

# Annual Report 2024

Driving transparency in forest-connected supply chains.

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“In a world where efficiency often leads to opacity and the benefits of natural resources are unevenly distributed, our work shines a light on supply chains, enabling fairer outcomes for all stakeholders.”



“Traceability is often viewed as a technical endeavor, confined behind closed doors, but when applied through objective science at scale, it can serve the common good and transform entrenched inequalities in global commodity systems.”

# Public-good science

Jade Saunders — Executive Director



Welcome to our first annual report, highlighting the key achievements of 2024; the year World Forest ID fully hit its stride. This year, we completed 15 expeditions, collected over 8,000 samples, and turned them into unique chemical reference data that expands traceability in critical forest ecosystems. In 2024 alone, we added coverage across cocoa, soy, shrimp and timber sectors, totaling an additional 427.9 million hectares of forest and farmland. We signed a landmark Consortium Agreement with our seven global partners, advancing data sharing and capacity building. Our team supported enforcement agencies in the EU and US to scrutinize species and origin claims for high-risk timber products. Collaborations with WWF and FSC strengthened private sector supply chain integrity.

Meanwhile, our peer-reviewed machine-learning model, published in Nature Plants, earned widespread recognition for its innovative spatial evaluation approach. Beyond the technicalities, we do all of this because we believe that transparency is not only a prerequisite for accountability, but also a powerful tool for addressing global inequalities. In a world where efficiency often leads to opacity and the benefits of natural resources are unevenly distributed, our work shines a light on supply chains, enabling fairer outcomes for all stakeholders. Our nonprofit approach ensures rigorous data integrity and scalable solutions that drive accountability, protect forests, and support the communities that depend on them.





“We’re bridging the gap between consumers and ethical producers, ensuring those who manage forests responsibly receive the recognition they deserve, creating a fairer system for all.”

# Bridging data and impact

Scot McQueen — Board President



At World Forest ID, our mission is to leverage unique geo-located plant chemistry, environmental data, and cutting-edge technology to enable traceable and accountable global supply chains. By analyzing natural signatures such as trace elements and isotopes absorbed by plants and animals from their environments, we provide precise, actionable insights. These tools make commodity supply chains, from timber to soy, cocoa, and shrimp, more transparent and accountable. I’ve seen how the organization’s shift towards data science and AI-enabled modeling has scaled its impact across global supply chains.

This isn’t just about collecting samples; it’s about layering diverse data, including scientific techniques and environmental variables, to create a clearer picture of forest ecosystems and their commodities. What stands out to me is how this transparency directly benefits those often overlooked, like smallholders and ethical producers. By ensuring they aren’t undercut by illegal or unsustainable practices, accountable supply chains lead to better outcomes for both people and the environment. It’s incredibly rewarding to see these advancements empowering governments and companies to protect our planet and support sustainable practices.



**TOTAL SUPPORT AND REVENUES:**

**\$2.71m**

Includes revenue from government donors, foundations, private sector partners, NGO partners, and income from interest.

**TOTAL PROGRAM SERVICES EXPENSES:**

**\$2.04m**

The majority of our funds were allocated to direct program activities, including sample collection, data analysis, and forest advocacy.

**SUPPORTING SERVICES EXPENSES**

**\$510,582**

Only a small portion of our budget was allocated to general operations, administration, and fundraising.


## Funding overview

In 2024, we secured \$2.71 million in funding to support sustainable practices. This funding enables key activities such as sample collection, analysis, and the development of advanced spatial models. By streamlining our operations and focusing resources on what drives the greatest impact, we ensure that our resources go further toward delivering transparency and accountability in global supply chains.

“The approach has always been about aligning resources with impact, ensuring that every dollar contributes to meaningful change in supply chains while driving innovation.”

**CATALINA ROMERO NOCUA** — Board Treasurer

Training in Indonesia led by Dr. Victor Deklerck (World Forest ID) and Dr. Tony Hall (The University of Adelaide) at IPB University, utilizing their newly installed Isotope Ratio Mass Spectrometry (IRMS) laboratory, with support from the World Resources Institute (WRI).

A photograph showing three individuals in a meeting. On the left, a woman wearing a grey hijab and a white lab coat with 'BRIN' and 'BADAN RISET DAN INOVASI NASIONAL' printed on it is gesturing with her hands. In the center, a man in a light-colored button-down shirt is looking towards the woman on the left. On the right, another woman wearing a patterned hijab and glasses is looking at a laptop. They are seated around a wooden table with a laptop, a mouse, a notebook, and a smartphone. The background shows a bright, modern office or laboratory setting with wooden chairs and tables.

**“The development of these methods happened largely in the Global North, and the challenge is to apply them effectively in the Global South, where most of the timber is harvested, produced, and shipped.”**

Prof. Dr. Andrew Lowe, Director of Environment Institute, The University of Adelaide



# Impact Highlights of 2024



## Expanded species data in high-risk forest ecosystems

Working with local researchers and changemakers, we've collected over 4,500 samples from key species in the Congo Basin, Amazon Basin, and Caucasus, strengthening our ability to scrutinize critical supply chains.



## Formalized global scientific collaboration and data sharing through a new consortium

Uniting leading institutions including CITEmadera Lima, IPB University, Institut de Recherches Agronomiques et Forestières (IRAF), Meise Botanic Garden, Royal Botanic Gardens, Kew, The University of Adelaide, and Wageningen University and Research, we've driven unique new global data sharing protocols, scientific innovation, and technology transfer.



