IRVING

J.D. IRVING, LIMITED



STATEOF THE FOREST REPORT



Serge Doiron, **Operations Supervisor**, **NS Woodlands**



Andrew Cote, Maintenance. Juniper Tree Nursery



Nicole Kelly, **Regional Scaler**, Chipman Woodlands

Andrew Neilson,

Saint John

Financial Analyst,



Kayla Fox, HR Business Partner, Black Brook Woodlands



Watch Our Story

Kelten Fawcett, Tree Planter, **SNB** Woodlands



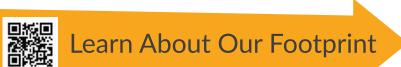
Marcus Smith. Heavy Equipment Operator, Sussex Garage



Lowell Sherry, Senior Stumpage Buyer, Nova Scotia Woodlands



Erin Popika, Silviculture Supervisor, Sussex Woodlands



A BETTER WAY, EVERY DAY

2022 Key Statistics

HEALTH AND SAFETY: NUMBER OF LOST TIME INCIDENTS:





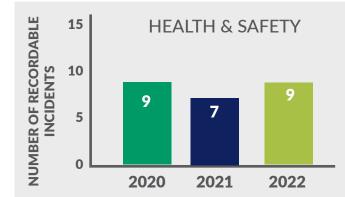


86%

Overall Woodlands Employee Engagement Survey Score

SEEDLINGS PLANTED IN 2022 18,754,777 14,872,422 SEEDLINGS PLANTED IN 2021











Tonnes Purchased

INVESTING IN TODAY FOR FUTURE GENERATIONS (FREEHOLD & CROWN L7)



PLANTATION CLEANING

10,582 HA 26,148 AC



PRE-COMMERCIAL THINNING

> 2,471 HA 6,106 AC

2022 YEAR IN REVIEW

A working forest works for all

anaging land for over 140 years has taught us that a well-managed working forest works for everyone. Working forests are more diverse, healthier, and therefore more resilient in the face of a changing climate. They work for our employees, our economy, our communities and provide necessary forest products such as lumber, paper and tissue that we use every day. Our harvesting and silviculture operations, together with our conservation forests, create a patchwork mosaic of different tree species, patch sizes, age classes, forest types and structural diversity. Because not every animal and plant uses every part of the forest equally, a well-managed working forest augments biodiversity and carbon sequestration while contributing to our economy and communities. The forests where we work are classified as the Acadian Forest type, a naturally diverse forest that lends itself to a multitude of treatments. This natural diversity, along with sustainable forest management, leads to climate resiliency, as demonstrated by our low levels of deforestation, occurrence of pest outbreaks and losses due to fire.

2022 saw a continuation of our time-tested strategy of sustainable forest management as the foundation of our forest products supply chain. Some highlights include: for the third year in a row, our supply chain was verified Carbon Neutral by KPMG thanks in part to the working forest; we continued to trial new technologies that will improve quality and safety of our operations and implement new analytics that improve the utilization of the resource and efficiency of our operations; we initiated a new research project with Dr. Tim White of the University of Florida to measure and describe the tree species diversity

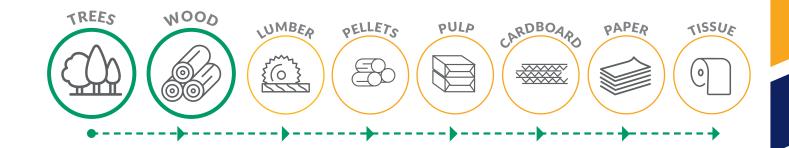
that exists on the lands we manage and continued to invest in long-term studies on habitat and forest ecology; we made significant investments in our operations, including the purchase of new, higher capacity firefighting aircraft to protect the forest from fire and pests; we continued to invest in our communities through various housing and community initiatives; we have significantly increased our annual tree planting capacity; and, in partnership with the Government of Canada, we contributed 10,000 hectares of our freehold conservation land to Canada's Target 1 Initiative through Other Effective Conservation Measures (OECMs). Currently, this is Canada's largest private land contribution to date.

