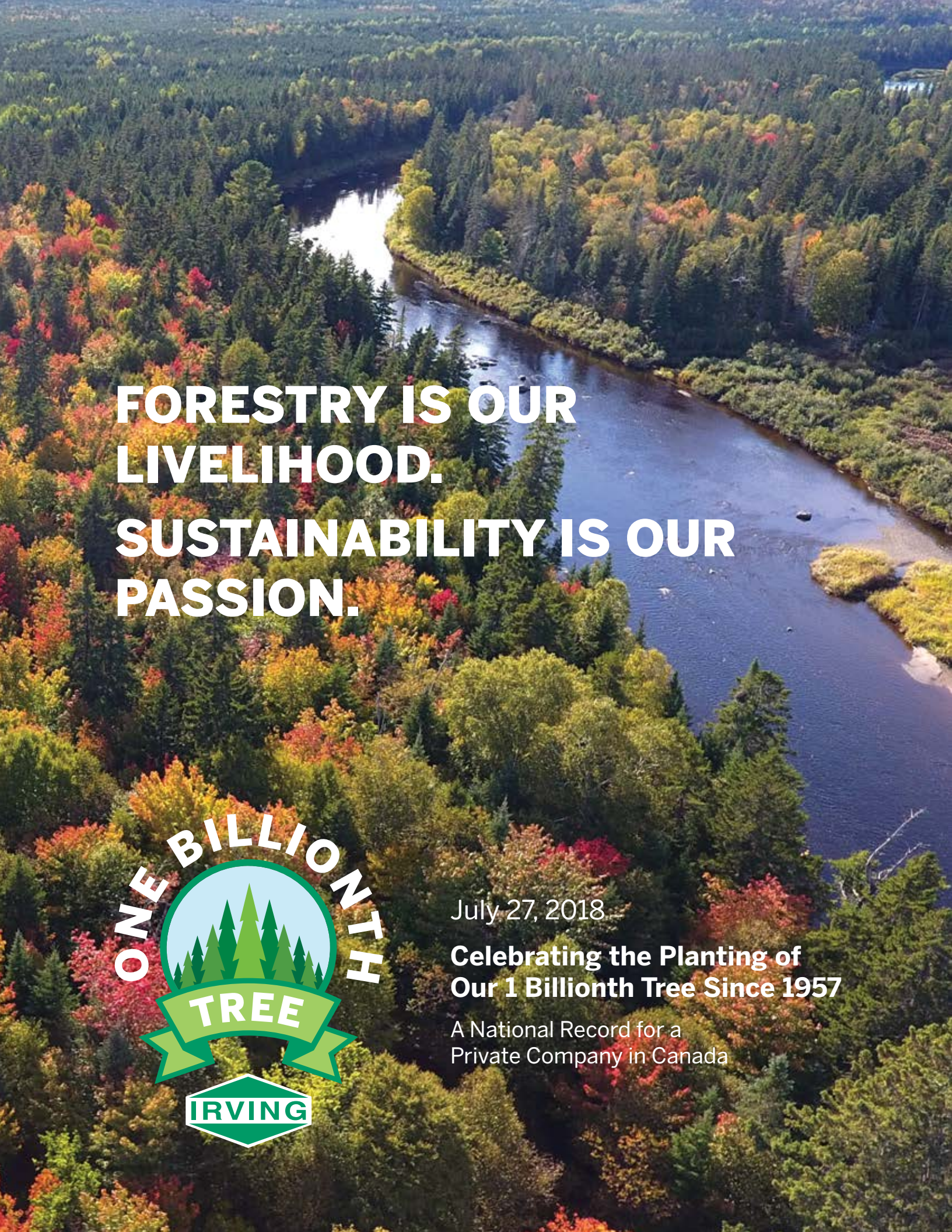

FORESTRY IS OUR LIVELIHOOD.
SUSTAINABILITY IS OUR PASSION.
ONE BILLIONTH
TREE
IRVING
July 27, 2018
Celebrating the Planting of Our 1 Billionth Tree Since 1957
A National Record for a Private Company in Canada

Today we celebrate the planting of the billionth tree at J.D. Irving, Limited. It is an historic milestone on a very rewarding journey. Back in 1957 there were many who questioned why we needed to plant trees and others who doubted it would ever work. We persevered. Over the past sixty years we learned, and tried many new ideas to ensure healthy growing forests for the future. It has made a powerful difference. Today we are growing more wood than we harvest every year and our forest products businesses have grown with our commitment to planting trees. Impressive results!