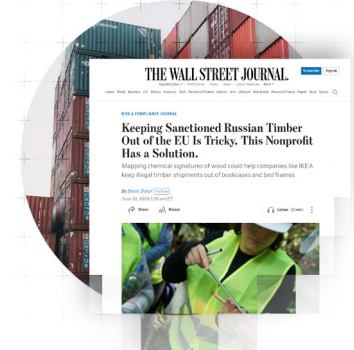
## Pioneered AI-driven traceability with peer-reviewed origin models

Published in [Nature Plants](#), our AI-powered origin model integrated chemical and environmental data to accurately identify timber harvest locations, using machine learning algorithms to infer results in conflict zones and other areas where physical sampling is impossible.



## Engaged major retailers in the Alliance for Wood ID Testing

Launched with WWF, we created an initiative that brings together major retailers and industry leaders to pilot chemical testing in high-risk supply chains, targeting illegal, unsustainable and sanctioned timber.



## Enabled major enforcement actions against illegal timber trade

Working directly with investigators and regulators, we shared knowledge about the critical role science can play in environmental cases. We supported the identification of over 260 tons of allegedly illegal timber in Belgium, a fine and broad economic injunction on trade for a significant importer in Latvia, and six cases that are either ongoing or not on the public record.

# Data metrics

## 2024 DATA

### Samples

Samples collected:	8132
Expeditions:	15
Countries sampled:	9

### Area of Insight\*

Timber:	289.4 million hectares
Forest-Risk Commodities:	138.5 million hectares
<b>Total:</b>	<b>427.9 million hectares</b>

## 2017—2024 CUMULATIVE DATA

### Samples

Samples collected:	36,387
Expeditions:	89
Countries sampled:	50

### Area of Insight\*

Timber:	1.14 billion hectares
Forest-Risk Commodities:	408.9 million hectares
<b>Cumulative Total:</b>	<b>1.55 billion hectares</b>

**\*AREA OF INSIGHT:** The area around each sample within which we can confidently infer the chemical characteristics of trees and crops. Where we do not have samples for a target species, we are able to produce increasingly precise and accurate results by modeling multi-genus data from other sampled species ranges.

**CARBON IMPACT:** The area of insight derived from our timber samples stores more than ~288 billion tons of above-ground carbon.



# Data coverage

## EUROPE AND CENTRAL ASIA

Samples collected: 12,047

Area of Insight: 394.9 million hectares

Armenia	Estonia	Latvia	Spain
Azerbaijan	Finland	Lithuania	Turkey
Belarus	France	Moldova	Ukraine
Belgium	Georgia	Poland	United Kingdom
Bosnia and Herzegovina	Germany	Romania	
Croatia	Hungary	Russia	
Czechia	Kazakhstan	Slovakia	

## LATIN AMERICA

Samples collected: 12,878

Area of Insight: 562.7 million hectares

Argentina	Colombia	Mexico
Belize	Costa Rica	Paraguay
Bolivia	Ecuador	Peru
Brazil	Honduras	

## SOUTH/EAST ASIA AND THE PACIFIC

Samples collected: 3,781

Area of Insight: 287 million hectares

China	Laos	Solomon Islands
India	Malaysia	Thailand
Indonesia	Papua New Guinea	

## AFRICA

Samples collected: 6,441

Area of Insight: 159.4 million hectares

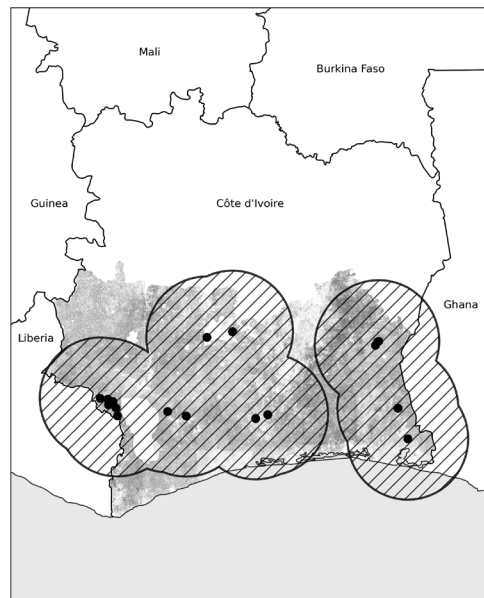
Cameroon	Liberia
Côte d'Ivoire	Nigeria
Democratic Republic of Congo (DRC)	Republic of the Congo
Gabon	



# Data spotlights 1/2

## GLOBAL COCOA PRODUCTION

We have sample coverage across countries producing 66% of cocoa globally, including Côte d'Ivoire, Cameroon, Nigeria and Ecuador. In Côte d'Ivoire our area of insight represents 80.1% of the cocoa production. Combined, our total cocoa sample set spans over 188 million hectares of cocoa-producing landscapes and smallholder farms.