Our State of the Forest Report provides key summary statistics on how our well-managed working forests contribute to biodiversity, to our communities, to our economy and to climate resiliency. We hold ourselves to the highest standards through independent forest certification like the Sustainable Forestry Initiative® and the Forest Stewardship Council[®] (FSC[®] CO41515). We continuously test our assumptions on forest management through independent peer-review science by experts in their respective fields. Finally, we look to improve our transparency and relationships with our stakeholders and communities so that they too can benefit from the forest. I sincerely hope you enjoy the report and invite you to learn more about our story at www.jdirvingsustainability.com

- Jason Limongelli Vice President, Irving Woodlands

OUR FOREST SUPPLY CHAIN INVESTMENTS

A working forest is good for the economy



\$389 Million

IN SILVICULTURE

MAKING IT HAPPEN





SUSTAINABILITY IS **OUR BUSINESS**

A working forest balances the short- and long-term values

or over 140 years, our approach to sustainability has been rooted in balancing the needs of the business with the long-term vision required to sustain generations of healthy, fast-growing and resilient forests. This requires a commitment to forest management best practices, growing more than we harvest and producing high-quality products that allow us to reinvest in lands we own or manage.

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DRIVING INCREASED TREE IMPROVEMENT FOR 45+ YEARS

Improving resiliency in the working forest



842,303,000 SEEDLINGS DELIVERED BY JDI NURSERIES SINCE 1961

ur seed orchard in Parkindale, New Brunswick is a 300acre site with seven species of softwood trees and two species of hardwood trees. More than 100 million seeds may be collected and processed in a year and the breeding and cone collection is guided by data from over 400 field trials. The seedlings we plant today are selected from families with genetics known to produce trees that are faster-growing, straighter, more adaptable to climate change and with an improved resistance to pests than those with unimproved genetics.

Meet Bridget MacNutt, a lab technician at Maritime Innovation Limited. For three years, she's been producing high-quality seedlings and working to drive process improvement. She's confident that with the help of having superior genetics and increased tolerance to insects and disease, the trees we're growing can survive and thrive for generations. "Sustainability is something I truly believe in and is something everyone benefits from. I'm glad to have the opportunity to h sustainable at work."



LANDS UND	ER IRVING M	ANAGEMENT
HECTARES	ACRES	
796,095	1,966,355	NB & NS Freehold
519,208	1,282,444	Maine Freehold
1,062,337	2,623,972	NB Crown License
2,377,640	5,872,771	Total

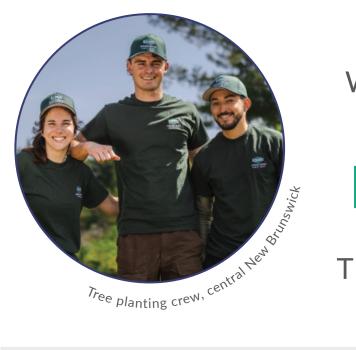




MAKING EVERY **ACRE COUNT**

Healthy working forests for generations

e can mitigate the effects of climate change by planting more trees to remove more carbon. With a variety of silviculture activities like site preparation, tree planting and thinning, our trained foresters plan to grow the right species on the right site and ensure that each acre continues to grow at its highest potential. This ensures a healthy forest for future generations.



WE PLANTED 26% MORE **SEEDLINGS** THAN IN 2021!

MECHANIZED TREE PLANTING

- Allows for continuous tree planting.
- Each arm plants one seedling every three seconds.
- Will plant an additional 500,000 seedlings in New Brunswick.



HARVEST LEVELS M³/HA/YR Sustainable Harvest Levels Actual Harvest Levels



WOOD HARVESTED

1,722,632 tonnes (Crown L1,3,7,9) 2.255.962 tonnes on Freehold 350,996 tonnes Purchased Stumpage



WOOD PURCHASED 1,283,340 tonnes

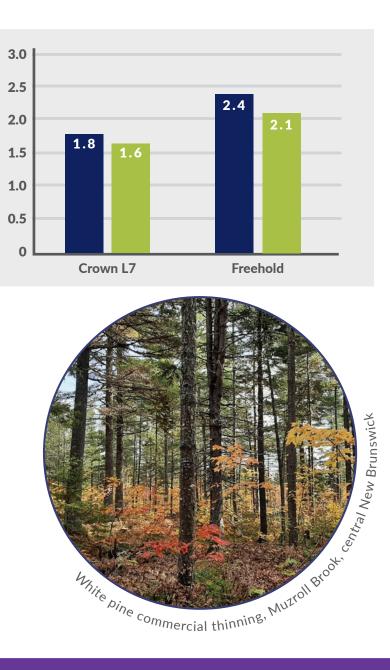
TOTAL: 5,612,930 TONNES (Crown L1,3,7,9), Freehold and Purchased