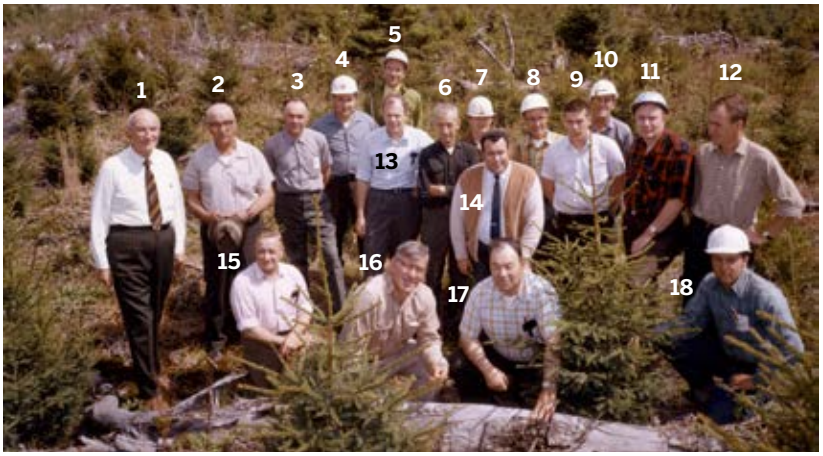
From the very beginning we've always seen caring for the forest as an important responsibility. This promise goes back generations and it continues today.

One billion trees planted is a generational team effort that we can all be proud of. Growing trees has meant growing jobs, new scientific discoveries, investment and a positive impact on the place we are proud to call home.

While the number of trees planted is important, the number of great people who have been part of this 60+ year story are the reason we celebrate! Past and present, I want to thank everyone who has shared this passion for renewing the forests where we live and work.

J.K. Irving

THE EARLY YEARS – 26 MILLION TREES PLANTED (1970)



1. K.C. Irving 2. Frank Soucy 3. Edmund Dupéré 4. Roland Boutot
5. Neils Kreiberg 6. Fred Pelletier 7. Bernard Michaud 8. Théodule Thériault
9. Henri Thériault 10. Raymond Fournier 11. J.K. Irving 12. Arthur Irving
13. Jack Irving 14. W.R. Duffie, NB Minister of Natural Resources (1966-1970)
15. Irené April 16. Pat Marceau 17. Joe Picard 18. Normand Sirois

1950s

It was a big idea that began small. In 1956 the trees on Black Brook Hill near St. Leonard, New Brunswick were harvested for community firewood. J.K. asked Mr. Barkhouse, the company forester at the time, what he thought about the site as a place to plant trees.

Mr. Barkhouse thought is was a good site and was soon dispatched to the provincial tree nursery at Welsford, N.B. In 1957, 3000 white spruce were planted on Black Brook Hill. It took two men with shovels, planting 600-700 trees a day.

Shortly after, K.C. Irving came to visit. He was impressed by J.K.'s reforestation efforts.

After much searching, Juniper, N.B. was chosen as the nursery site in 1958. Thrity-five acres (14 hectares) were cleared and planted. The goal was to produce 1 million seedlings. And so our tree planting journey began!

"My father, K.C. Irving, was very interested in our first planting effort in Black Brook. He bought in! It became a passion and for the decades that followed he would enjoy many days in woods measuring our progress."

J.K. Irving

1957 - 1958

3000 seedlings planted at Black Brook

Juniper Nursery site cleared

35 acres / 14 hectares planted

GOAL: 1 million trees

1960s

- Tree planting expands rapidly from over 1 million trees planted in 1963 to over 4 million by 1968
- Fall 1969 – Construction of the 1st greenhouse begins
- All of the trees were bare root stock

1963

1 Million trees planted

1969

23 Million trees in nursery inventory

2-2 BARE ROOT STOCK

Seeds sown in seedbeds grow for 2 years followed by 2 years in the transplant beds before going to the woods for final planting

