

Sydney Rodman



GREEN REVIVAL

Scaling up The Bioeconomy 2024

Accelerating the Bioeconomy: Generating  
Bioproducts from Invasive Plant Species



GREEN REVIVAL

# Origin Story

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From lab → field → this podium





Most abundant and promising resource

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80% of all living matter is  
photosynthetic

Yet, global human-made mass exceeds all living biomass (since 2020, according to a Nature article)

**Invasive  
Species  
Excess**

**Green**  
  
**Revival**

**Biomass  
Demand**

# If we do nothing about the plant invasion

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- Wildfires
- Extinctions
- Biodiversity Collapse
- Health risks (allergies, tick-borne disease)
- Forever chemicals from herbicides
- Less Navigable waterways

We can take this threat and make it into an asset



# Japanese Barberry Ticks and Maui Wildfires

ON THE STREET | STORIES | CURRENT EVENTS | HIGHLIGHTS

## Barberry Linked to Rising Rate of Lyme Disease

BY NICKI BELLEZZA

You could be more at risk of Lyme disease by having a particular plant growing in your yard. Japanese barberry (*Berberis thunbergii*) is thorny but a hardy, colorful, deer-resistant and inexpensive shrub — all reasons why it is popular in landscapes. It is an invasive species and an extremely popular shrub in home gardens and outside businesses as well. You see it at malls, gas stations and office complexes. However, it is also a haven for ticks.

The RA board banned Japanese barberry in Reston in 2008 due to its ability to spread from the landscape and invade the forested natural areas. Now, there is another reason to prevent residents from planting the shrub.



A bullseye rash is an indicator of Lyme disease infection in humans.



OTRPHOTO

### WHERE THERE IS JAPANESE BARBERRY THERE IS LIKELY TO BE HIGH NUMBERS OF LYME DISEASE-CARRYING TICKS.

According to Dr. Scott Williams, the lead researcher on Japanese barberry for the Connecticut Agricultural Experiment Station (CAES), one acre of forest with Japanese barberry averages 120 ticks,

which is 12 times higher than forests without it. The spread of Lyme disease in barberry thickets is due to white-footed mice, common carriers of the bacteria that cause Lyme disease, which take shelter among the barberry's dense and thorny branches. One infected mouse passing through can transfer bacteria to any number of ticks, which then pass the infection to their next host. Japanese barberry thickets are also warmer and more humid than is normal, making it easier for ticks to survive.



The Washington Post  
Democracy Dies in Darkness

## Why Hawaii's wildfires are so devastating — and 'predictable'

The ecological ravages of Hawaii over time have left behind nonnative grasses that serve as fuel for blazes. Some experts say the islands have yet to fully prepare.

7 min 479



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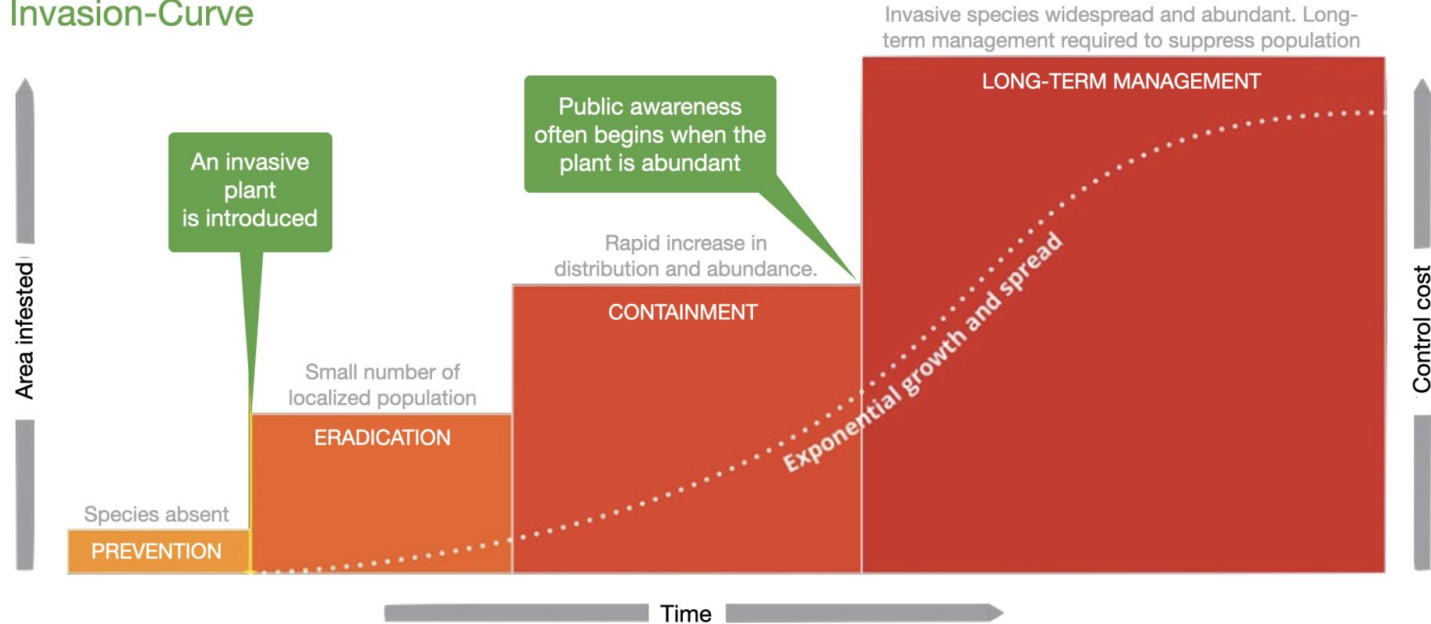
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# We Have to Manage Infestations