ABOVE & BEYOND 20 years of third-party forest certification

100% of land certified













100% of land certified in Maine



~--

The mark of responsible forestr



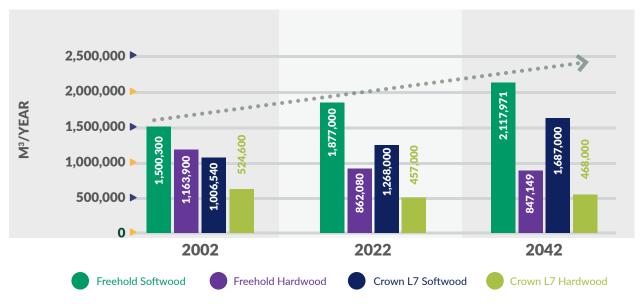
PLAN. HARVEST. REPEAT.

Looking ahead 80 years



	Freehold	Crown L7	Average
AVERAGE HARVEST	16 HA	20 HA	18 HA
OPENING SIZE	40 AC	49 AC	44 AC

WE'RE ON TRACK TO DOUBLE OUR FREEHOLD SOFTWOOD SUPPLY EVERY 50 YEARS



CONTINUOUS IMPROVEMENT

Leading the way to a sustainable future



A-train logging truck, northern New Brunswick Woodlands

DRIVING BUSINESS FORWARD

Our trucking team made ground-breaking contributions to Canada's transition to a greener and more sustainable future with Canada's first A-train logging truck trials.

These trucks haul 2x more volume than a regular truck, which results in:

- Less fuel consumption
- Fewer trucks on the road for a safer environment.

SUPERVISOR AND **CONTRACTOR EFFICIENCY**

Our staff and contractors now have better visibility into their operations with the development of the latest in remote systems technology, including OpsHQ, which is a comprehensive harvesting analytics platform. This tech displays real-time performance information, allowing: • Contractors to have better knowledge about their remote operations at their fingertips with live data • Supervisors to improve their effectiveness and focus on priority areas

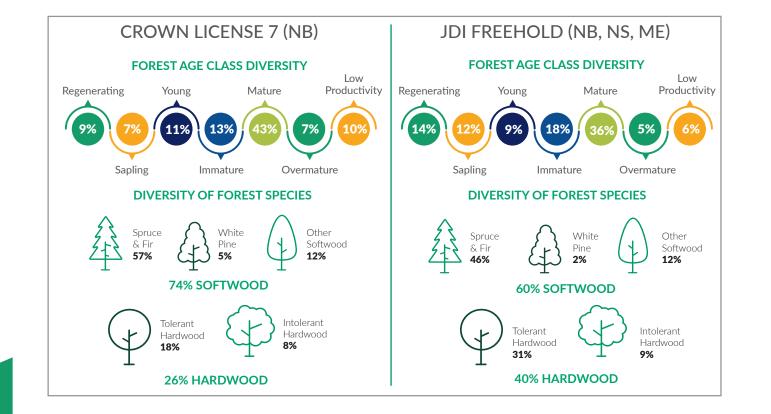
- For an overall increase in operational productivity, reduced costs and better quality for our customers.





OUR APPROACH TO BIODIVERSITY

A working forest works for diversity



1992 - PRESENT

OVER \$1 MILLION SPENT ANNUALLY ON THIRD-PARTY RESEARCH

Our Forest Research Advisory Committee (FRAC) is comprised of forest managers and expert scientists who identify, advocate and conduct research with a focus on addressing knowledge gaps and landscape-level impacts on flora and fauna.



Findings are communicated in independent, peer-reviewed scientific journals, technical reports and/or graduate theses.