Cocoa Production Area    ● Samples  
 Area of Insight    — Country Borders

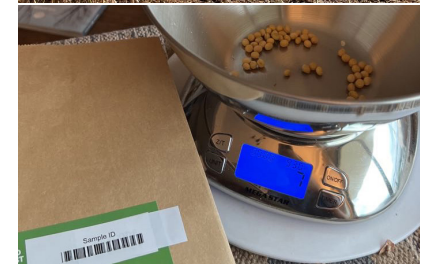


## LATIN AMERICAN SOY SUPPLY CHAINS

Our sample area of insight covers the growing range of soy across all major producers in Latin America, including 45.6% of Brazil's production area, 23.7% of Argentina's, 99.4% of Paraguay's, and 98.5% of Bolivia's. This spans over 201 million hectares, providing critical data to address deforestation risks in soy supply chains.



Soy Production Area    ● Soy Samples  
 Area of Insight    — Country Boundaries

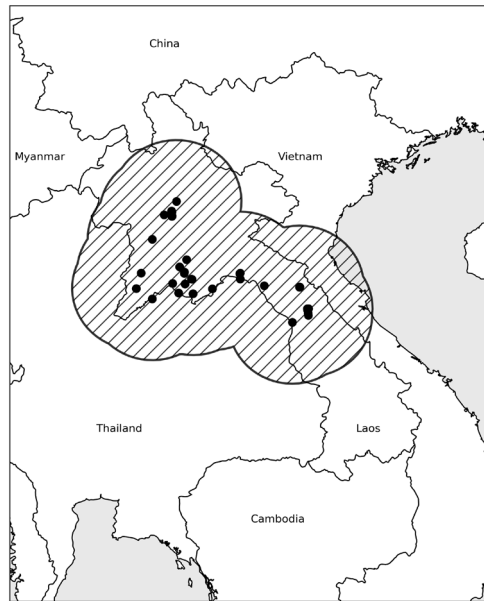




# Data spotlights 2/2

## THREATENED FORESTS IN SOUTHEAST ASIA

Our chemical data covers 62.4% of Laos' threatened forests, spanning over 10.2 million hectares, supporting national climate commitments and protecting vital resources for the 67% of Laos' population that depends on forests for their livelihoods.



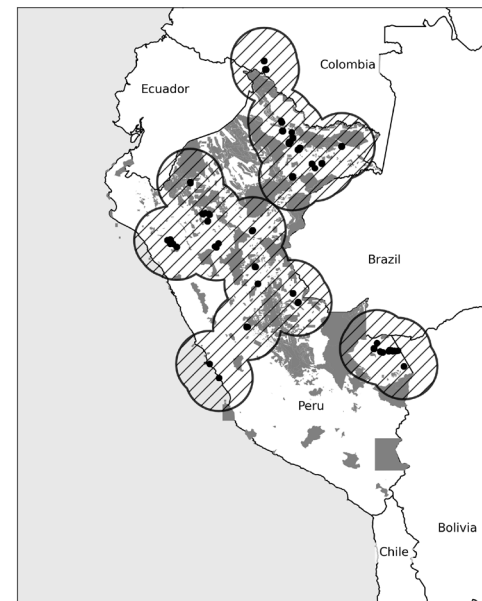
▨ Area of Insight — Country Borders ● Samples



Timber collection, Laos

## PERU'S FORESTS AND INDIGENOUS LANDS

Our timber samples cover 47.7% of Peru's protected areas and 65% of Indigenous Territories, spanning over 25.6 million hectares. This extensive coverage supports the protection of biodiversity and local communities in one of the world's most critical forest regions.




▨ Indigenous Territories & Protected Areas ● Sample — Country Borders



Timber collection, Peru





“Belgium’s federal health-and-food safety agency has several ongoing cases using World Forest ID’s reference data to back up forensic tests of timber shipped into the country, according to spokeswoman Annelies Wynant.”



How funding fits our strategic framework

# Pillar 1/3. — Sample collection and data creation

Creating primary reference data for high-risk tree species and Forest Risk Commodities (FRCs) is the foundation of our work. Trees and plants have chemical, genetic, and anatomical signatures that are specific to their species and location of harvest. By collecting and analyzing geo-referenced tree and plant samples from around the world, we create the ground-truthed data needed to develop origin models for traded forest products. The credibility of this reference data is ensured through replicability testing with ISO17025 accredited laboratories.



**FUNDING NEEDS:** This pillar requires significant investment in fieldwork and chemical analysis. We need to train and empower sample collectors in new forest areas, and expand our collection protocols for new 'liquid' deforestation-driving commodities, including palm oil and rubber. Continued investment expands our ability to make supply chains transparent and accountable in high-risk regions.



