What is the value of a forest?

Natural capital accounting for forest management

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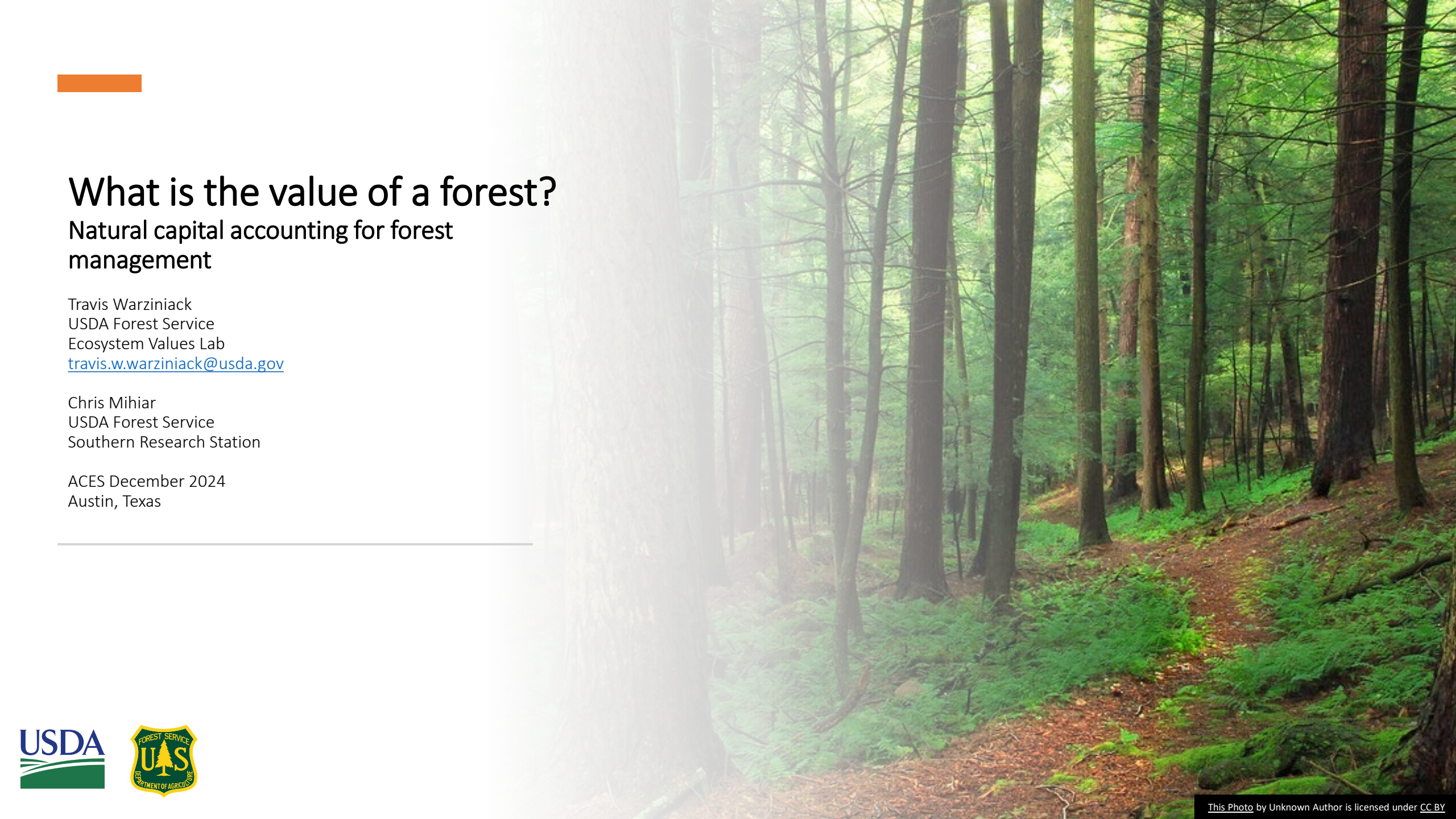

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NATIONAL STRATEGY TO DEVELOP STATISTICS FOR ENVIRONMENTAL-ECONOMIC DECISIONS

A U.S. SYSTEM OF NATURAL CAPITAL ACCOUNTING AND ASSOCIATED ENVIRONMENTAL-ECONOMIC STATISTICS

OFFICE OF SCIENCE AND TECHNOLOGY POLICY
OFFICE OF MANAGEMENT AND BUDGET
DEPARTMENT OF COMMERCE

JANUARY 2023

THE WHITE HOUSE
WASHINGTON

National Strategy to Develop Statistics for Environmental-Economic Decisions (SEED)

DEVELOP NEW APPROACHES TO CONNECT FOREST-GENERATED SERVICES WITH USERS.

THE FORESTS ACCOUNT SHOULD DEVELOP DATA SETS ON THE ECONOMIC VALUE FOR THE MOST IMPORTANT FOREST-GENERATED SERVICES.