A WELL-MANAGED & DIVERSE FOREST LANDSCAPE

HEALTHY AND DIVERSE WORKING FORESTS

Canada

Carleton



JDI partnered with scientists at Natural Resources Canada, Carleton University and the Canadian Wildlife Service in 2016 for a five-year songbird habitat research project.



JDI's mapping system and acoustic monitoring devices in Black Brook give researchers the ongoing abilities to know the forest landscape and learn how birds use different forest communities.

Olive-sided flycatcher

The forest model from Black Brook supports known habitat for Canada warbler, i.e. a forest with a composition of mixed wood leaning towards softwood.

Canada warbler and olive-sided flycatchers are listed as species of Special Concern under COSEWIC (Committee on the Status of Endangered Wildlife in Canada).

Initial research shows that there is an important amount of habitat for these two species in the managed forests of Black Brook, and that these species (and many others) are flexible in their habitat selection.

RESULTS

Managed forests support abundant habitat for two songbird species of concern.

FAST FACTS

JDI forests have a high forest land base diversity for wildlife. Our lands in the Black Brook district has 71% (70/98) of all songbirds found in that area of the province and 100% (23/23) of the wood warblers found in the area. More species richness and diversity than Fundy National and Mount Carleton Parks!

PROJECT PARTNERS







STUDY STATISTICS

- Managed forests grouped into 21 different forest communities.
- 34 species of trees in New Brunswick forests, with 31 present on JDI lands.
- Results will serve as benchmark for diversity in New Brunswick, especially with regards to changing climate.

16

RESEARCHER PROFILE

DR. TIMOTHY L. WHITE

was a professor at the University of Florida (UF) for 32 years. For the last 13 years, he has been the Director of the School of Forest. Fisheries and Geomatics Sciences. His research interests include quantitative genetics, forest genetics and planted forests. Tim has co-authored two books, Forest Genetics and Predicting Breeding Values with Applications in Forest Trees, and 100 refereed publications. While on the faculty at UF, he was Director of two

industry-sponsored research cooperatives: Forest Biology Research Cooperative and Cooperative Forest Genetics Research Program. He has consulted with more than 25 forest companies and organizations in 12 countries.



This project looked to quantify tree species diversity on JDI managed lands in New Brunswick.

RESULTS SO FAR:

- JDI managed forests have considerable tree species diversity
- There are an estimated 7.17 billion trees on JDI managed lands in New Brunswick.
- Planted stands are just as diverse (27 species) as natural spruce/fir forests (26 species).
- Having multiple forest management conditions allows for diversity of forest communities across the landscape.

A WELL-MANAGED WORKING FOREST CREATES FOREST DIVERSITY

STUDYING WHITE-TAILED DEER WINTERING HABITS

PROJECT PARTNERS



MAINE

Canada

Brunswick



RESEARCHERS:

(Northeast Deer Partnership): Dr. Graham Forbes (UNB) Dr. Carly Sponarski (UMaine) Joe Kennedy (NBERD) Dr. Amber Roth (UMaine) John Gilbert (JDI) Nathan Bieber (MIF&W) Elias Ayrey (UMaine) Dr. Dave MacLean (UNB) Joe Nocera (UNB) lan Thompson (UNB) Philip Wiebe (UNB)

RESEARCHER PROFILE

PHILIP WIEBE has been a biologist with Canadian Forest Services for over 15 years and studies the effects of

forestry on forest-dwelling animals in Canada. He is currently a PhD student at the University of New Brunswick focusing on white-tailed deer. Philip hopes to gain a better understanding of the relationship between habitat quality and population growth through animal location technology.



We maintain 136,049 HA / 336,041 AC of mature coniferous deer wintering areas.

This four-year project focuses on understanding habitat selection by deer related to snow depth & winter severity versus food availability, forest cover and more.

STUDY STATISTICS

- Approximately 12,000 ground measurements of snow depth across New Brunswick over 4 years.
- Snow depth grids use information from satellites, ground stations. topographical information & forest coverage.
- Values are accurate to within 10 cm.



RESULTS SO FAR:

- Deer populations in New Brunswick are at their northern range limits.
- Populations are heavily impacted by snow depth; they increase in light snowfall years and decrease when snow depth is high.
- Deer seek out forest cover (deer wintering areas) for shelter and food availability in heavy snowfall winters.
- Together with models for food availability and forest cover, this study will help managers identify areas of the landscape that are critical to deer survival.

