accurate predictions in a changing forest structure. As the SCF structure is changing, most notably with the advancing age of pine plantations and as new data becomes available, a more comprehensive projection became of value.

**Projections for 2021-2030 and beyond**

Significant data from 2011-2021 is now available for analysis to improve projections.

Prior data for analysis included:

- Production unit
- Cutting cycle
- Age class
- Area
- Average harvest volumes

Additional data now available for analysis includes:

- harvest volumes from final removals/stand conversions
- probability of final removal based on age
- rates of stand conversions
- new production unit probabilities following a stand conversion
- age of stands following a final removal (and delay period of next harvest)
- average revenue by production unit and age class

This additional information can now be used to build a more detailed and complex forecast model that addresses the changing forest structure.

For example, the portion of the SCF that comprises of red pine plantations is decreasing and will continue to do so for the upcoming decades. In 2011, there was 4233 ha of red

pine but by 2021 this area dropped to 3769ha, or an 11% decrease. As mature red pine stands convert to other forest types, there are significant impacts including:

- Red pine plantations to hardwood conversions
    - Increase in cutting cycle period from nine to 15 or 20 years
    - No anticipated harvest until the new stand is 40 years old
    - Lower growth rates in hardwood vs conifer plantations
    - Lower timber values
- Red pine plantations to other conifer conversions
    - No anticipated harvest until the new stand is 25 years old
    - Lower timber values for smaller wood and for white pine or spruce

As red pine plantations age, there is also the potential for declining health. Management of this creates additional uncertainty as red pine plantations may be cut earlier than their 9-year cycle and may not remain productive for their expected rotation age of 90 years. When plantations are declining, they will have a higher number of trees cut under a final removal scenario than under a regular thinning operation, thus also increasing the average volume harvested per hectare and the associated revenues.

For these reasons, as part of the 10-year management plan update, a project was undertaken to forecast the wood supply coming from the SCF. The project included a detailed projection of the wood supply for the next decade and a general projection by decade for the next 50 years. This project took an approach of not only looking back at past changes and trends but modelling how they will impact the future. The project modelled the future forest composition for a given period, and projected what the age and working group of each forest compartment would be while considering the probabilities of stand conversions based on the trends of the past decade. The forecast also included expected forest revenues over the specified time.

The figures from the forecast show that all projected annual harvest volumes fall below the estimated annual volume growth. Red pine does however have a projected harvest volume that is 97% of overall estimated growth. This is related to the age class of red pine in the SCF and the conversion of these stands as they age. The projected average annual volume for other production units is 55% (other hardwood) to 75% (white pine) of the estimated annual volume growth.

2022-2031 Forecasted Average Annual Harvest Volume and Estimated Annual Volume Growth

| Production Forest Unit | Total Productive Area (Ha) 2022 (a) | Available Harvest Area 2022 (b) | Cutting Cycle (years) (c) | Average Growth Rate ($m^3$/ha/year) (d) | Projected Average Annual Harvest Area (Ha) 2022 - 2031 (e) | Projected Average Annual Harvest Volume ($m^3$/year) 2022 - 2031 (f) | Estimated Annual Volume Growth ($m^3$/year) 2022-2031 (g) |
|---|---|---|---|---|---|---|---|
| Red Pine | 3,769 | 3,586 | 9 | 7.7 | 358 | 28,102[h] | 29,023 |
| White Pine | 1,262 | 1,200 | 9 | 7.5 | 125 | 7,133 | 9,463 |
| Other Conifer | 687 | 607 | 9 | 7.5 | 59 | 3,107 | 5,154 |
| **Total Conifer** | **5,718** | **5,393** | | | **542** | **38,342** | **43,640** |
| Tolerant Hardwood | 2,315 | 2,205 | 15 | 3.9 | 152 | 5,916 | 9,030 |
| Upland Oak | 1,148 | 1,011 | 20 | 4.4 | 81 | 3,172 | 5,050 |
| Other Hardwood | 1,138 | 910 | 20 | 3.9 | 63 | 2,423 | 4,437 |
| **Total Hardwood** | **4,601** | **4,126** | | | **296** | **11,511** | **18,518** |

[a] includes all area within the production forest unit that is classified as productive

[b] includes all area within the production forest unit that is classified as productive and >25 years of age for conifer or >40 years of age for hardwood; as stands age, more area will move into the available harvest area classification.

[c] cutting cycle (years)

[d] average growth rate in gross total volume ($m^3$/ha/year) from 2021 growth and yield analysis

[e] projected average annual harvest area is calculated from the operating plan and modelling

[f] projected average annual harvest volume is taken from 2022 forest modelling report: 'Simcoe County Forest – Projection of Wood Supply' which projects average volume harvested by age class and scheduled operations under the current operating plan and also incorporating modelling for final removals and stand conversions.

[g] estimated annual volume growth ($m^3$/year) 2022-2031 is calculated by multiplying the total productive area by the estimated volume growth in section 5.2.1

[h] Includes volume from final removals

## Additional notes on projections:

'Estimated annual volume growth' is calculated by growth and yield data from permanent sample plot measurements and reported as 'gross total volume' or GTV. 'Projected average annual harvest' is calculated from historic harvest volumes and

reported as ‘gross merchantable volume’. There is a relationship between GTV and GMV but they are not the same and caution should be taken comparing them. The 2021 ‘Growth Rates for Simcoe County’ analysis identified that annual GMV growth is currently exceeding GTV growth due to the age class of the forest. This makes the comparison reasonable and conservative in the above table.

### 5.2.3 Red Pine – Long-Term Harvest Trends

As described earlier, the red pine working group is the most significant within the SCF in area, productivity, and revenue. Due to a range of factors, however, current growth rates and harvest levels cannot be maintained indefinitely:

- Tree planting volumes closely mirrored historic land acquisition rates. Planting numbers peaked from 1936 to 1941 and dropped off in the mid 1970’s, resulting in the current age class distribution.
- Red pine has extremely low shade tolerance; as such it will not regenerate naturally in the understory of existing stands.
- The preponderance of armilaria root disease (ARD) and heterobasidion root disease (HRD) within the root systems of some plantations is influencing the age at which these stands can remain productive and healthy. Decline from these diseases can mean that some stands are harvested prior to their anticipated rotational age of 90 years.
- ARD and HRD both present a risk to the successful re-establishment of pine following a final harvest.
- Property acquisitions from 2012-2021 were substantial, with some acquisitions being un-forested land. This did lead to a significant increase in tree planting with over 555,000 seedlings planted. Of these, over 500,000 were pine seedlings (256,000 Pr, 140,000 Pw, 105,000 Pj).
- Even if significant land acquisition and reforestation of marginal lands continues, a significant age gap will exist due to the reduced planting since 1975.