The first greenhouse under construction in Juniper

Planting seedlings into transplant beds

Laying the beds to grow the first seedlings at the Juniper greenhouse

Undercutting seedlings in seed beds for transplanting

1970s

1977
100 Millionth Tree is Planted

Growing and planting
4 Million
trees/year to over
12 Million
in 1979

Further expansion of the greenhouses in the early 1970s

Seedling Production and Planting
1960s and 1970s

Lifting and baling 2-2 transplant seedlings for shipping to planting sites

Bundling

Tree planting was carried out using shovels with planters lined up behind a marked rope to make the correct spacing

Nursery automation for container seeding production

All seedlings now produced in plastic multipot trays

4 Scandinavian greenhouses built (28,000 ft² each)

1986

200 Millionth Tree is Planted

1980s

- 1984 the company starts planting on Crown Lands
- Bare root seedling production phased out
- Nursery automation for container seedling production implemented
- 1988 a fourth large greenhouse built
- Tree improvement program begins at Sussex
- Tree planting begins in Maine

Seedling production rises to 15 Million/year

PARKINDALE, NB SEED ORCHARD IS ESTABLISHED

- Grafted trees from superior trees across the region are planted in 1983 for seed production in 1988
- 2 out of every 3 of the billion trees planted come from seed orchards

1990s

Retractable shades in seedling holding areas provide frost protection

Snow making capacity expands. Seedlings are moved outside and are protected over the winter with a layer of snow from snow-making machines

Together, the New Brunswick Forest Industry celebrates the planting of 1 Billion trees in the Province (1997).

Juniper Tree Nursery (2003)

New greenhouses built

Production rises to 24 Million seedlings/year

2000s

Seedlings by the Numbers:

6 Greenhouses

1.9 Million seedlings in each greenhouse

2 crops per year

Sowing **2 million** seeds a week

It takes **a week** to fill a greenhouse

Up to 3 species of seedlings in each tray

2010 - PRESENT

Dr. David Miller

DISCOVERIES AND PATENTS

Dr. David Miller of Carleton University has worked with JDI for over 20 years studying spruce budworm to reduce the impact of future epidemics. Miller identified a naturally occurring fungi in the needles of the trees which improves tree tolerance to spruce budworm. The discovery has led to international patents in Canada, the U.S., Russia, Australia and European Union. To date, over 150 million seedlings have been inoculated with these beneficial fungi.

Spruce budworm

Astronaut on board the NASA space station carrying JDI seedlings

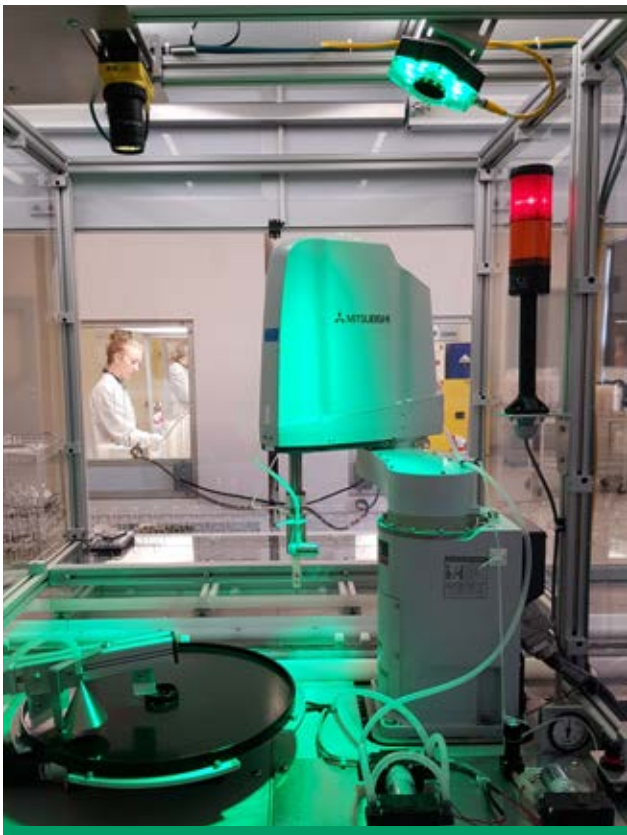
TREES IN SPACE

In April 2010, 18 of our seedlings blasted off from NASA's Kennedy Space Center. The trees are being studied while growing in zero gravity as well as on earth to help scientists understand the basic biology of wood formation (no plans to grow forests in space!). JDI was asked to provide seedlings based on our longstanding history of tree improvement and research.