UNDERSTANDING MOOSE HEALTH

PROJECT PARTNERS

université **LAVAL**

UNB

Université ՠ de Montréal



Québec

RESEARCHERS:

Christian Dussault (MFFP) Jean-Pierre Tremblay (ULaval) Steeve D. Côté (ULaval) Joe Nocera (UNB) Patrick Leighton (UdeM) Christopher Fernandez-Prada (UdeM) Sandra Hamel (ULaval) John Gilbert (JDI)

This five-year project focuses on understanding possible impacts of winter ticks, climate change and predation on moose populations in New Brunswick and Québec.



In 2022, four calves were equipped with video enabled collars which captured three months' worth of footage!

STUDY STATISTICS

- 286 calves have been equipped with GPS collars in five regions over three years to assess their movement and survival, as well as the health of moose populations.
- The research team treated half of the calves (142) with acaricides to reduce tick load and understand their effects from other environmental factors such as climate, predation or competition for food.
- 500,000+ GPS locations of moose have been collected over the first two years of the project.

DR. JEAN-PIERRE

TREMBLAY is a professor in wildlife biology and an institutional director of the Centre for Forest Research at Laval University. He is the principal investigator of a five-year cooperative research project looking at the role of winter ticks on the population ecology of moose in Québec and New Brunswick. Dr. Tremblay's research program focuses on wildlife-forest relations, seeking to understand how interactions between cervids, plants and parasites influence their respective abundance and distribution.

RESEARCHER PROFILE







Up to 80.000 ticks can be found on a single moose.

RESULTS SO FAR:

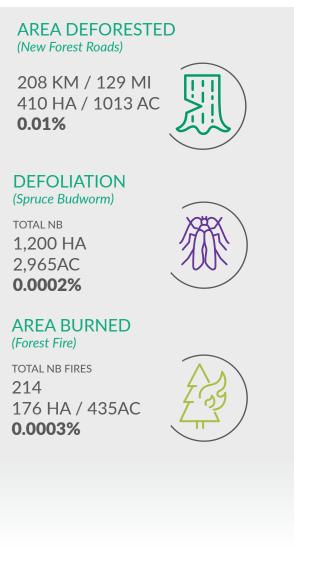
• Through necropsies on dead calves and flyovers, we confirmed the acaricide treatment significantly reduced the winter tick load.

• Winter ticks are increasing variability in calf survival and moose abundance, thus decreasing sustainable moose populations.

• Tick clusters were found in the vegetation where the ticks fell off the calves. This opens up the possibility of investigating forest habitat features and that affect the survival of ticks in the environment and their possible co-occurrence with moose.

EXCELLENCE IN FOREST PROTECTION

A working forest is a resilient forest





We regularly respond to calls for firefighting assistance from governments.

AGGRESSIVE FOREST PROTECTION TACTICS

New aircrafts to protect the working forest



OUR ROLE IN MITIGATING CLIMATE CHANGE

How a working forest enables carbon neutrality

Since 2020, the JDI Forest Supply Chain has been measuring and reporting its carbon footprint. We're proud to be carbon neutral, meaning that within the boundary from seed production to the sale of products to our customers, we remove more greenhouse gases than we emit.

The working forest helps mitigate climate change in many ways by removing CO₂ from the air with vigorously growing trees and then providing long-term carbon storage in wood products like lumber. Residual products from working forests like bark, sawdust, wood shavings, and lignin are used for energy to avoid emissions from alternative fossil fuels used in the manufacturing process.