The table and figures below illustrate the changes in projected harvest area, volume, and value by age class. Projections go beyond this plan's scope to fully illustrate the forecasted reduction of red pine timber flow over the longer term. Total red pine harvest volume will peak in the 2022-2031 period and begin to decline thereafter; however, an increasing percentage of volume and value will come from older stands which produce larger diameter and higher value timber. Revenue should remain strong for a further 20

years or more. The reduction in younger age classes, however, may impact some operators structured to use smaller diameter timber.

Notwithstanding the pending impacts to local industry and reduced revenue from timber sales, the coming transition in forest composition will also affect habitat conditions. In particular, the reduction of large areas of pine forests may impact certain forest-dependent bird species.

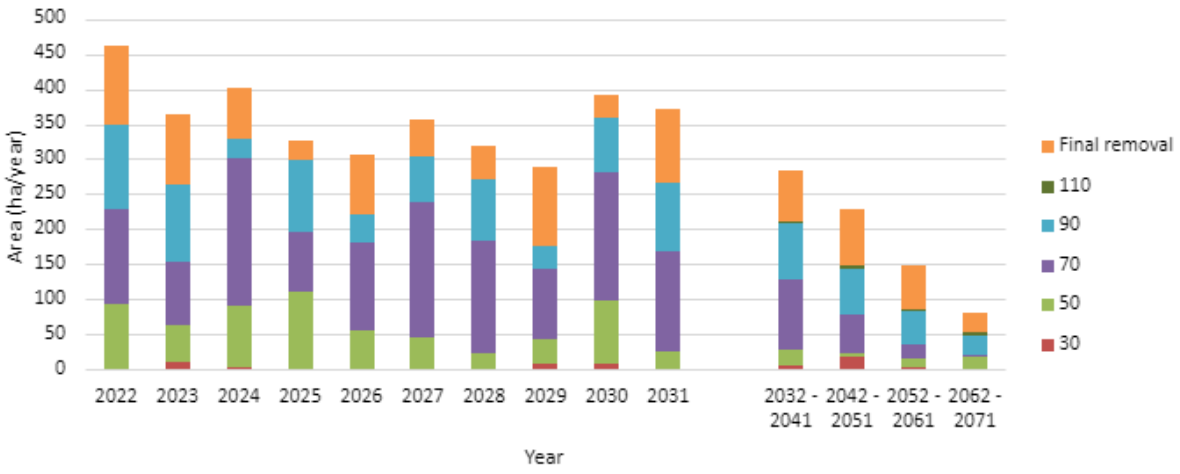
Recent efforts have been made to establish early successional pine forest habitats. This habitat type is important for many wildlife species and is increasingly rare as pine plantations transition into natural forests. New property acquisitions, afforestation, prescribed burning, and considering options to re-establish pine plantations after final removal are all options currently being used or considered to maintain a diversity of wildlife habitat. Section 5.3 discusses this further.

In 2022, a forest growth model was completed to project longer term forest changes and impacts. If trends in red pine stand conversions continue to follow the trends of the last decade, it is predicted that red pine average annual harvest area decrease by 21% next decade. With volumes 15% lower and revenues 10% lower. Volumes and revenues decrease slower than overall area as more mature forests provide higher volumes and values. A longer term forecast on a 50-year horizon suggests that red pine annual harvest area will drop 77% by 2062-2071 from current levels. Associated volumes are forecasted to be 73% lower and values 70% lower on a 50-year horizon. Revenues of other forest types however do increase to mitigate some of the impacts.

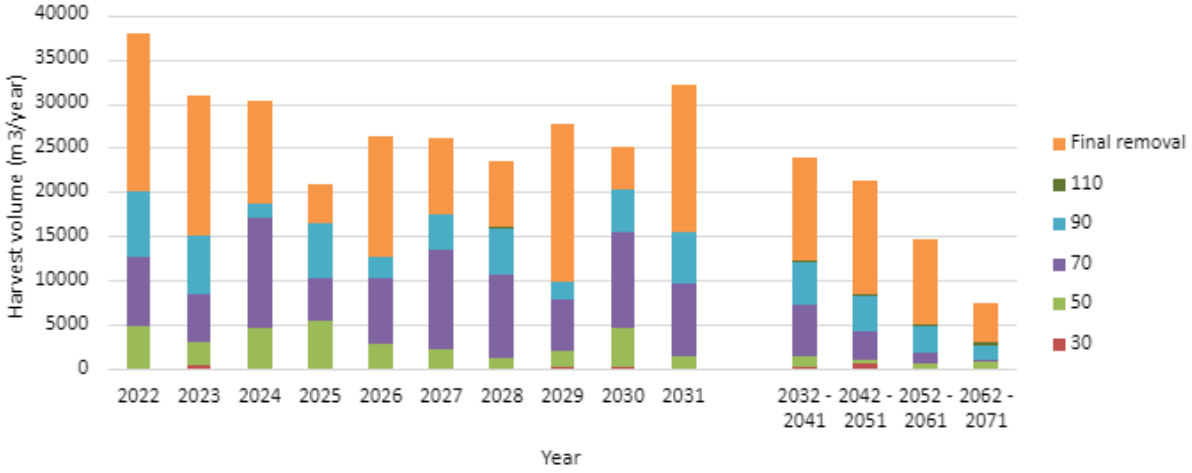
Predicted decline in red pine harvest area, volume and values:

| Forecast Decade | | Harvest Area (ha) | Harvest Volume ($m^3$) | Harvest Value (2022 $) |
|---|---|---|---|---|
| 2022-2031 | Annual Forecast | 358 | 28,102 | $1,759,934 |
| 2032-2041 | Annual Forecast | 283 | 23,837 | $1,579,289 |
| | Decrease from previous decade | 21% | 15% | 10% |
| 2042-2051 | Annual Forecast | 229 | 21,271 | $1,459,893 |
| | Decrease from previous decade | 19% | 11% | 8% |
| | Decrease from 2022-2031 | 36% | 24% | 17% |
| 2052-2061 | Annual Forecast | 147 | 14,661 | $1,030,312 |
| | Decrease from previous decade | 36% | 31% | 29% |
| | Decrease from 2022-2031 | 59% | 48% | 41% |
| 2062-2071 | Annual Forecast | 81 | 7,542 | $522,659 |
| | Decrease from previous decade | 45% | 49% | 49% |
| | Decrease from 2022-2031 | 77% | 73% | 70% |