CARBON SEQUESTRATION

Trees are Nature's air filters. The average tree can absorb up to one tonne of CO_2 over its life span. JDI has planted 1 billion trees since 1957. In partnership with University of New Brunswick's Dr. Chris Hennigar, we assessed our carbon footprint from seedling to store shelf – including carbon absorbed by growing trees, carbon emissions through harvesting, transportation, manufacturing, as well as storage and eventual release of carbon in wood and paper products over time.

Dr. Chris Hennigar



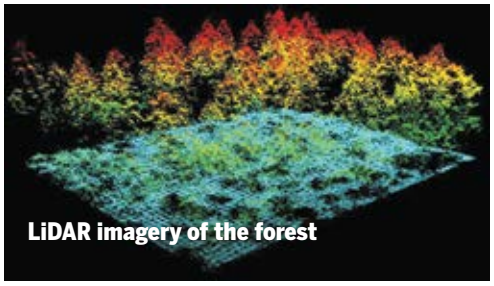
Maritime Innovation Limited

New 7800 square foot state-of-the-art laboratory built in Sussex

"Over the past 20 years, J.D. Irving, Limited has invested over $25 million in forest research and tree improvement. This new state-of-the-art research facility will allow us to concentrate our efforts in one centre of excellence, increasing our research capability and technological capacity. We look forward to this facility contributing to other areas of scientific discovery in the years ahead."

Jim Irving
Co-Chief Executive Officer
J.D. Irving, Limited

HIGH TECH FOREST SUSTAINABILITY


LiDAR imagery of the forest

200 million data points of 25 billion forest attributes

• JDI was an early adopter of Geographic Information System (GIS) in 1984. Initially, it was used as a system of record for the 6 million acres (2.4 million ha) of land we manage. Today we have a hyper-accurate scan of our forest, thanks to Light Detection and Ranging (LiDAR) technology which has radically changed the way we see the forest.

- This intelligence allows for the right type of harvesting, at the right time, in the right place while safeguarding the environment, and meeting the demands of the variety of products in our supply chain.
- During logging planning, tablets enabled with Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technology allow the foresters to locate harvest areas and map physical, environmental, and operational constraints on the ground. This technology allows for a site specific digital map and work order explaining the best plan of action and location for operations. Foresters can also send updates to the system from their on-the-ground assessments.
- State-of-the-art technology enables the delivery of more than 20 forest products to over 30 mills on a road system of over 28,000km.