## Invasion-Curve





# Case Study in Puerto Rico with Seaweed

**CARBONWAVE**

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TONS <b>100</b> Wet Sargassum	KG <b>18300</b> CO2 Sequestered*
KM2 <b>120.0</b> Naturally-Fertilized Land*	KG <b>4500</b> Bioplastic Materials Replaced*

Rethinking economies through pioneering plant-based science

We're one of the few global companies exploring the benefits of brown seaweed, and the only one with an integrated mass collection network and cascading processing operation ready to address the Sargassum emergency. This means scalable systems capable of supplying to a global economy with measurable positive environmental impact.

Current Products:  
Fertilizer  
Cosmetic Emulsifier

Future Plans:  
Leather  
Non-wovens  
Bioplastics



# Canada Invasive Biomass Potential

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486 invasive alien plant species known in Canada

1 in 4 Canadian trees are at risk (Wildlife Conservation Society) and invasive species are a leading cause

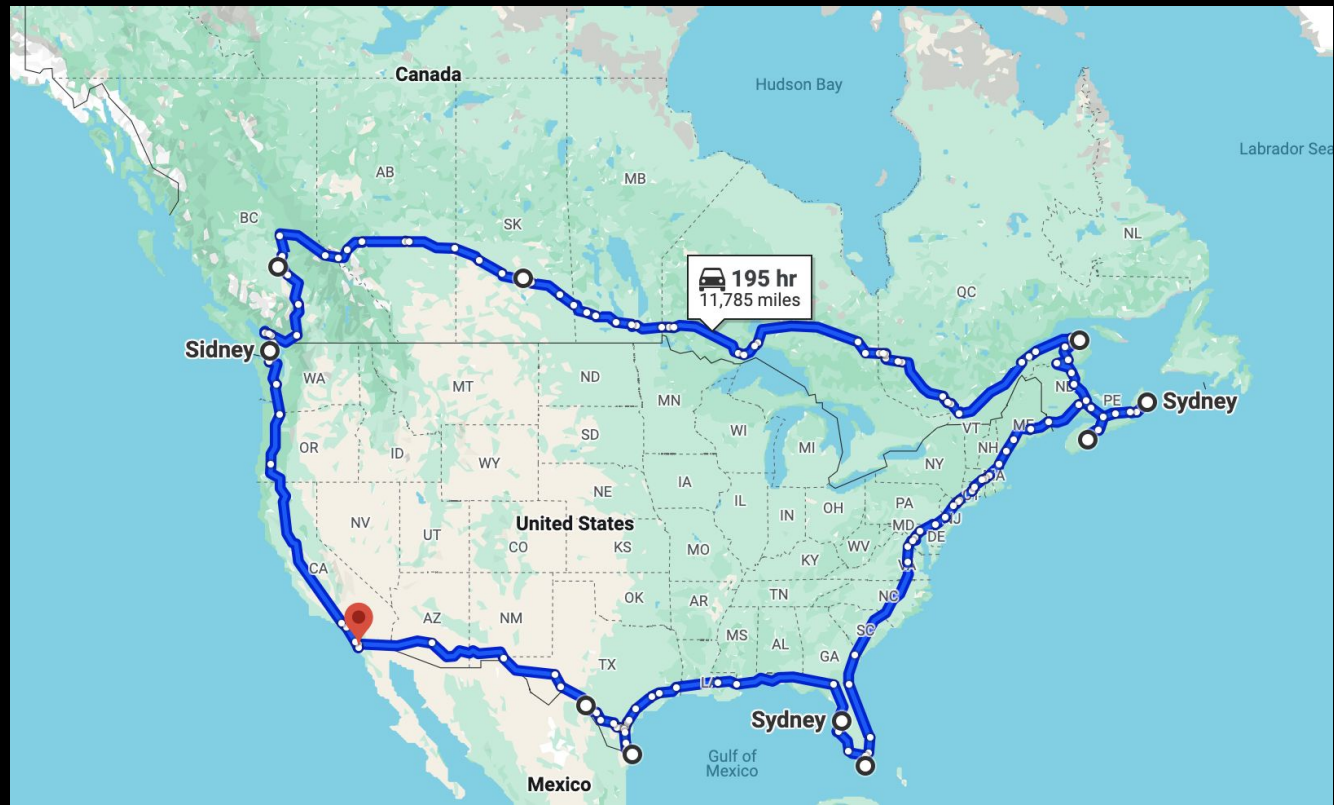
## Great Lakes Coastal Wetlands

- 3 Species : 660k MT, 226k MT, 163k MT

27% of vascular plant species in Canada are alien



# Geography We Service



# Farmland Loss

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Invasive plants, such as witchweed and woolly cup grass, that grow in crops and pastures are estimated to cost \$2.2 billion each year in damages in Canada.



# Pollen

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Invasive species produced 3× fewer ovules/flower and >250× more flowers per plant, compared with their native relatives.

Production of more allergens.