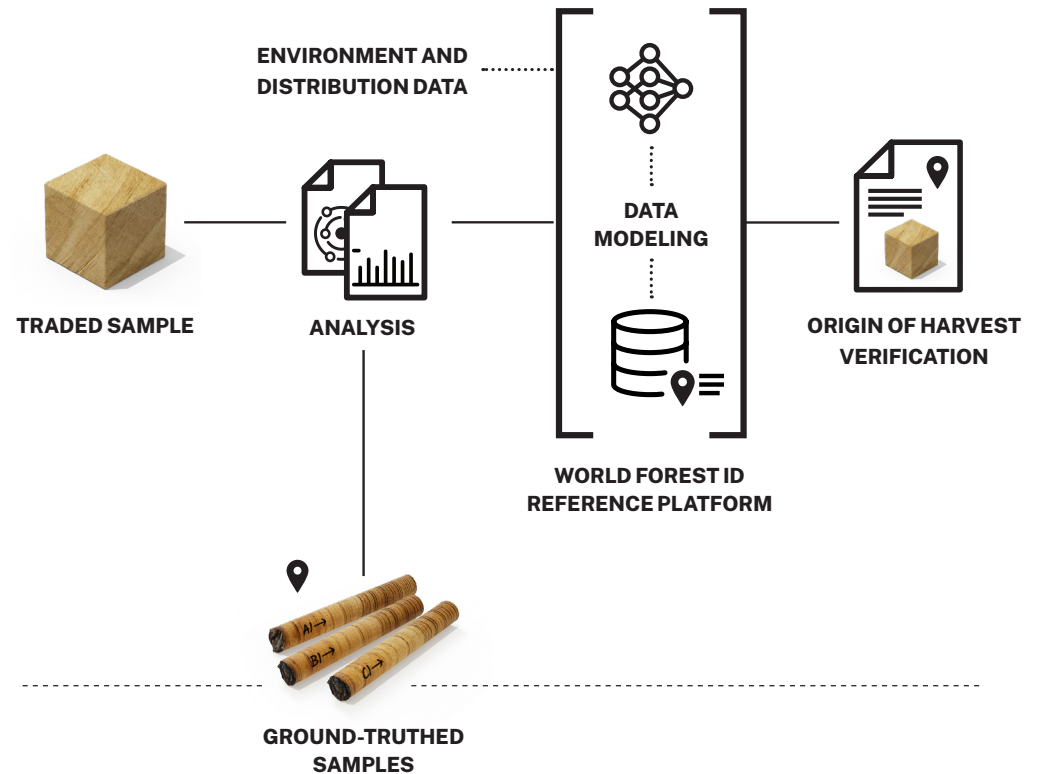
How funding fits our strategic framework

## Pillar 2/3. – Data modeling, hosting, and security

By fusing our sample data with freely available environmental information, we are able to increase the accuracy, precision and range of our models by inferring chemical values for areas where we are not able to collect physical samples for security-related or political reasons. In order to scale impact, we're building a secure evaluation platform to turn geo-referenced data from our ground-truthed samples into actionable reference knowledge that is available to multiple laboratories and end users.

### KEY COMPONENTS:

Secure data hosting	Stakeholder confidentiality
Spatial reference model expansion	Interoperability standards
Data governance protocols	Data integrity and security



**FUNDING NEEDS:** Investment is critical to strengthen data security, expand verification systems, and improve interoperability across regions and commodities. Expanding data inference helps overcome financial and political barriers to sample collection, driving greater accountability in forest-connected supply chains.

How funding fits our strategic framework

# Pillar 3/3. — Use cases and tool development

Simply creating data does not change the world. Impact lies in transforming data into tools that meet the needs of regulators, businesses, changemakers, and certification schemes. By working with these groups, we ensure our tools are practical, scalable, and help drive transparency and compliance across supply chains. Through our partnerships with enforcement agencies, certification bodies, and businesses, we pilot and refine tools in real-world settings. Whether it's expert advice, origin verification, or capacity building, we empower stakeholders to use our data to conserve forests and uphold environmental laws.

## SERVICES

- Capacity building
- Risk screening
- Origin verification
- Legal evidence
- Norm setting

## USERS

- Changemakers
- Community producers
- Investigators & prosecutors
- Regulators
- Customs authorities
- Trade federations
- Certification schemes
- Service providers



**FUNDING NEEDS:** Investment will support the development of tools for changemakers, businesses and enforcement agencies, ensuring they can seamlessly leverage our data for conservation, compliance, and commercial purposes across existing systems and platforms.



**“We are today at a stage of fully integrating this as part of our due diligence system.”**

**MIKHAIL TARASOV** — IKEA's Head of Forestry





# Governance and ethical use of data

Recognizing the power of our data, we have established a governance structure to safeguard stakeholders and manage risk. Operating under 501(c)(3) nonprofit status, the Board provides regular oversight, ensuring responsible stewardship of our data, with a focus on transparency to support its use for public good.

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The World Forest ID Board:

**SCOT MCQUEEN** — President

Scot, the Senior Technology Officer at FSC, brings expertise in strategic planning, project management, and building relationships in the forestry sector, following his work at Esri.

**DR. ARTHUR BLUNDELL** — Secretary

Arthur specializes in conflict and natural resource management. He has chaired the UN Security Council's panel on Liberia and worked on forest governance in Myanmar with Forest Trends.

**DR. MELISSA FLAGG** — Board Member

Founder of Flagg Consulting, Melissa has served in senior roles at the US Department of Defense and is affiliated with several research institutions. Her expertise spans defense science and technology.

**ALEXANDRA BANKS** — Vice President

Expert in corporate social responsibility, modern slavery risk management, and ethical trade, Alexandra has deep knowledge of auditing, international trade regulation, and ESG due diligence.

**ALICIA SULLIVAN** — Board Member

Alicia brings experience in natural resource management, remote sensing, and technology development, having worked at Weyerhaeuser, Microsoft, and Google. Her focus is on climate science and resource management.

**DR. PAUL WILKIN** — Board Member

Paul leads science and conservation at Royal Botanic Gardens, Kew. His research focuses on crops like yams and Enset, promoting economic innovation and climate-resilient agriculture.