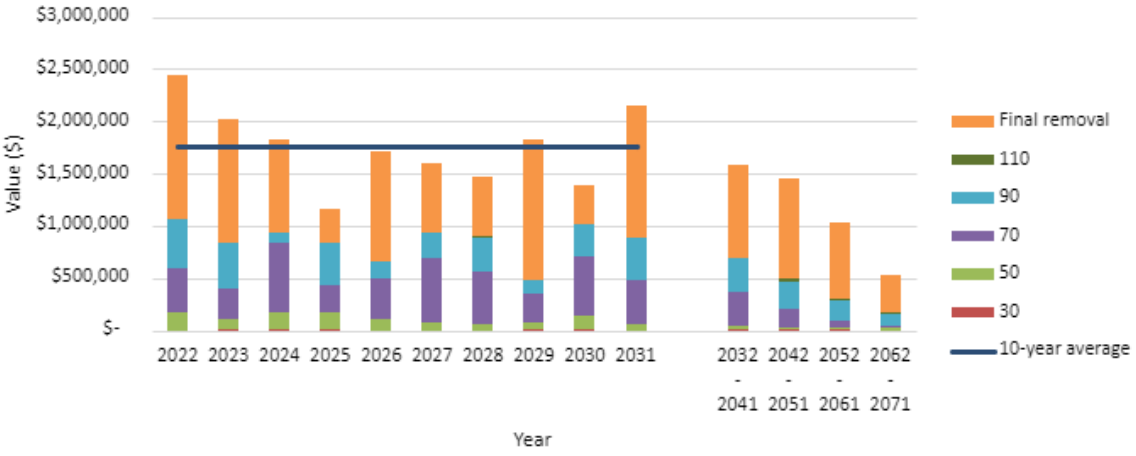
Red Pine Forecast – Harvest Area by Age Class




Red Pine Forecast – Harvest Volume by Age Class




Red Pine Forecast – Harvest Value by Age Class



### 5.2.4 Options to Mitigate the Impact of the Variable Age Class Structure of Red Pine

To minimize the impacts associated with the age class distribution of red pine the following strategies will be considered and utilized to the degree possible:

**Increase acquisition and reforestation of marginal farmlands**

Levels of tree planting historically mirrored land acquisition rates which peaked in the 1930s and 40s and began to decline markedly in 1975. During the 20-year period from 1990-2009, planting was negligible (Section 3.1.1), but planting rates did increase over the previous decade as acquisitions increased. It is hopeful this recent trend will continue if suitable lands can be acquired, but it will remain small as compared to historical standards. It will also not contribute to the age gap which exists currently from the reduced planting since the 1970's.

**Increase acquisition of lands with established young plantations**

This option represents the only opportunity to reduce the current gap of young plantations within the SCF. Targeting the acquisition of lands toward properties which contain established pine plantations up to 50 years of age would contribute to maintaining the revenue stream further into the future. Also, although many private woodland owners are good stewards, the expertise and management processes at the County would ensure the proper development of the forest. As such, although local industry would have access to some of the timber if privately-owned, County ownership would ensure that the maximum volume of high-quality timber was available. As an added benefit to industry this option will increase the availability of certified timber.

**Extend the rotation age of existing plantations where possible**

The maximum age of red pine in natural conditions is about 350 years, but plantations are typically managed with a projected rotation age of 80 to 110 years. The planned rotation age for red pine in the SCF has been 90 years, and future projections will continue on this basis. With the onset of decline forcing a shorter rotation age in many stands, those which continue to show good health as they mature may be managed with a longer maximum age to compensate for projected yields. Extending the rotation age of select plantations will also provide an opportunity to extend the revenues from these plantations further into the future than would otherwise be the case. As discussed earlier, plantation thinning must be scheduled appropriately to achieve optimum growth and yield. In particular, the first three to four operations (generally between 35 to 65 years of age) cannot be altered substantially without adversely impacting stand level objectives. Following this, however, it is possible to consider more flexibility in the operating schedule for any particular stand. Operating cycles may be shortened for

stands exhibiting decline, and others will be identified which can continue for longer periods between harvests and potentially continue beyond 90 years of age.

Specifically, candidate stands chosen for longer retention should be:

- A minimum age of 65 years and exhibiting no obvious signs of decline;
- Succeeding to tolerant hardwood species (stands which have an opportunity for conversion to mid-tolerant species including oak and white pine will need to be thinned more aggressively to provide adequate light conditions).

Extending the rotation age of these stands can be achieved by extending the cutting cycle beyond 9 years and/or reducing the percent removed in each harvest to 20-25%.

It must be noted that the ultimate longevity of these red pine stands is not known at present and as such ongoing adjustments to the operating plan will be required. Additional staff time will also be required as additional stands will require assessments at an increased frequency.

**Rotstop C**

In 2015 a biocontrol product started being applied to stumps in recently harvested red pine plantations. Rotstop C is a biofungicide for use in forestry that reduces the impacts of Heterobasidion Root Disease (HRD). Rotstop C is applied to the stumps of any red pine trees that are harvested from April to November in selection harvests. It is also applied to final removal harvests of red pine when regeneration includes 50% or more of HRD susceptible species. This product has been shown to be effective in reducing mortality in conifer plantations and its use should reduce the occurrences of red pine decline related to HRD. This will reduce the probability of red pine stands needing final removed earlier than their anticipated 90-year rotation age and allowing some stands to be maintained longer to offset earlier final removals. This will help mitigate the impact of the variable age class structure of red pine.

**Release established white pine regeneration**

Many mixed plantations which had a component of white pine planted originally provide an excellent opportunity to increase the component of white pine as a secondary crop. This will require managing mature (ie. 65 years plus) red and white pine plantations using the shelterwood system to ensure adequate light conditions where white pine is well-established in the understory. This process will contribute to filling the gap in young red pine plantations.

**Maximize efforts to improve stand quality and future value in natural stands**

Notwithstanding the strategies listed above, the volume and subsequent value derived from plantations will decline in coming decades. In their place will be many hectares of

young hardwood or mixed stands which will not provide revenue for 20 to 30 years or more following the final overstory removal. Even when revenues are generated from these young stands, they will have a much lower value than the previous mature red pine. Pre-commercial stand improvement work has not been widely employed in the SCF since the 1970's, however an increased emphasis in this area has begun in 2011 to offset or reduce future declines in revenue from plantation thinning. Pre-commercial stand improvement work may include:

- Crop tree release at a very early age to maximize future value and minimize the time required to produce marketable timber;
- Proper corrective pruning of select young hardwood stands (primarily red oak);
- Control of undesirable species (ie. Manitoba maple; buckthorn).

Most existing tolerant hardwood stands have been treated at least once during the previous 30 years; some have received up to three treatments to improve timber quality and structure since owned by the County. These operations involve the reduction of unacceptable growing stock typically through commercial sales of primarily firewood. A smaller percentage of other forest types have also been treated with the objective of improving future timber quality. An increased emphasis on forest stand improvement will be required, however, to improve the future health and value of these stands. Based upon the total available area for harvest, a substantial increase in commercial stand improvement work is desirable provided that suitable markets exist for low grade timber and firewood. Recent successes at marketing firewood and poplar sawlogs provide encouragement to increase volumes in coming years. Further opportunities may also become available if the recent interest in bioenergy becomes a reality.

**Retain 'veteran' trees during final overstory removal**

To reduce the potential impact to forest dwelling songbirds and other species utilizing the mature pine forests, remnant overstory or 'veteran' trees shall be retained where possible. Guidelines are detailed in Section 5.3.3.