## Invasive weed Stinknet causing allergy symptoms in Phoenix area



Even though it looks like something you may want to smell, you'll definitely want to avoid stinknet.



# Wildfires

Invasive grasses like buffelgrass, cogon grass, and silk reed can increase the frequency of wildfires by up to 150% and the occurrence of wildfires by up to 230%. (NIH Study)

by **Kylie Mohr**  
Mar 28, 2024, 7:00 AM EDT

CLIMATE

## Yes, even most temperate landscapes in the US can and will burn

Wildfire risk is increasing everywhere, especially in the East and South. Here's a major reason why.



Photo by Michael Bockiers/Getty Images

# Our Services

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- Biomass abundance estimation and localization
- R&D determination of candidate species
- Comprehensive supplier list with vetted contacts or direct procurement outreach
- Strategic marketing to authentically highlight unbelievable impact
- Policy compliance
- Bridge partnerships with unconventional “champion” stakeholders

# Canadian Policies

## Ontario legislation focusing on invasive species

(2015) Great Lakes Protection Act

(2015) Invasive Species Act

(1990) Forestry Act

(1990) Pesticides Act

(1990) Weed Control Act

## Ontario legislation related to invasive species

(2009) Animal Health Act

(2008) Lake Simcoe Protection Act

(2007) Endangered Species Act

(2006) Provincial Parks and Conservation Reserves Act

(2003) Kawartha Highlands Signature Site Park Act

(2001) Municipal Act

(1997) Fish and Wildlife Conservation Act

(1994) Crown Forest Sustainability Act

(1990) Conservation Authorities Act

(1990) Environmental Assessment Act

(1990) Plant Diseases Act

Can it spread?