**CATALINA ROMERO NOCUA** — Treasurer

Catalina is Deputy Managing Director at ASI, overseeing strategy and operations. With over 15 years in business strategy and finance, she also serves as Treasurer for World Forest ID.

**DR. CHARLES (CHIP) BARBER** — Board Member

Chip is the Director of Natural Resources Governance at WRI, with experience as Forest Division Chief at the US Department of State and as a consultant for the World Bank and The Nature Conservancy.

“World Forest ID is more than just an organization, it’s a whole network of partnerships that drive change.”

**DR. CHARLES (CHIP) BARBER** — Board Member

## Our Consortium

The World Forest ID Consortium is a group of public research institutions that are committed to protecting forests and other ecosystems using science. The research institutes drive innovation and ensure scientific excellence in the development of novel forensic techniques and global verification standards, reflecting their complementary areas of expertise. The Consortium is facilitated by World Forest ID, an independent legal entity with a mission to support collaboration, data interoperability and scale in the science necessary to make forest connected supply chains transparent and enforce environmental laws. Together the group works to expand the realm of relevant knowledge and utilize non-proprietary science and technology for global good. The Scientific Stewardship Committee, drawn from members of the consortium, oversees scientific risks and integrity, ensuring that all research and techniques adhere to the highest standards of credibility, ethical responsibility, and transparency.

**CITEmadera**  
Lima

CITEmadera Peru (Peru)  
José Ugarte Oliva



Institut de Recherches  
Agronomiques et Forestières, Gabon (IRAF)  
Dr. Dyana Ndiade Bouroubou



IPB University (Indonesia)  
Prof. Dr. Iskandar Siregar



Meise Botanic Garden (Belgium)  
Dr. Victor Deklerck



Royal Botanic Gardens, Kew (United Kingdom)  
Dr. Caspar Chater



The University of Adelaide (Australia)  
Prof. Dr. Andrew Lowe



Wageningen University (Netherlands)  
Prof. Dr. Pieter Zuidema



**“With our partnership with World Forest ID, our goal is to further understand the science as well as test the application of wood identification technology in our high risk supply chains. It’s also FSC’s hope that this becomes a widely adopted industry practice.”**



# Priorities for 2025



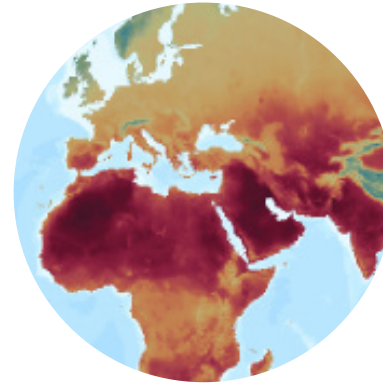
## Expanding origin models to the Congo and Amazon Basins

Adapting our AI-powered origin model to incorporate multi-genus sample data, and tropical forest characteristics from the Congo and Amazon Basins, strengthening transparency in supply chains that track back to these critical forest ecosystems.



## Developing AI origin models for soy and cocoa

Expanding our origin models beyond forests and into farms, most notably for soy in Latin America and cocoa in West Africa, Central America and Southeast Asia, using samples and data developed since 2019 in partnership with CITEMadera Lima, Meise Botanic Garden, and Royal Botanic Gardens, Kew.



## Enhancing AI models with expanded environmental data

Integrating additional environmental variables such as climate, soil, and land use data into our AI models to extract deeper knowledge from ground-truthed samples and improve origin verification accuracy and precision.



## Driving adoption for greater forest impact

Expanding partnerships with changemakers, community producers, regulators, retailers, and certification bodies to develop and scale our practical tools designed to bring transparency to global forest connected supply chains and protect forests.

# Financial summary (Year Ended December 31, 2024)

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## INCOME AND SUPPORT:

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Contributions:	\$2,213,683
Program Fees:	\$450,550
Interest Income:	\$49,327
Other Income (Loss):	\$646
Total Support and Revenues:	\$2,714,206

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## EXPENDITURES:

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Program Services:	\$2,035,272
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## SUPPORTING SERVICES:

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General and Administrative:	\$392,964
Fundraising:	\$117,618
Total Expenditures:	\$2,545,855

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## NET GAINS/LOSSES:

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Net Change in Assets:	\$133,670
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## NET MOVEMENT IN FUNDS:

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Net Assets at Beginning of Year:	\$2,230,607
Net Assets at Year-End:	\$2,364,277

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## STATEMENT OF FINANCIAL POSITION:

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Total Net Assets and Liabilities:	\$3,048,542
Total Liabilities:	\$342,133
Total Net Assets:	\$2,706,410
Without Donor Restrictions:	\$163,843
With Donor Restrictions:	\$2,071,764

These financial statements are unaudited and may be subject to adjustments.

# Funding partners

Our diverse funding base is essential to advancing our efforts to fight deforestation and global inequity. We could not achieve this impact without the trust and support of our funding partners. Continued investment is needed to expand sample collection into new regions, broadening the spatial coverage and accuracy of our AI-enabled models, and making our data more actionable and effective in driving supply chain accountability.