## 5.3 Natural & Cultural Heritage Values Protection and Enhancement

In addition to the direct economic value provided by timber, our forests provide critical habitat for a wide range of wildlife, improve and protect the health of area watersheds, provide numerous ecosystem services and provide tangible benefits to the health and wellbeing of residents. To manage our forests to achieve society's ecological, social

and economic expectations, a multi-faceted approach is required to identify, protect, and where possible enhance, the full range of values provided by the SCF.

### 5.3.1 The Course and Fine Filter Approach

With the incredible diversity of fauna within the Great-Lakes-St. Lawrence (GLSL) forest region of Ontario, a “species-by-species approach to the provision of wildlife habitat and the conservation of biodiversity is impossible” (MNRF Forest Management Guide for GLSL Forests). The MNRF has begun to rely on a nested coarse and fine filter approach to meet wildlife habitat needs and provide healthy forests on crown land; a concept which is also applicable to the SCF. The coarse filter component is intended to mimic natural disturbance patterns, creating diverse ecosystem conditions which provide habitat for the majority of native species. In the very large landscape context for which these guidelines have been developed, the coarse filter is defined by forest composition, pattern, and structure. Fine filters are then used, if necessary, to modify the results of applying the coarse filter. This is most often used where it is determined that modifications are necessary for the specific habitat requirements of species such as caribou, moose, marten, pileated woodpecker, etc.

Directly adopting this model to suit the conditions in Simcoe County, and particularly within the SCF, is challenging given the fragmented landscape and long history of human impacts as described in Section 1.2.2. We can, however, set broad objectives and strategies to increase contiguous forest cover (pattern), maintain or increase the diversity of forest stand types (composition), and improve habitat (structure) within each managed forest stand:

**Pattern**

The acquisition of additional lands will continue to focus on opportunities to connect or enlarge existing SCF tracts or other protected lands to enhance significant woodlands and forest cover within Greenlands areas.

**Composition**

Unusual forest stand types will be maintained or expanded; specifically, an increase in the amount of white pine / red oak dominated forests will be pursued where possible.

**Structure**

A range of wildlife habitat conditions within each managed forest stand will be enhanced as specified in Sections 5.3.2 and 5.3.3.

Fine filter adjustments are required where species at risk are known or believed to exist, special habitat features are identified, or aquatic or wetland ecosystems require protection as specified in Section 5.3.4.

**Additional Resources**

The tables in sections 5.3.2, 5.3.3 and 5.3.4 are not exhaustive and are only current as of this forest plan update. Additionally, a Natural Heritage Summary document is managed and updated on a regular basis. This document ensures that any updated natural heritage management guidelines are incorporated into silvicultural operations. This document also includes details on values that are uncommonly encountered or have the potential to be encountered in the forest but to date have not been observed.

## 5.3.2 Operational Guidelines for Habitat Improvement in Natural Forest Stands

While working within the scope of an operational prescription, the selection of individual trees for harvest will follow direction in the *Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales* and the *Ontario Tree Marking Guide.* When a natural value is encountered, modifications to tree marking and forest operations will be applied. Wildlife tree retention focuses on trees of high value to wildlife such as cavity trees, mast trees, scattered coniferous trees, and super canopy trees.

| Value Or Feature | Target | Details |
|---|---|---|
| **Biodiversity** | Maintain a natural mix of tree species, retain species that are less common and less abundant at the stand and landscape level. | • Retention of mid-tolerant species (black cherry, basswood, red, white and bur oak)<br>• Retention of regionally rare or uncommon tree species (butternut, bitternut hickory, black spruce, eastern cottonwood)<br>• Retention of individual “veteran” trees<br>• Creation of group openings |
| **Wildlife Trees** | Wildlife trees will be well dispersed. Where cavity trees are not available, recruit such | Retain at least half of wildlife trees as individual stems; the remaining wildlife trees may |

| | | |
|---|---|---|
| - Wildlife trees can include standing healthy, dead, or dying trees.<br><br>-Cavity trees are a dead, dying, or live tree with a hole for nesting, roosting, resting or feeding<br><br>-Mast trees are trees that produce edible fruit<br><br>-Super canopy trees are large living trees that emerge above the main canopy of the stand<br><br>-Veteran trees are larger trees that will become the super canopy trees of the future | trees by leaving inferior quality stems, especially living trees.<br><br>Favour retention of cavity trees which will last 20 years (hardwood trees are preferable to poplar) | occur in clumps and of varied species.<br><br>• Retain an average of ≥10 living cavity trees with a minimum of 5 living cavity trees on each ha<br>• Retain an average of ≥10 mast trees/ha<br>• Retain an average of ≥10 scattered coniferous trees/ha<br>• Retain an average of ≥1 super canopy tree/4 ha<br>• Retain ≥10 veteran trees/ha on final removal cuts<br>• Except in extraordinary circumstances, wildlife trees that fall to the ground, or are purposely felled for worker safety reasons, become downed woody material<br>• Reasonable efforts will be made to avoid knocking down standing wildlife trees during renewal and tending treatments<br>• Retain all Pileated Woodpecker nesting cavities |
| **Downed Woody Material**<br><br>-Refers to wood above the soil and on the ground | Leave coarse woody material on site. Coarse woody material will refer to sound and rotting branches, boles, logs, and stumps, generally ≥ 7.5cm in diameter at the small end. | Downed trees (or pieces of trees) present prior to harvest will be left on site (moving such trees for silvicultural purposes is permitted); where windstorms or other natural events (e.g., snow, ice) have recently caused damage to stands, trees leaning and downed by the recent disturbance, which normally would have been available for |

| | | |
|---|---|---|
| | | harvest, may be harvested and utilized. |
| **Snag trees**<br><br>-Refers to dead standing trees | Encourage operators to leave snags that are not a safety risk. | Leave snags that are in various stages of decay. Removal of snag trees to be minimized during road and landing construction consistent with OHSA requirements. |

### 5.3.3 Operational Guidelines for Habitat Improvement in Plantations

The long-term management objective for most forest plantations is to promote natural regeneration of mixed native species well suited to the site to allow for a gradual transition to a more natural state. Forest plantations offer more limited opportunities to maintain or enhance habitat conditions for a range of species, but the following guidelines will be used to the degree possible.