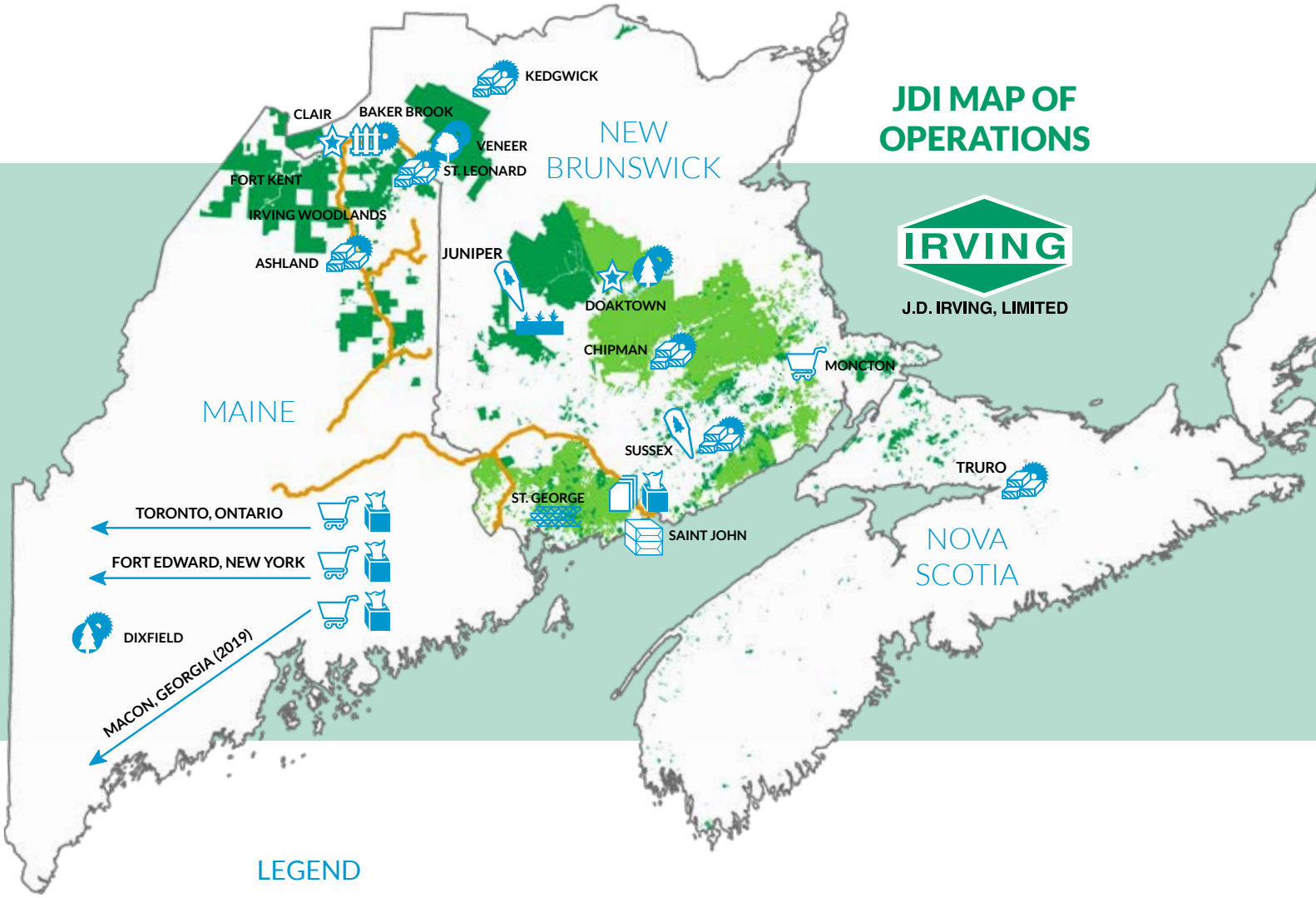
2015 GUINNESS WORLD RECORD

100 tree planters, 60 minutes, over 53,000 seedlings planted. Near Sussex, NB on May 20, 2015. The previous Guinness World Record of trees planted in one hour was set in 2012 in India where 40,000 trees were planted.

JDI MAP OF OPERATIONS

IRVING

J.D. IRVING, LIMITED



LEGEND

- FREEHOLD LAND
- CROWN LAND
- RAIL LINES

SAWMILLS

- HARDWOOD
- SPF* LUMBER
- WHITE PINE
- CEDAR

- PULP (NBSK**, NBHK***)
- PAPER
- CORRUGATING MEDIUM
- TISSUE

- CONSUMER PRODUCTS
- SPECIALTY WOOD PRODUCTS
- TREE NURSERIES

*Spruce Pine Fir
**Northern Bleached Softwood Kraft
***Northern Bleached Hardwood Kraft

STRONG ROOTS

A VALUE CHAIN THAT GROWS WITH TREES

ECONOMIC **ENVIRONMENTAL** **SOCIAL**

Conservation
1,454 high biodiversity and Unique Areas protected – 24% increase since 2014

14,900
direct, indirect and induced jobs (Canada and US)
Note: 4,600 direct

$936 Million
in total wages (direct, indirect and induced)

$1.2 Billion
in purchases from local suppliers

Sustainability at J.D. Irving, Limited . . . . . .

THEN – 1957

2 Sawmills
35M board feet/year

1 Pulp Mill
63,500 tonnes/year

Forestry
3000 trees planted

TODAY – From Seed to Shelf

2017 WINNER OF THE SUSTAINABLE FORESTRY INITIATIVE (SFI®) LEADERSHIP IN CONSERVATION AWARD

Paul Trianosky, SFI; Scott MacDougall, JDI; Jason Killam, JDI; Andrew Willett, JDI; Jason Limongelli, JDI; Jim Irving, JDI; Kathy Abusow, SFI; Karla Guyn, Ducks Unlimited Canada

From small beginnings, jobs and operations have grown with the trees we have planted. From seedlings to tissue on the store shelf our integrated value chain continues to grow jobs and new markets.