## **GOVERNMENT AGENCIES:**

Australian Department of Agriculture, Fisheries and Forestry (DAFF)

UK Department for Environment, Food and Rural Affairs (DEFRA)

US Animal & Plant Health Inspection Service (APHIS)

US Department of Justice

US Department of State

US Forest Service International Programs

## **NONPROFITS AND INTERNATIONAL ENTITIES:**

European Panel Federation

Forest Stewardship Council (FSC)

Royal Botanic Gardens, Kew (RBG Kew)

World Resources Institute (WRI)

Forest Trends

## **PRIVATE FOUNDATIONS:**

Climate and Land Use Alliance (CLUA)

Gordon and Betty Moore Foundation

Mulago Foundation

## **CORPORATE PARTNERS:**

Assurance Services International (ASI)

IKEA

Kingfisher





nature plants

Article <https://doi.org/10.1038/s41477-024-01648-5>

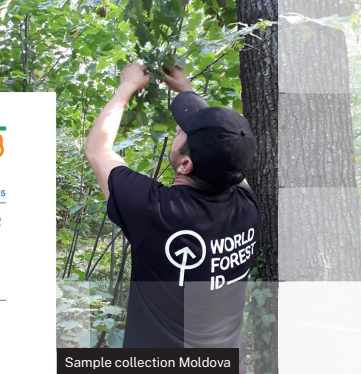
# A framework for tracing timber following the Ukraine invasion

Received: 30 October 2023  
Accepted: 6 February 2024  
Published online: 11 March 2024  
Check for updates

Thomas Mortier<sup>1,2,3</sup>, Jakub Truszkowski<sup>2,4,5</sup>, Marigold Norman<sup>1</sup>, Markus Boner<sup>2</sup>, Bogdan Buliga<sup>6,7</sup>, Caspar Chater<sup>8,9</sup>, Henry Jennings<sup>1</sup>, Jade Saunders<sup>1</sup>, Rosie Sibley<sup>1</sup>, Alexandre Antonelli<sup>10,11,12</sup>, Willem Waageman<sup>1</sup> & Victor Deklerck<sup>13</sup>✉

Scientific testing including stable isotope ratio analysis (SIRA) and trace element analysis (TEA) is critical for establishing plant origin, tackling deforestation and enforcing economic sanctions. Yet methods combining SIRA and TEA into robust models for origin verification and determination are lacking. Here we report a (1) large Eastern European timber reference database (*Betula*, *Fagus*, *Pinus*, *Quercus*) tailored to sanctioned products following the Ukraine invasion; (2) statistical test to verify samples against a claimed origin; (3) probabilistic model of SIRA, TEA and genus distribution data, using Gaussian processes, to determine timber harvest location. Our verification method rejects 40–60% of simulated false claims, depending on the spatial scale of the claim, and maintains a low probability of rejecting correct origin claims. Our determination method predicts harvest location within 180 to 230 km of true location. Our results showcase the power of combining data types with probabilistic modelling to identify and scrutinize timber harvest location claims.

Russia's invasion of Ukraine sparked global responses designed to penalize Russia and thwart continuing aggression. The UK and the European Union announced economic sanctions packages, including a ban on the direct imports of wood products from Russia and Belarus<sup>1</sup>. The USA increased tariffs on wood imports from both countries<sup>2</sup> (https://ec.europa.eu/eurostat/comext/newctweb/). While there is emerging evidence of companies seeking replacement markets, demand for birch, beech (*Fagus* spp.), pine (*Pinus* spp.) and oak (*Quercus* spp.) products remains high<sup>3</sup>. As a result, there has been a shift in the timber trade from both countries to the USA, Canada, Mexico and other countries<sup>4</sup> (https://ustr.gov). These interventions, combined with bans by the EU Stewardship Council and the Programme for the Endorsement of Forest Certification<sup>5</sup>, transformed timber products harvested in Russia, Belarus into 'conflict timber' in western markets<sup>6</sup>. Companies operating in the UK, European Union and USA long relied on timber imports from Russia and Belarus, particularly birch (*Betula* spp.), for construction<sup>7</sup>. By weight, 12% of all EU and UK wood product imports under Chapter 44 of the



# Case study 1. — AI-driven solutions to identify conflict timber in Eastern Europe

**AMBITION:** To create the data necessary to identify Russian and Belarusian conflict timber in trade.

In response to the invasion of Ukraine, World Forest ID, supported by funding from the UK Department for Environment Food and Rural Affairs and the US Department of State, launched a mission to build a comprehensive reference database for high-risk species. Over 4,500 samples were collected from 13 commercially-viable tree species across nine Eastern European countries, laying the groundwork for verifying timber origins and supporting global sanctions against conflict timber.