THE SET OF MONETIZED FOREST PROVIDED SERVICES SHOULD EXPAND OVER TIME.

What will be in the forest accounts?

Biophysical Accounts

- Forest Area and types
  - Timberland
  - Non-timberland
  - Reserved
- Forest Condition
  - Disturbances
  - Interior forest
  - Lots of other variables

Economic accounts

- Timber products
- Non-timber forest products
- Recreation and tourism

Ecosystem Services

- Forest carbon
  - Carbon sequestration
  - Carbon stocks (Above ground carbon, soil carbon, other carbon pools)
  - Carbon in wood products
- Water from forests
  - Extractive uses
  - Instream benefits
  - Healthy watersheds (role forests have in water benefits)
- Cultural accounts
  - Cultural and spiritual values
  - Traditional knowledge
- Health accounts
  - Air quality and human health
  - Ecosystem services for well-being

Forest Extent and Condition

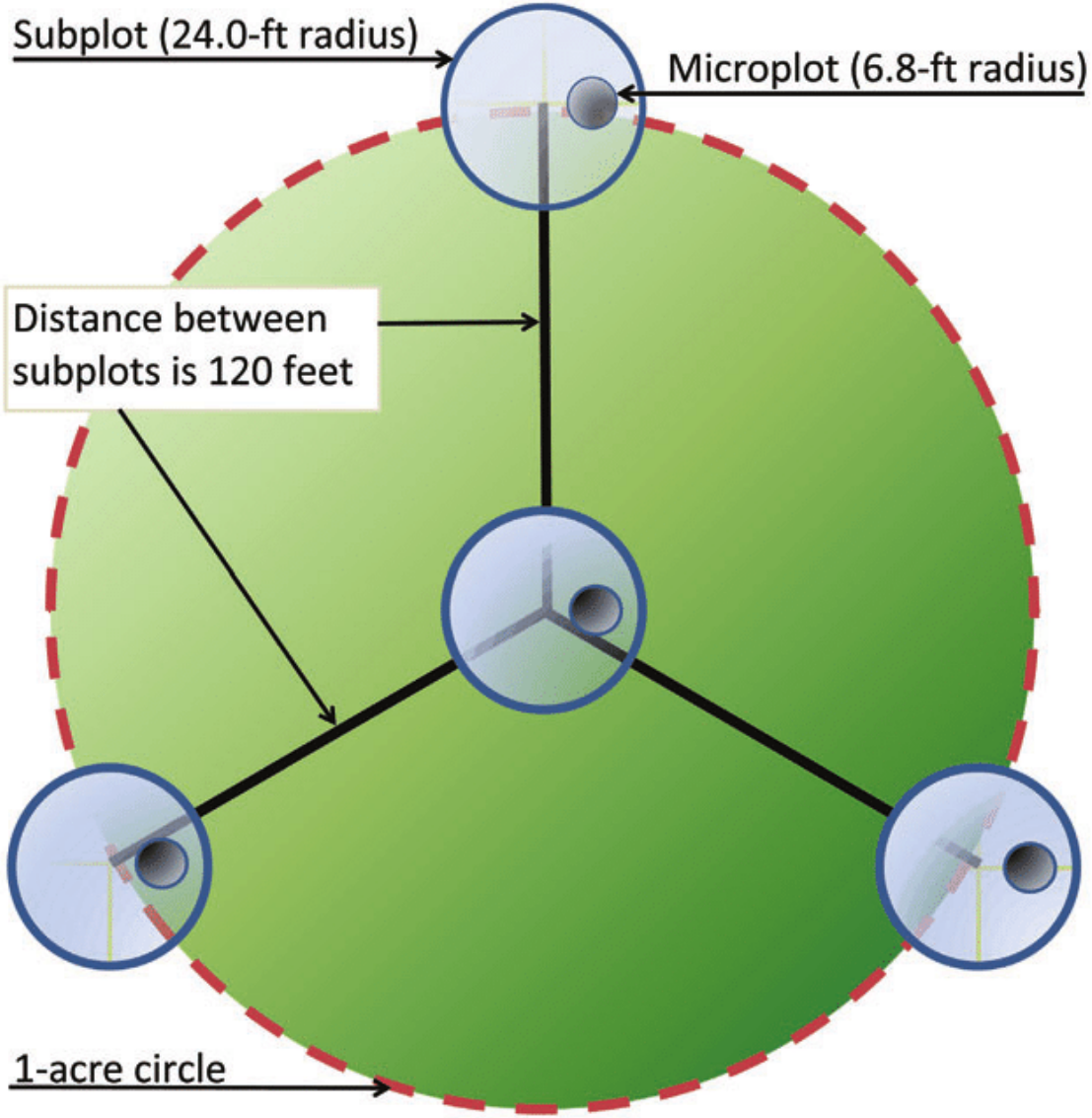
Extent: Forest Inventory and Analysis
the Nation's Forest Census