| Objective | Target | Details |
|---|---|---|
| **Wildlife Habitat**<br><br>– Plantations tend to be uniform with limited amount of wildlife trees | Increase the number of wildlife trees or potential wildlife trees within plantations. | • Retain standing dead trees if it is safe to do so<br>• Encourage the development of potential mast trees by releasing ≥10 mast trees/ha over 25cm<br>• Retain ≥10 veteran trees/ha on final removal cuts to become super canopy trees<br>• Retain an average of ≥1 super canopy tree/4 ha<br>• standing wildlife trees to be retained to the degree possible<br>• Retain all Pileated Woodpecker nesting cavities |
| **Stand Diversity** | Increase under-represented/ uncommon tree species. | Favour uncommon tree species where present |

| | | |
|---|---|---|
| **Incorporate Habitat Features** | Improve structure and provide seed source. | Protect and promote remnant hardwood fencerows and other habitat features where present. |
| **Downed Woody Material**<br><br>(Sound and rotting branches, boles, logs, and stumps, generally ≥ 7.5 cm) | Increase downed course woody debris | Downed trees (or pieces of trees) present prior to harvest will be left on site;<br><br>Recently damaged trees, which normally would have been available for harvest, may still be utilized. |
| **Improve Future Stand Structure** | Retain some plantations beyond marketable age. | Retain scattered super canopy trees to shelter developing stand |
| **Snag Trees**<br><br>**-**Refers to dead standing trees | Increase standing dead trees | Leave snags that are in various stages of decay. Removal of snags to be minimized during road and landing construction consistent with OHSA requirements |

## 5.3.4 Operations Summary for the Protection of Natural and Cultural Heritage Values

An area of concern (AOC) is a term used to identify an area that requires special consideration when planning forestry operations to mitigate the potential negative impacts on an identified value. Operational prescriptions for areas of concern may include a reserve, where no activities are carried out, and/or a modified area, where forestry activities are modified to protect the value. Applying these guidelines contributes to maintaining a healthy forest ecosystem, protecting and enhancing wildlife habitat and conserving forest biodiversity.

The following summary has been developed using the *Silvicultural Guide to Managing Southern Ontario Forests*, with additional adaptations from the *MNRF Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales*. These guidelines will continue to evolve to reflect the best available science. Further, these guidelines are not all encompassing; specific instances may arise which will require further analysis or consultation with other experts.

| Value Or Feature | Reserve | Modified Management Area | |
|---|---|---|---|
| | | **Dimension** | **Condition** |
| **Rivers and streams (including intermittent streams)** | Harvest not permitted below top-of-bank of water feature.<br><br>Where top-of-bank is not clearly defined harvest is not permitted within 15m of water feature. | Site Specific | Modified harvest, renewal, and tending operations will follow appropriate operating practices to minimize rutting, compaction, and mineral soil exposure that could lead to erosion and subsequent transport and deposition of sediment.<br><br>Retain minimum 75% canopy closure within 30m<br><br>If a crossing is necessary, temporary structures that do not impede water movement must be used. |

| | | | |
|---|---|---|---|
| **springs, seeps** | | 15m | Trees are not to be felled into the water feature. |
| | | 30m | Retain minimum 75% canopy closure |
| **woodland pools / amphibian breeding ponds** | No harvest within 15m of pond edge | 30m | Retain minimum 75% canopy closure.<br><br>Skid trails are not permitted. |
| **Wetlands (includes all identified wetland areas)** | No harvest within wetland area. | 120m | Focus on maintenance and enhancement of wildlife and biodiversity values.<br><br>Roads and landings are not permitted. |
| **Active Great Blue Heron Colonies** | No harvest within 75m of colony. | 76-150m | Maintain minimum 60% crown closure. |
| | | 150m | Roads and landings are not permitted. |
| | | I km | No operations permitted March 15 to July 31. |
| **Active Osprey Nest** | No harvest within 75m of nest. | 150m | Maintain minimum 60% uniform canopy closure.<br><br>Road and landings are not permitted. |
| | | 300m | Operations are not permitted April 1 to August 15. |

| | | | |
|---|---|---|---|
| **Active Red-shouldered Hawk & Goshawk Nest** | No harvest within 50m of nest. | 400m | Maintain minimum 70% canopy closure.<br><br>No operations permitted March 15 to July 15. |
| **Active- Sharp-shinned Hawk & Merlin Nest** | Nest tree will be retained | 50m | No operations permitted April 1 to July 31. |
| **Active Broad-winged Hawk nest** | | 100m | |
| **Active Red-tailed Hawk Nest** | No harvest within 20m of nest | 100m | No operations permitted March 15-July 15. |
| **Active Cooper's Hawk Nest** | | | No operations permitted April 1 to July 31. |
| **Inactive Heron Nest** | No harvest within 30m of nest. | 30m | New landings are not permitted within the AOC. |
| **Inactive Osprey Nest** | No harvest within 20m of nest. | 75m | Maintain minimum 60% canopy closure within AOC.<br><br>New roads and landings are not permitted within the AOC. |
| **Inactive Red-shouldered Hawk, Cooper's Hawk, Common Raven, Red-tailed Hawk& Goshawk Nest** | No harvest within 20m of nest. | n/a | |
| **Inactive Broad-winged Hawk, Sharp-shinned Hawk and Merlin** | Nest tree will be retained. | n/a | |

| | | | |
|---|---|---|---|
| **Pileated Woodpecker Nesting Cavities** | Cavity tree will be retained | | |
| **Deer Winter Concentration Area** | | Stratum I (core area) | Maintain a minimum 30% as critical thermal cover dispersed throughout the stratum |
| | | Stratum I and Stratum II (yarding area) | Maintain a minimum of 60% in conifer canopy; up to 80% if possible. |
| | | Stratum III (year-round range) | Maintain a shifting mosaic of 10-15% of the summer range as openings where possible. |
| **Ginseng** | Patch plus 20m from patch edge. Trees are not to be felled into reserve; trees accidentally felled into reserve must be left | 120m | Maintain a minimum of 70% canopy closure. Winter harvest only is permitted. Employ all available BMP's to reduce potential impacts from the introduction of invasive plants. |
| **Butternut (Bn)** | No live Bn to be harvested unless deemed hazardous. No Reserve | Isolated Bn scattered within stand | Ensure all retainable Bn are not damaged during harvest. Consider creation of group openings (approximate diameter equal to stand height) in close proximity to retainable Bn |
| | | Bn > 10% of stand | Consider application of group selection system to favour Bn regeneration throughout stand. |
| **White oak** | No Reserve | n/a | Identify and retain all healthy specimens; utilize proven red oak silvicultural practices; consider seed collection and assisted dispersal. |
| **Archaeological sites** | No Reserve | Forest stand boundary | Forest operations must not disturb soils, including road or landing construction. |

| | | | |
|---|---|---|---|
| **Old homestead remnants including foundations, stone fences, rock piles**<br><br>(Both cultural and potential habitat values man be present) | No Reserve | n/a | No disturbance is permitted. |
| **Trails** | No Reserve | n/a | Trails should be cleared of logging debris and left safe and passable to the degree possible. |

### 5.3.5 High Conservation Values

The concept of identifying, maintaining or enhancing areas of ‘High Conservation Values’ is an established principle of the Forest Stewardship Council. The first version of this plan adopted this approach and classified forest stands with the following features having high conservation values: wetlands, riparian zones, seeps or a high-water table, species at risk, regionally uncommon species, old growth, cultural significance, Areas of Natural or Scientific Interest (ANSI).