## Federal legislation focusing on invasive species

(2001) Canada Shipping Act

(1990) Health of Animals Act

(1990) Plant Protection Act

(1985) Fisheries Act

(1985) Great Lakes Fisheries Convention Act

## Federal legislation related to invasive species

(2009) Environmental Violations Administrative Monetary Penalties Act

(2008) Federal Sustainable Development Act

(2002) Pest Control Products Act

(2002) Species at Risk Act (SARA)

(2000) Canada National Parks Act

(1994) Migratory Birds Convention Act

(1992) Transportation of Dangerous Goods Act

(1992) Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act

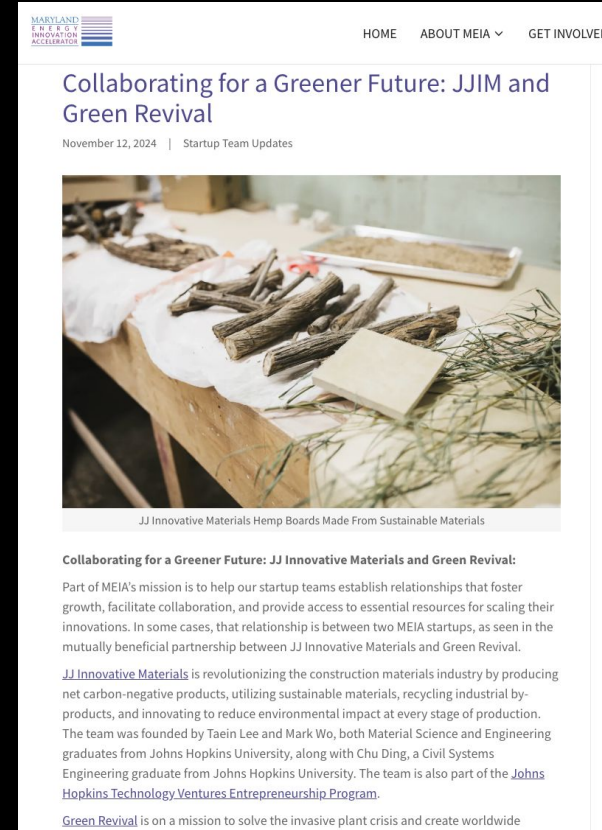
(1990) Canada Environmental Protection Act

(1985) Freshwater Fish Marketing Act

(1985) Seeds Act

# Examples of Green Revival Projects

- **Haffner Energy**
  - Hydrogen
  - 23% of Houston trees are one species: Chinese Tallow Tree
- **JJ Innovative Materials**
  - Construction Materials




The screenshot shows a webpage from the Maryland E.N.E.G.V. Innovation Accelerator. The article is titled "Collaborating for a Greener Future: JJIM and Green Revival" and is dated November 12, 2024. It features a photograph of hemp boards on a workbench. The text describes the collaboration between JJ Innovative Materials and Green Revival, highlighting their shared mission to create sustainable construction materials.

**MARYLAND**  
E.N.E.G.V.  
INNOVATION  
ACCELERATOR

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## Collaborating for a Greener Future: JJIM and Green Revival

November 12, 2024 | Startup Team Updates



JJ Innovative Materials Hemp Boards Made From Sustainable Materials

**Collaborating for a Greener Future: JJ Innovative Materials and Green Revival:**

Part of MEIA's mission is to help our startup teams establish relationships that foster growth, facilitate collaboration, and provide access to essential resources for scaling their innovations. In some cases, that relationship is between two MEIA startups, as seen in the mutually beneficial partnership between JJ Innovative Materials and Green Revival.

JJ Innovative Materials is revolutionizing the construction materials industry by producing net carbon-negative products, utilizing sustainable materials, recycling industrial by-products, and innovating to reduce environmental impact at every stage of production. The team was founded by Taein Lee and Mark Wo, both Material Science and Engineering graduates from Johns Hopkins University, along with Chu Ding, a Civil Systems Engineering graduate from Johns Hopkins University. The team is also part of the [Johns Hopkins Technology Ventures Entrepreneurship Program](#).

Green Revival is on a mission to solve the invasive plant crisis and create worldwide





GREEN REVIVAL

# Birthday of Green Revival is...

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Tu B'Shevat, the Jewish New Year for  
**the trees**

**of life.**



The hardest thing to see is  
what is in front of your eyes.

Johann Wolfgang von Goethe

# Now What

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Make Green Revival part of your resilient feedstock agenda and marketing agenda  
to put together the biomass puzzle



GREEN REVIVAL

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