Sustainability is Our Focus

1. Healthy Environment
2. Growing and Engaging People
3. Vibrant Communities
4. Strong Partnerships for Business Success
5. Safe and Efficient Operations

$885 Million
in Capital Investment (2013-2017)

Zero
Environmental non conformities since 2015 on 145 criteria as measured by FSC, SFI and the New Brunswick Department of Natural Resources

17%
Overall Reduction in Recordable Incident Rate since 2014

JDI Helps
Rooted in community!

Over **$1.9 Million**
in community donations and scholarships (2016-2017)

Over 135 years of quality products and service to valued customers.

TODAY

10 Sawmills
1.2B board feet/year

Pulp, Paper & Tissue
1.15M tonnes/year

Forestry
20M trees planted/year

SFI LEADERSHIP IN CONSERVATION AWARD

"J.D. Irving stands out as a research leader that engages universities and conservation partners year after year. As Canada marks its 150th anniversary we are pleased to recognize J.D. Irving, Limited, whose roots in forestry go back 135 years."

Kathy Abusow, President and CEO of SFI Inc.
September 2017

SFI is the largest environmental certification program for forests in North America.

SUSTAINABLE FORESTRY INITIATIVE
SFI-00032

All forests owned or managed are Sustainable Forestry Initiative® (SFI) certified

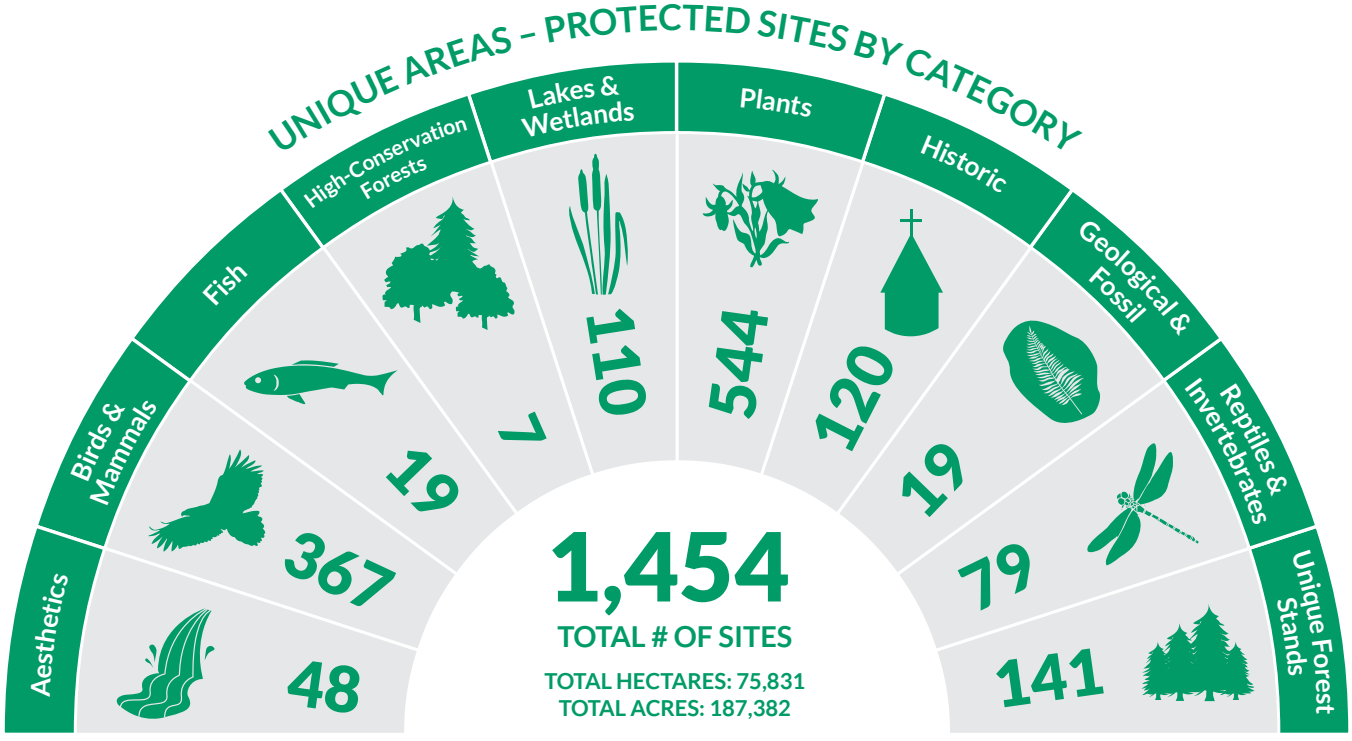
FSC
www.fsc.org
FSC® C041515
The mark of responsible forestry