Revised assessment guidelines established through the Forest Stewardship Council, enhanced consultation, and continuous information gathering has led to a more robust HCV assessment. Six broad HCV classifications are identified at the stand level of the County Forest, providing additional guidance on management options.

A precautionary approach is adopted in all areas to ensure that forest management or other development such as trails does not adversely impact the identified sensitive feature.

These values are identified and managed at the forest stand level to ensure that all values are captured and considered appropriately when making management decisions. Information used to determine these values comes from a wide variety of sources, including staff observations, outside experts, consultation, provincial data, etc. As a result, total areas identified evolves regularly; as such the table below ‘High Conservation Values - Forest Area Summary 2022’ is a snapshot in time.

A more detailed ‘High Conservation Values Report’ based on the most recent FSC Framework is modified annually and publicly available.

## High Conservation Values - Forest Area Summary 2022

| Classification | Description | SCF components | Area (ha) |
|---|---|---|---|
| HCV 1 | Species Diversity Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant* at global, regional or national levels. | Species at Risk, Important Bird and Biodiversity Areas, Potential Bat Roosting Habitat, White Oak | 1,190 |
| HCV 2 | Landscape level ecosystems and mosaics. Intact Forest Landscapes and large landscape-level ecosystems and ecosystem mosaics that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance. | N/A | 0 |
| HCV3 | Ecosystems and habitats. Rare, threatened, or endangered ecosystem, habitats or refugia | Provincially Significant Wetlands, Areas of Natural and Scientific Interest. | 2,655 |
| HCV4 | Critical ecosystem services. Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes. | N/A | 0 |
| HCV5 | Community needs. Sites and resources fundamental for satisfying the basic necessities of local communities or Indigenous Peoples (for example for livelihoods, health, nutrition, water), identified through engagement with these communities or Indigenous Peoples. | Hardwood Hills Exclusive Use Agreement, Simcoe County Museum Property. | 268 |
| HCV6 | Cultural values. Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or Indigenous Peoples, identified through engagement with these local communities or Indigenous Peoples. (Source: FSC 2011). | Archaeological sites, potentially significant sites outside of existing HCV Framework. | 926 |
| Total HCVF Area | 4,334 ha (Note: 705 ha fall into multiple classifications) | | |
| Total SCF Area | 13,468 ha | | |

# 5.4 Forest Protection

## 5.4.1 Insects and disease

As described in Section 3.5.1, a wide range of insect and disease factors play a significant role in the health of individual trees and the development of forest stands. Occasionally, conditions may arise which threaten the health of a particular species or group of species to the degree that intervention is considered. As such, ongoing monitoring is required:

- The MNRF provides forest health monitoring through a Forest Health Technical Specialist and regular forest health updates.
- The Canadian Forest Service (CFS) conducts research on forest health issues and provides technical support.
- The Canadian Food Inspection Agency (CFIA) is a regulatory body responsible for reducing the introduction or export of insects or disease particularly where international trade may be compromised.
- County staff monitor forest health as part of regular forest inspections. Specific county-led monitoring programs have also been undertaken as is the case with pine false webworm, emerald ash borer and spongy moth.
- Partnerships between the County and other agencies are a regular occurrence to identify potential pests, determine the level of risk, and assess potential control methods.

The decision to initiate control measures is the responsibility of the County Forester. Where anticipated costs for recommended control measures are beyond approved budgets, approval must be obtained from Council.

## 5.4.2 Fire

Planning, responsibility, and investment in controlling fire in the SCF has changed dramatically in recent decades. Previous plans indicate substantial MNRF involvement in the creation and annual maintenance of fire guards, and ponds or cisterns for water storage on most properties. 'Duty Officers' were also on call outside of business hours. A fire protection plan was updated annually which listed the locations of fire suppression

equipment, personnel, and water sources. Local municipalities were responsible for initial attack. The substantial investment in prevention and control proved successful at keeping losses from fire extremely low.

Currently, agreements have been in place with all area municipalities since 1999 which establish responsibilities for firefighting. Local fire departments remain responsible for all necessary firefighting; associated costs for suppression in the SCF are charged to the County. The MNRF provides training and advice through regional 'fire advisors'; MNRF fire support could also be called in under extreme circumstances if requested by the local Fire Chief. The County is responsible for purchasing and maintaining five caches of portable wild land firefighting equipment housed with local fire departments.

Efforts are currently ongoing to ensure the accurate and consistent emergency numbering of SCF properties.

## 5.5 Recreational Use

In the conclusions drawn by E.J. Zavitz in his influential 1909 report '*Reforestation of Waste Lands in Southern Ontario'*, he states: "The policy of putting these lands under forest management has many arguments in its favour. It will pay as a financial investment; assist in ensuring a wood supply; protect the headwaters of streams; provide breeding ground for wild game; provide object lessons in forestry; and prevent citizens from developing under conditions which can end only in failure." In addition…" these areas should be preserved for the people of Ontario as recreation grounds for all time to come." It is in this spirit that the SCF has remained available for a wide range of recreational activities to this day.

The management of the SCF by the province until 1996 also played a role in its public use as provincial staff were managing crown land parcels in tandem. As such, the public have historically viewed the SCF as 'crown' land, and permitted uses were generally identical. Increasing population levels and expectations, however, combined with a substantial increase in the popularity of All Terrain Vehicles (ATV's), led to the need for the County to review permitted uses of the SCF. The result, following an extensive public process, was the adoption of a Recreational Use Policy in June 2006. An update to this policy and associated by-law was completed in 2018. The policy attempts to reduce conflict and limit the liability of the County using Property Use Agreements for all organized activities including individual events and long-term trail use.

Since the introduction of the Recreation Policy, understanding and compliance has increased, and improved communication has resulted in beneficial relationships between various user groups and County staff. With the increasing levels of use and associated growth in club membership and designated trails, achieving a sustainable level of forest use in future will require continued effort. Protection of High Conservation Values must take precedence as does the ability to continue to manage the SCF for multiple purposes.

## 5.6 Property Maintenance

In the early decades of the development of the SCF, property protection and maintenance activity was much more intensive. Significant resources were invested in fencing and the creation and maintenance of fire guards to protect the substantial investments being made in reforesting vast acreages. A 1960 report described that, in addition to the five full-time forest superintendents and assistants, approximately 70 summer students were hired annually to assist with property maintenance. Fire guards and access roads were still being maintained annually until 1991/92.

Current maintenance and infrastructure improvements are intended to serve the following purposes:

- Maintain access for management purposes and emergencies;
- Identify and delineate SCF properties and inform the public through adequate signage;
- Protect County property and assets including timber;
- Reduce unauthorized activities;
- Improve public safety.