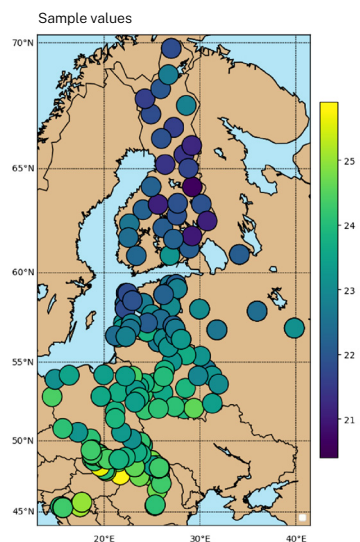
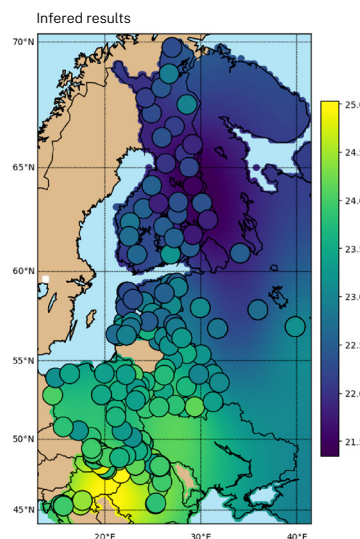
Our Nature Plants paper, "A Framework for Tracing Timber Following the Ukraine Invasion," outlined methods for tracing timber origins using AI and geochemical analysis. In 2024, these methods became reality, with multiple European and US investigators and regulatory agencies using our model to scrutinize imported plywood products. IKEA and the European Panel Federation directly invested in expanding the dataset in the Baltics and Black Sea region. Advanced AI models, integrating Stable Isotope Ratio Analysis (SIRA) and Trace Element Analysis (TEA), proved essential in identifying timber harvest locations. This ensures illegal timber does not enter global markets.

**COUNTRIES SAMPLED** — Belarus, Croatia, Estonia, Finland, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine.  
**SPECIES COLLECTED INCLUDE** — Birch, Aspen, Pine, Spruce, Oak, Beech, Ash, Fir, Alder, Larch, Elm, and Linden.

“AI allows us to augment ground-truthed data, enabling us to predict critical information even in conflict zones. This technology ensures we don’t put people in harm’s way while still achieving reliable, actionable insights.”

DR. MELISSA L. FLAGG — Board Member

Inferred  $\delta^{18}\text{O}$  (Oxygen) values created with AI-enabled spatial models



Data used to train the AI model for origin verification

**STABLE ISOTOPE RATIOS**

*Isotope ratios measured:*

- $\delta^2\text{H}$  (Hydrogen)
- $\delta^{13}\text{C}$  (Carbon)
- $\delta^{15}\text{N}$  (Nitrogen)
- $\delta^{18}\text{O}$  (Oxygen)
- $\delta^{34}\text{S}$  (Sulfur)

**TRACE ELEMENTS**

*Elements Measured:*

- Aluminium
- Barium
- Bromine
- Calcium
- Chlorine
- Copper
- Iron
- Lead
- Manganese
- Nickel
- Phosphorus
- Potassium
- Rubidium
- Silicium
- Strontium
- Sulfur
- Zinc

**AUXILLIARY DATA**

*Data Considered:*

- Species Distribution





Sample collection Côte d'Ivoire



Sample drying Thailand

## Case study 2. — Protecting forests and futures in cocoa supply chains




**AMBITION:** To build a reference database that supports the verification of cocoa origins, promoting sustainable and ethical cocoa production.

We're developing a robust cocoa sample collection from key regions, supporting verification of cocoa origins. Cocoa production in West Africa, particularly in Côte d'Ivoire and Ghana, has driven significant deforestation, with these countries losing 94% and 80% of their forests respectively over the past 60 years. This deforestation, fueled by the expansion of cocoa cultivation into protected areas, devastates biodiversity, exacerbates climate change, and perpetuates child labor, with nearly all affected children engaged in hazardous work.

Smallholders, the backbone of the cocoa industry, are often disadvantaged by illegal deforestation and exploitative labor practices. Traceability helps identify and exclude cocoa linked to deforestation from global markets, supporting compliance with the European Union Deforestation Regulation (EUDR). It also ensures that sustainably and ethically produced cocoa is recognized and rewarded, helping responsible smallholders compete fairly, promoting long-term environmental sustainability and human rights protections.

**COCOA SAMPLES COLLECTED TO DATE** Bolivia: 258 Brazil: 148 Colombia: 1223 Ecuador: 537 Thailand: 305 Cameroon: 450 Ivory Coast: 110 Nigeria: 493





**“How we treat the planet reflects how we treat people. Tracing cocoa is crucial for both forests and farmers. We need traceability to ensure that human rights, especially those of children, are respected in cocoa-producing regions.”**





Sample collection Peru

## Case study 3. — Protecting forests and biodiversity in the Amazon Basin

**AMBITION:** To safeguard biodiversity and combat illegal deforestation in the Amazon Basin by building a comprehensive collection of timber and Forest Risk Commodity (FRC) reference samples.

We're addressing the urgent threat of biodiversity loss in the Amazon Basin, driven by illegal logging and agricultural expansion. In Brazil and Ecuador, we collect samples from high-risk timber species like Ipê and Mahogany, as well as key FRCs like soy. Operating in remote tropical regions presents significant challenges, including difficult terrain, extreme weather, and the need to establish trust with local communities.

**BRAZIL:** Wood Samples: 1146 / Soy Samples: 504 / Cocoa Samples: 148

**COLOMBIA:** Wood Samples: 934 / Cocoa Samples: 1223

**ECUADOR:** Cocoa Samples: 537


Our teams, often in partnership with landowners and universities, navigate these complexities to gather samples successfully. In Peru, led by Arthur La Rosa Sánchez Navarro and Rosario Carrasco Torres, we collaborated closely with community leaders to secure access and permissions. Arthur and Rosario also trained indigenous communities in the Peruvian Amazon to collect geo-referenced wood and commodity samples, empowering them to actively participate in forest conservation. By promoting sustainable and legal practices, we support farmers in preserving forests while sustaining their livelihoods, fostering a more equitable and sustainable future for those living in these regions.