All Maine woodlands are Forest Stewardship Council® (FSC® C041515) certified

MORE THAN JUST TREES

VOLUNTARY RESEARCH AND CONSERVATION LEADERSHIP

- **Unique Areas Program** – Growing from 29 sites in the 1980's to more than 1,450 sites today, focused on protecting unique elements in working forests.
- **White Tail Deer Study** – Collaboration of 6 university, government, conservation and industry partners across New Brunswick and Maine. The deer research uses GPS tracking to observe 140 deer over the next four years to better monitor their habitats and how they are using different forest types throughout the year.
- **Songbird Study** – Partnering with Natural Resources Canada, Carleton University, and Environment and Climate Change Canada on a multi-year songbird habitat research project on JDI land in Northern New Brunswick. 100 acoustic devices, 400 hours of recordings, 323 sites identifying 93 bird species to date.
- **Collaboration for Atlantic Salmon Tomorrow** – A founding partner of CAST, which is a partnership of scientists, conservation groups and industry participants focused on saving wild Atlantic salmon. Today 10 scientists are at work on four projects using the best technology to count, grow and save wild Atlantic salmon populations.



67,396 ha
Old Forest Sites

JDI has set an objective to designate and maintain old forest within the working forest landscape. To date, more than 67,396 hectares (166,540 acres) have been designated towards meeting this objective.

TODAY

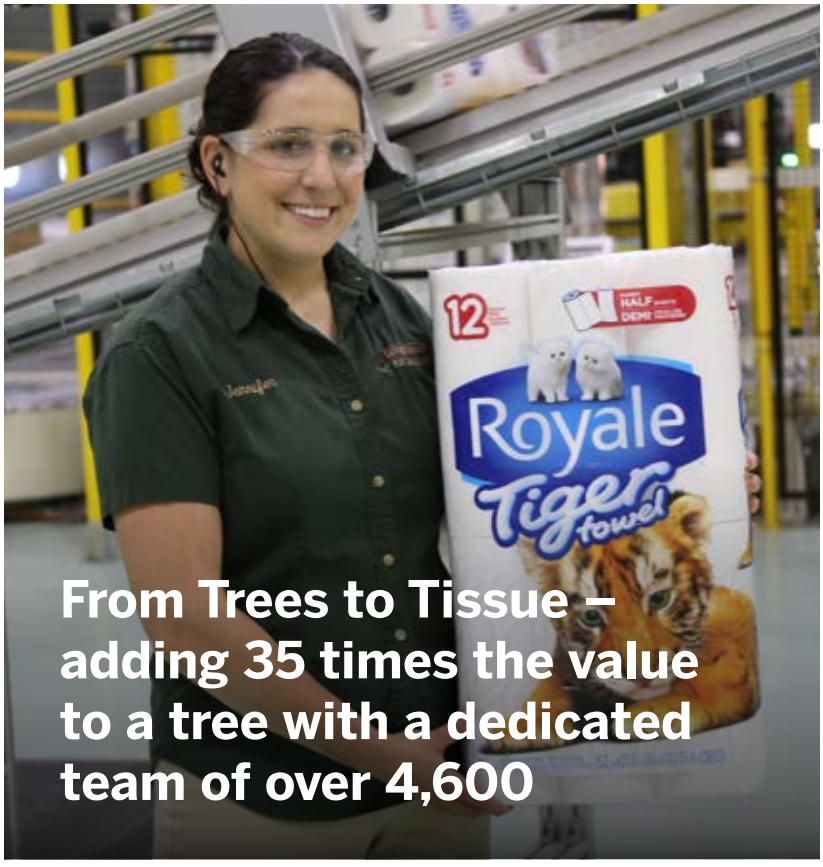
WORLD CLASS FACILITIES GROWING HEALTHY FUTURE FORESTS – A GENERATIONAL COMMITMENT

J.K., Jim, and Robert Irving

The difference since 1957?

4 times the tree growth and carbon sequestration!

(per acre/hectare)



From Trees to Tissue – adding 35 times the value to a tree with a dedicated team of over 4,600

Growing more than we harvest every year

$60,000 in Scholarships Annually to Tree Planters

$1.5 Million/year Forest Research

IRVING

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