**Forest Access Roads**

Maintenance of forest access roads is generally only completed as required for forestry operations. In most cases, harvest contractors are responsible for completing any needed road improvements as per the timber sale terms and conditions. The County may, however, provide gravel or other material where road and/or landing enhancements are of mutual benefit. The County has also traditionally been responsible for new entrances or enhancements to existing entrances including culverts.

Additional maintenance is also completed where safety is of concern, particularly where water erosion has created gullies on steep sections and to reduce severe rutting and ponding in wet areas. This work is completed when possible with the assistance of County Roads crews during off-peak times to reduce costs. Designated snowmobile trails are maintained by area clubs as per the Property Use Agreement; as these trails are also primary access roads this trail maintenance provides a benefit by facilitating access for forestry purposes.

Before 2007 and the Recreation Policy implementation, vehicular use by the public played a role in keeping forest roads open by reducing vegetation and overgrowth. Where a minimum level of access is required for management and/or emergency purposes, an increased level of road maintenance may be required in future. The construction of new access roads will be carefully considered and minimized to the degree possible.

### Entrances

Although signs are placed at each main entrance, physical barriers are required to reduce vehicular traffic and dumping. Approximately 210 of 540 primary entry points have been gated, blocked, or cabled to date, with additional installations occurring annually on a priority basis. Openings vary depending on existing uses – 38" is left for passive uses (Hiking, Cycling, Horseback Riding), and 62” is left where designated ATV trails exist. In cases where properties have more entrances than required, ditching or other means may be used to cost effectively limit vehicle access.

Parking or staging areas at major trail-head locations have been installed to improve safety in several well-used locations. Winter maintenance of parking areas began in 2019 with 14 Lots being plowed to date. Parking enhancements are prioritized based on the increase in recreational use and where safety concerns arise.

### Designated Recreational Trails

Trail development and use occurred in a haphazard and unauthorized manner for many years prior to the Recreation Policy. As per the Policy, designated trails now require a Property Use Agreement which clearly establishes roles and responsibilities. Staff will need to continue to work proactively with trail proponents to establish trails which reduce conflict, promote safety, and are environmentally responsible. Designated trails are monitored and maintained by Property Use Agreement holders only; Forestry staff do not maintain trails for recreational use.

### Signs

Three main sign types are currently in use to identify SCF Tracts, inform the public regarding permitted uses and define property boundaries:

- Large Simcoe County Forest ‘Tract’ signs are installed in highly visible locations;
- Signs detailing permitted/restricted activities are installed at all primary access points;
- Property boundary signs are installed at all boundary points along road frontages.

The large inventory of signs requires ongoing maintenance, repair and replacement including vegetation removal to ensure visibility.

SCF tracts have been signed with 911 numbers for emergency purposes; however the unique circumstances associated with County Forest properties has resulted in some inconsistencies. Tracts with multiple entrances are problematic and require a unique approach. Most main access points along public roadways are identified with an address sign.

**Property Boundaries**

Property boundaries should be visible to staff and the public to protect the interests of the County and neighbouring property owners. In particular, recreational users should be aware if they are venturing onto private lands. Many property lines which were once fenced have deteriorated to the extent that they are no longer visible or may only be found in some locations. Locating and re-establishing these property lines is conducted by staff on an as-needed basis. In rare cases, surveying is required to locate and establish property boundaries.

**Garbage**

Illegal dumping remains a significant issue with an average of approximately 15,000 kg collected annually from the SCF. Debris is always removed as quickly as possible to reduce hazards and reduce the likelihood of further dumping in the same locations. The ongoing installation of gates helps to reduce opportunities for illegal dumping over time, as does increased public use.

## 5.7 Property Acquisition / Disposition

The accumulation of properties which make up today’s SCF are indicative of an incredibly long history of vision and political commitment. The future growth of the SCF will require the same; however a continued focus on wise fiscal management and application of good forestry practices will provide opportunities for growth.

The reasons for the continued growth of the SCF have changed over the decades, yet it remains an important priority today. The public ownership of lands which protect a

range of natural heritage features and functions will continue to grow in importance, as will the availability of these lands for recreation as the population increases. Continued expansion will also help ensure the economic sustainability of the SCF.

Criteria were established in 1996 which recommend that the County continue to actively pursue the purchase of properties. The adoption of of the SCF 'Growth, Investment & Protection Policy in 2020 provided for more current acquisition principles:

The continued strategic expansion of the County Forest will enhance the environmental, social, and economic benefits it provides. Priority will be given to acquire available lands which:

- Enlarge or consolidate existing SCF tracts;
- Provide opportunities for forest restoration / management;
- Contribute to natural heritage protection;
- Increase or protect woodland cover in underrepresented areas of the County.

These broad principles may be refined upon the adoption of targets for woodland cover and/or the completion of a more detailed Acquisition Strategy.

Properties have historically been named after the former landowner. In some cases, tract names have been established or changed to recognize the significant contribution of an individual to the County Forest. Changes may also be recommended to provide clarity; particularly where duplicate names exist and when several separate acquisitions are combined into one management area. In all cases, approval from County Council is required.

## 5.8 Promotion of the SCF and the Sustainable Management of Our Forests

Fostering awareness and knowledge of the SCF, its natural and cultural heritage values, and its sustainable management is extremely important in building and maintaining an awareness of the contributions made by our forests. The SCF provides a unique opportunity to improve understanding and support for sustainable forest management as they may be the only lands where the public is exposed to active forest management. Although many in the forestry community are aware of the substantial contributions, an enhanced effort will be required to build understanding and maintain public support. Specific tactics are detailed below; however additional opportunities may arise which will be considered and implemented as time and resources allow.

### Communications prior to Harvesting or Tending Operations

Forestry operations can elicit questions and concerns from the public, particularly those who are not familiar with witnessing active forest management. Staff will continue to treat all questions with respect and consider it an opportunity to educate the public and promote the SCF. Improved communications with neighbouring property owners prior to start-up will provide similar opportunities. In highly visible locations and well used properties, enhanced communication may include more descriptive signage on site before or during operations and/or media releases. A detailed communications protocol is utilized to ensure complete and timely communications to all stakeholders including neighbours, recreation clubs and local municipalities.

### Public Outreach

Opportunities to present to various interests, organizations and clubs will be seized when possible. Media requests will continue to be considered an excellent opportunity to enhance the profile of the SCF.

### Partnerships

Forestry staff will continue to work cooperatively with various partners to provide information and education most effectively to the public. Examples include Forests Ontario, Canadian Institute of Forestry, MNRF Stewardship Councils, Conservation Authorities, Land Trusts, Loggers Association, Woodland Owners Association, etc. Contributions may include the use of SCF properties for tours or demonstrations, or staff may provide expertise or other contributions toward landowner workshops or other educational initiatives. Forest tours or workshops may include many aspects of forest values.