**PERU:** Wood Samples: 5565

**BOLIVIA:** Soy Samples: 171 / Cocoa Samples: 258

**ARGENTINA:** Soy Samples: 40



A man wearing a white hard hat, safety glasses, and a high-visibility yellow vest is kneeling in a forest. He is holding a clear plastic bag containing a sample, which is being handed to him by another person whose hand is visible from the right. The background is a dense, sun-dappled forest with many trees and green foliage.

“I never thought I’d be working in the rainforest, but this is where you really see the problems first-hand, and that motivates you. It feels like a crazy job sometimes, but it’s rewarding, and I believe it’s going to have a big impact.”

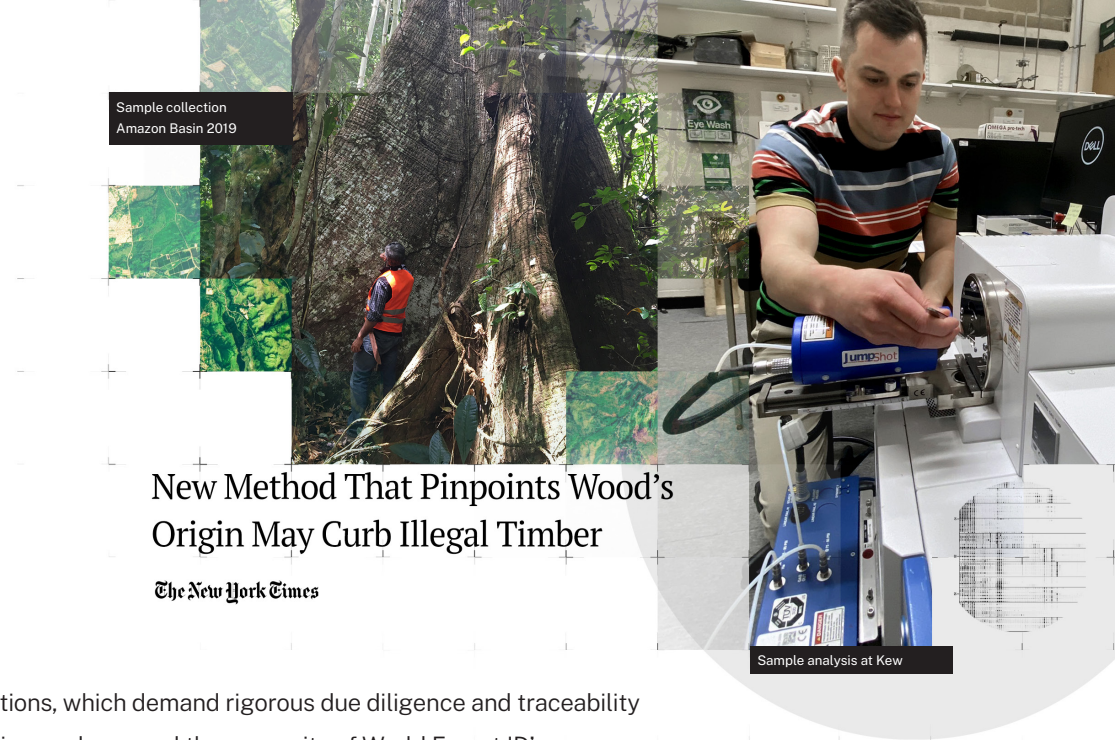
ARTHUR LA ROSA SÁNCHEZ NAVARRO — Collector, Peru



# Our history

The roots of World Forest ID trace back to 2017, when WRI came together with USFS-International Programs, Royal Botanic Gardens, Kew and FSC, bringing their expertise in science, traceability, and forestry to create a new approach to species and origin verification for Forest Risk Commodities. Initial discussions led to the formation of the World Forest ID Founding Consortium, an informal collaborative effort focused on building the reference data necessary to enforce timber-related regulations like the EU Timber Regulation and the Lacey Act Amendment.

In 2021, World Forest ID was granted 501(c)(3) status by the US Government as a private, non-profit organization. This milestone allowed the organization to expand its reach, securing crucial funding and partnerships that enabled the rapid scaling of its global reference collections. World Forest ID's official incorporation coincided with a critical moment in international environmental policy, marked by the adoption of the UK Environment Act in 2021, the EU Deforestation Regulation in 2023 and the EU Corporate Sustainability Due Diligence Directive in 2024.



These regulations, which demand rigorous due diligence and traceability in supply chains, underscored the necessity of World Forest ID's mission. As the world's legal frameworks evolve to combat deforestation more effectively, World Forest ID is poised to create the science-backed tools that make enforcement and compliance possible.

Today, World Forest ID operates at the intersection of science, technology, and law, creating data and tools that not only support the enforcement of international regulations but also drive systemic change in global supply chains. The organization's impact is felt across continents, from the Amazon Basin to the European single market, where our data is used to trace the origins of timber, ensuring that only legally-sourced wood reaches consumers. In just a few short years, World Forest ID has transformed from a concept into a critical player in the global fight against illegal logging and deforestation, demonstrating the power of collaboration and innovation in achieving real-world environmental impact.