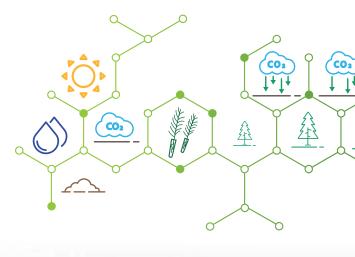
(2,364,100)onnes CO₂e Forest Growth SCOPE 1,2,3 **EMISSIONS** WE REMOVE **MORE CARBON THAN WE EMIT!** 976,358) (1.215.743) Tonnes CO₂e 2,124,715 Harvested Wood Products Tonnes CO₂e



JDIRVINGSUSTAINABILITY.COM

A working forest's carbon cycle

From competition for their life cycle with practices and regenerated, and when we regenerate with tree planting, these areas remove 4x more CO_2 from the atmosphere than naturally regenerated forests. This is due to planting improved trees which grow faster and have better genetics, and by ensuring that the trees grow free





Northern New Brunswick Woodlands

HISTORIC PARTNERSHIP WITH THE GOVERNMENT OF CANADA

AWARD-WINNING CONSERVATION

Our working forest maintains over 2,000 significant sites

D. IRVING CONSERVATION PROGRAM

the United Nations Convention on Biological Diversity (COP15) and in partnership with the Government of Canada, J.D. Irving, Limited has committed 10,000 hectares of privately held Acadian forest,

coastlines and dunes in New Brunswick to be recognized as Other Effective area-based Conservation Measures (OECMs). This commitment represents the largest private contribution to OECMs in Canada. These lands provide a variety of ecosystems for common, at-risk and rare species and are among the province's most unique and biodiverse areas. We strongly believe that wellmanaged forest and conservation can co-exist, and we're playing a key role in helping achieve Canada's ambition of protecting 30 per cent of its lands and waters by 2030.

> The Honourable Steven Guilbeault. Minister of Environment and Climate Change Canada and J.D. Irving, Co-CEO of J.D. Irving, Limited

10,000 **HECTARES** committed to conservation





DISCOVER THE GIFT OF

NATURE





JDI has set an objective to designate and maintain old forest within the working forest landscape.

Total Conservation Area on Lands Under Irving Management: 529,252 HA / 1,307,782 AC

CONSERVED LANDS	
Unique Areas	
Water and Wetland Buffers	
Deer Wintering Areas	
Old Forest Habitats	
Protected Natural Areas	

22% TOTAL CONSERVED LANDS

*Includes 4,500 hectares of non-spatially identified conservation forest on recently acquired lands in Maine.

PLANTS
BIRDS & MAMMALS
REPTILES & INVERTEBRATES
UNIQUE FOREST STANDS
HISTORIC
AESTHETICS
LAKES & WETLANDS
FISH
GEOLOGICAL & FOSSIL
HIGH CONSERVATION FOREST

To date, more than 68,804 hectares (170,018 acres) have been designated towards meeting this objective.

FREEHOLD 19% 247,913 HA* 612.593 AC

CROWN LICENSE 7 (NB) 26% 281,339 HA 695.189 AC

OUR PARKS

We maintain four free parks for public use & enjoyment

The Irving Nature Park and Irving Eco-Centre: La Dune de Bouctouche is proud to have welcomed over







♣ - ⊂ * ↔

- Free BBQs
- Public washrooms
- Accessible trails
- Guided tours
- Planned programming
- Partnerships with local ENGOs

Irving Nature Park

La Dune de Bouctouche



NUMBER OF VISITORS

"Wolastoq" means "the beautiful river" in the language of the Wolastoqiyik people. The park was built in 2004 by J.D. Irving, Limited and overlooks the Reversing Falls rapids. The park is dotted with chainsaw-carved wood statues of historical figures, including the legendary Koluskap the Great Beaver, Samuel de Champlain and our very own K.C. Irving.

INVESTING IN OUR PEOPLE

A working forest works for people

Supporting Women in STEM

wo of our employees created a women's networking group this year for female leaders in STEM (Science, Technology, Engineering and Mathematics) across the Woodlands and Sawmills division. This group aims to support and uplift women and to contribute to a welcoming culture within traditionally male-dominated fields. These women meet regularly and represent the company at local events, conferences and through encouraging young women to enter into the industry.



A First in New Brunswick

wo employees of our independent contractors in Deersdale, New Brunswick became the first in the province officially certified as forest equipment operators, as a skilled trade. We worked in collaboration with Forest New Brunswick, local contractors and government stakeholders to create opportunities for existing operators and students to receive entry-level and advanced training in these highly skilled positions.

We look forward to more of our operators gaining this accreditation and developing their workforce skills.