### Website

A forestry website is maintained and updated that provides information on recreational use, active forest operations, history, and management of the SCF and useful information and resources for residents and landowners. Continued updates and improvements to the website will be an important objective and provide an opportunity to communicate.

### Continued Contact with Recreational Users

Regular contact with recreational users, including an annual meeting, has resulted in improved cooperation amongst various interests in the SCF and provided staff with allies in educating the public about the Recreation Policy. It has also provided an opportunity to improve the understanding of the various groups about the SCF and the importance of maintaining active forest management.

**Tours**

Tours of various tracts and management areas will be organized annually to improve the understanding of the general public of the history, objectives, and management techniques employed in the SCF.

## 5.9 Research

The County Forest has been utilized for many years for a variety of research initiatives to gain a better understanding of forest growth, management, and protection. Although the County is not a research-based agency and does not assume the lead role, contributions have included research locations, staff time, and/or funding.

Information on the growth of forests and anticipated future yields is vital for forest managers to project timber volumes, revenues, and ensure sustainability. This information depends upon the establishment of 'permanent sample plots' (PSPs) where a defined area is established in a particular forest and several factors are measured over many years. This requires a stable land base like the SCF and a long-term commitment from the research lead and the landowner. A renewed partnership began in 2008 with the County assisting the MNRF by taking a more active role in the location and measurement of PSPs in the SCF. Efforts have been made to accurately locate and map PSPs which has reduced the confusion which has resulted in the past when they were found in the field unexpectedly. All active PSP's within the SCF are regularly measured by forestry staff and MNRF staff to provide valuable data for forest monitoring and analysis.

More recent research initiatives include a study on the biological herbicide Lalcide Chondro, which utilized sites in the SCF. Two other studies, with one ongoing, and one completed have looked at the effectiveness of Rotstop C Biofungicide under different conditions and against different root diseases. Additional sites and assistance have been provided to studies into the ability of the larvae of the Hypena opulenta moth as a biocontrol for the invasive plant, dog strangling vine. These are in addition historical research initiatives including two studies related to forest succession and the establishment of native understory plants in mature pine plantations, a study to determine the cause of red pine decline, a study of the impacts of Sirex wood wasp in plantations, an operational spray trial to test the efficacy of Gypchek for the control of Spongy Moth, Pine False Webworm monitoring and control options, and many others. Research sites have generally been provided upon request and funding and/or staff time provided where there is a potential benefit to the County and as budgets allow.

While it is anticipated that future contributions will be made in the same manner, a more proactive role should be taken by the County to identify information gaps and promote and fund research accordingly.

Potential research priorities include the following:

- Implications or impacts to the forest ecosystem because of climate change;
- Assessing the type and amount of recreational use in the SCF and any resulting impacts to the forest;
- Under-represented forest types are not known outside of staff knowledge and experience. No assessment or inventory of other forest species has been conducted.

Continued cooperation with existing and potential partners will help to ensure that management decisions in the future are based upon the best possible science, and that the SCF continues to contribute to a broader knowledge base which benefits the larger community.

# PART 6 MONITORING / REPORTING

## 6.1 Annual Reports

In addition to budgeting, annual reporting is critical to provide the information needed to track trends, monitor performance, and establish records for future analysis.

Annual reports will include:

- Property acquisitions and sales
- Timber sales summary including volume by species, total area, and revenue
- Other silvicultural operations including tree planting, stand tending, etc.
- Invasive species monitoring and control
- Infrastructure maintenance and improvements including signs, gates, garbage removal, etc.
- Property Use Agreements
- Research initiatives
- Partnerships / extension services
- Special projects

## 6.2 Five-Year Review

Although the 2011-2030 forest plan is intended for a twenty-year period, a staff review at five-year intervals continues to provide an opportunity to monitor progress and make any required adjustments. Modifications resulting from improved data (which may alter HCV's) and land acquisitions will be incorporated into the plan.

# PART 7 APPENDICIES

## 7.1 Related Policies and By-laws

- Growth, Protection and Investment Policy
- High Conservation Values Report
- Integrated Pest Management Operations Guidelines
- Invasive Species Management Strategy
- Property Use Agreement Policy
- Recreation By-law
- Recreation Policy

## 7.2 References


Armson, K.A. 2001. Ontario Forests – A Historical Perspective. Ontario Forestry Association.

Buckman, R.E., Bishaw, B., Hanson, T.J. Benford, F.A., 2006. Growth and Yield of Red Pine in the Lake States. United States Department of Agriculture Forest Service; General Technical Report NC-271.

County of Simcoe Official Plan; Office Consolidation February 2023.

Forest Certification Program Policy and Procedures Manual. 2007. Eastern Ontario Model Forest Information Report No. 51 V. 2.

McLaughlin, J.A. et al, 2011. Abiotic and biotic factors used to assess decline risk in red pine plantations.

Ontario Invasive Plant Council, 2011. http://www.ontarioinvasiveplants.ca

Ontario Ministry of Natural Resources, 2010. http://www.mnr.gov.on.ca/en/Business/Species/index

Ontario Ministry of Natural Resources. 1986. Evergreen Challenge – The Agreement Forest Story. Queen's Printer for Ontario.

Ontario Ministry of Natural Resources. 1986. Managing Red Pine Plantations. Queen's Printer for Ontario.

Ontario Ministry of Natural Resources. 1994. Policy Framework for Sustainable Forests. Forest Policy Series. Forest Policy Section; Forest Management Branch; Forests Division.

Ontario Ministry of Natural Resources. 2000. A Silvicultural Guide to Managing Southern Ontario Forests, Version 1.1. Ontario Ministry of Natural Resources. Queen's Printer for Ontario.

Ontario Ministry of Natural Resources. 2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Toronto: Queen's Printer for Ontario.

Ontario Ministry of Natural Resources. 2010. Forest Management Guide for Great Lakes - St. Lawrence Forests. Toronto: Queen's Printer for Ontario.

Parton, J. 2018. Introduction to Ontario's Growth and Yield Program. Ontario Ministry of Natural Resources and Forestry. http://www.forestryfutures.ca/upload/464883/documents/ 716DEC9B0EC61A50.pdf

Penner, M., & Pitt, D. 2019. The Ontario Growth and Yield Program Status and Needs– Report to the Forestry Futures Trust Committee.

United Counties of Prescott and Russell, 2009. The United Counties of Prescott and Russell County Forest Lands Forest Management Plan 2009-2028.

Schwan, T.D. and Elliott, K.A., 2010. Effects of diameter-limit by-laws on forestry practices, economics, and regional wood supply for private woodlands in southwestern Ontario; Sept/Oct 2010. Vol 86. No. 5 – The Forestry Chronicle.

Sutherland, E. 1983. Management Plan for the Simcoe County Forest of the Huronia District 1983 – 2003.

Van Sleeuwen, M. 2006. Natural fire regimes in Ontario. Ontario Ministry of Natural Resources, Queen's Printer for Ontario.