Empowering Our Employees

ne Woodlands and Sawmills divisions have created a brand-new Employee Engagement Committee comprised of a group of people across both teams who are passionate about improving their workplace. This committee will work to bridge any gaps, connect employers and

employees and to gain insight and act on challenges identified in the workplace.





Growing our Rural Communities

have been investing in settling newcomers and their families to our regions to fill critical roles in our operations. We have been partnering with the Chipman Housing Authority to address affordable housing within the community and have built a subdivision of 12 mini-homes and 18 townhouses for newcomers and their families. In the last year, 39 newcomers and 60 of their family members have started a new life in Chipman, New Brunswick.



Cookhouse Modernization

ur northernmost cookhouse in Boston Brook, New Brunswick received a major renovation in time for the May – October 2022 operating season. We increased seating and installed new freezers, a dry storage pantry and a walk-in fridge. Brand-new windows, doors, walls and countertops completed the refurbishment, which allows employees to enjoy their dining space more fully in between helping us grow the future forest.



IT ALL STARTS WITH COMMUNITY

The working forest works for communities

30 Years of Can-AM

he Can-AM Crown International Sled Dog Race in Fort Kent has been a staple of the northern Maine community for 30 years, featuring hundreds of dogs who race between 30 and 250 miles. We have been a proud sponsor for nearly 20 years, with our employees volunteering at the event annually. We donated \$60,000 to local community action and food pantry programs and are happy to make this world-class event possible.

Scan to learn more





A Vibrant New Brunswick Celebration

he Atlantic Balloon Fiesta welcomed over 150,000 people from across eastern Canada and beyond in 2022. This threeday event, of which we are a major sponsor, features hot-air balloons, food trucks, craft markets and more. Each morning and evening, spectators watch the balloons take flight or purchase a balloon ride to get an aerial view of Sussex, New Brunswick.

Year-Round Recreation

e are a lead sponsor of several fishing tournament events which host hundreds of people and includes support through donations, a BBQ and registration prizes. In 2022, we were happy to support the Municipality of Grand Lake's Family Day Ice Fishing Tournament, the Tri-Lake Ice Fishing Tournament, the Annual Grand Lake JDI Fishing Derby and the Hook and Paddle Tournament. These competitions are a great way to enjoy the outdoors year-round.





Supporting Our Communities – Snowmobile Club Firewood Donations

ach year, our team travels across the province of New Brunswick to deliver firewood for the Snowmobile-Motoneige NB clubhouses. In 2022, we donated 16 full trailer loads of logs to 16 local clubs. These donations help snowmobilers warm up and dry off during their trail adventures.

STAKEHOLDER ENGAGEMENT

Where We Work and Live

- **53** Stakeholder partners
- 4 New partners
- **59** Community based partnerships
- **11** University partners
- **13** Outdoor associations
- 4 Motorized recreation activities





170 Total Partners **65,300** People Reached

STAKEHOLDER PROFILE



The ATV Association of Nova Scotia (ATVANS) has formalized a trail use agreement with J.D. Irving, Limited (JDI) which includes 170 kilometres of trails on JDI private lands and roads. This agreement allows ATVANS members to access and maintain existing trails on JDI lands and fosters more opportunities for locals to get outside and discover the gift of nature.

Across New Brunswick and Nova Scotia, 109 clubs can enjoy over 1,200 kilometres of ATV trails.

- **9** Fishing & hunting clubs
- 2 Industry associations
- **3** Government
- **12** Non-government organizations
- **170** Total partners



362 Stakeholder Meetings



\$158,369 Community Donations

DIGITALLY LEADING IN FORESTRY AWARENESS

Irving Woodlands is committed to reaching our audience with the mediums they use most and leads the forest products industries across North America in social media following.

Check us out online!

ENGAGING STAKEHOLDERS THROUGH SOCIAL NETWORKING







PO Box 5777 300 Union Street Saint John, New Brunswick E2L 4M3 Canada Toll Free: 1-800-518-7999 Main Switchboard: 1-506-632-7777 www.irvingwoodlands.com www.jdirvingsustainability.com www.jdirvingconservation.com info@irvingwoodlands.com

Southwest Miramichi River, Deersdale, New Brunswick

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