Forest inventory plot: 1 for every 6,000 acres of forest

- Forest type and attributes
- Tree species
- Tree size
- General condition

Forest health plot: 1 out of every 16 inventory plots (1 per 100,000 acres of forest)

- Crown conditions
- Lichen community
- Understory veg
- Down woody debris
- Soil attributes



1000 hectares	Opening stock (2012)	Net changes in stock	Closing stock (2017)
Forest land (000 ha)	310091	-300	309791
Naturally regenerated forests	283727	-1231	282496
Timberland	184544	-3654	180890
Mature and old growth	Not Measured		46065
Planted forests	26364	931	27295
Plantation forest	0	0	0
Introduced plantation forest	0	0	0
other planted forest	0	0	0
Other land with tree cover	0	0	0
Tree orchards	1643	190	1833
Agroforestry	0	0	0
Urban settings	0	51477	51477
Other wooded land	21279	1801	23080
Accounting period is 2022 to 2023			
Carbon (millions metric tonnes)	62,130	(189.30)	62,320
Above ground biomass	17,622	(134.10)	17,757
Below ground biomass	3,207	(26.40)	3,233
Dead wood	3,148	(35.80)	3,184
Litter	3,768	7.20	3,761
Soil (CO_2 per cm)			
Mineral soil	28,401	(0.30)	28,401
Organic soil	5,983	-	5,983

Forest Condition

- TBD (December 2025)
- SEEA EA working group

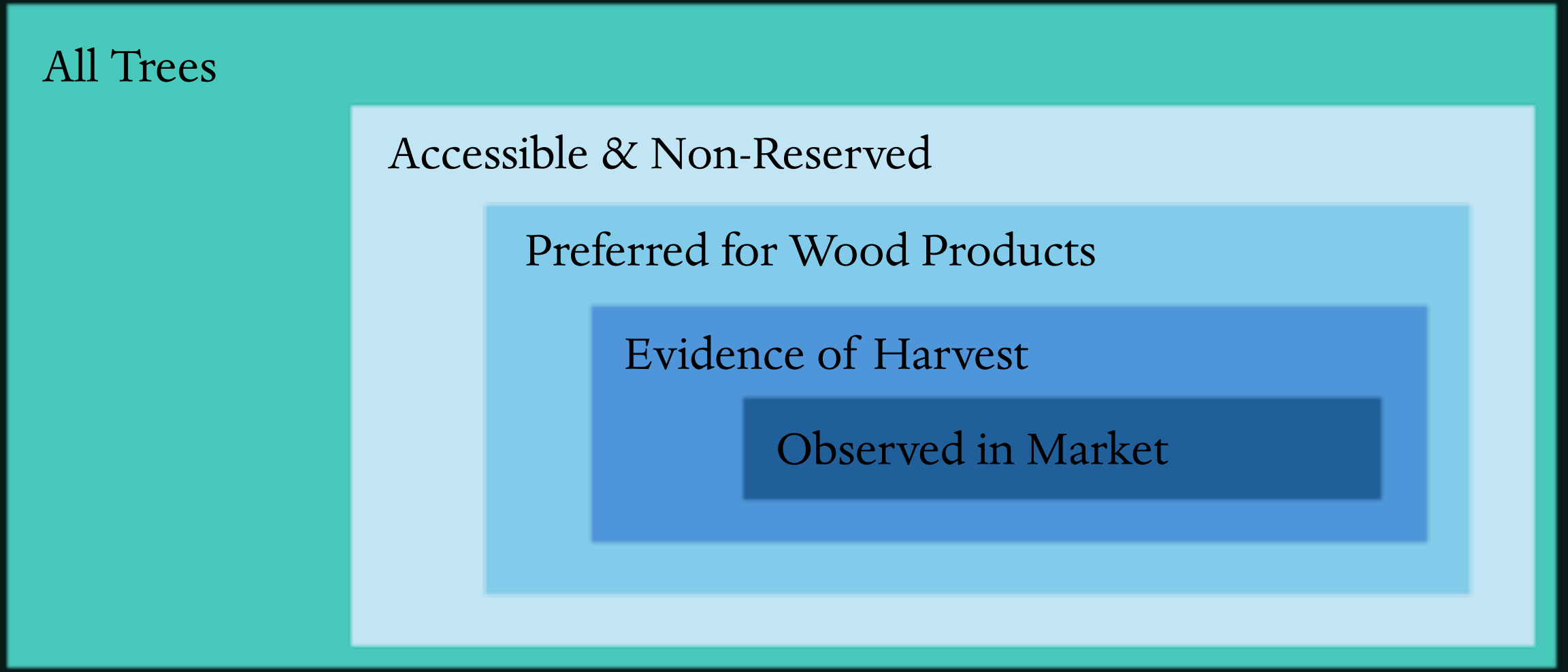
Timber Valuation: U.S. Asset Account Pilot

CHRIS MIHIAR, U.S. FOREST SERVICE

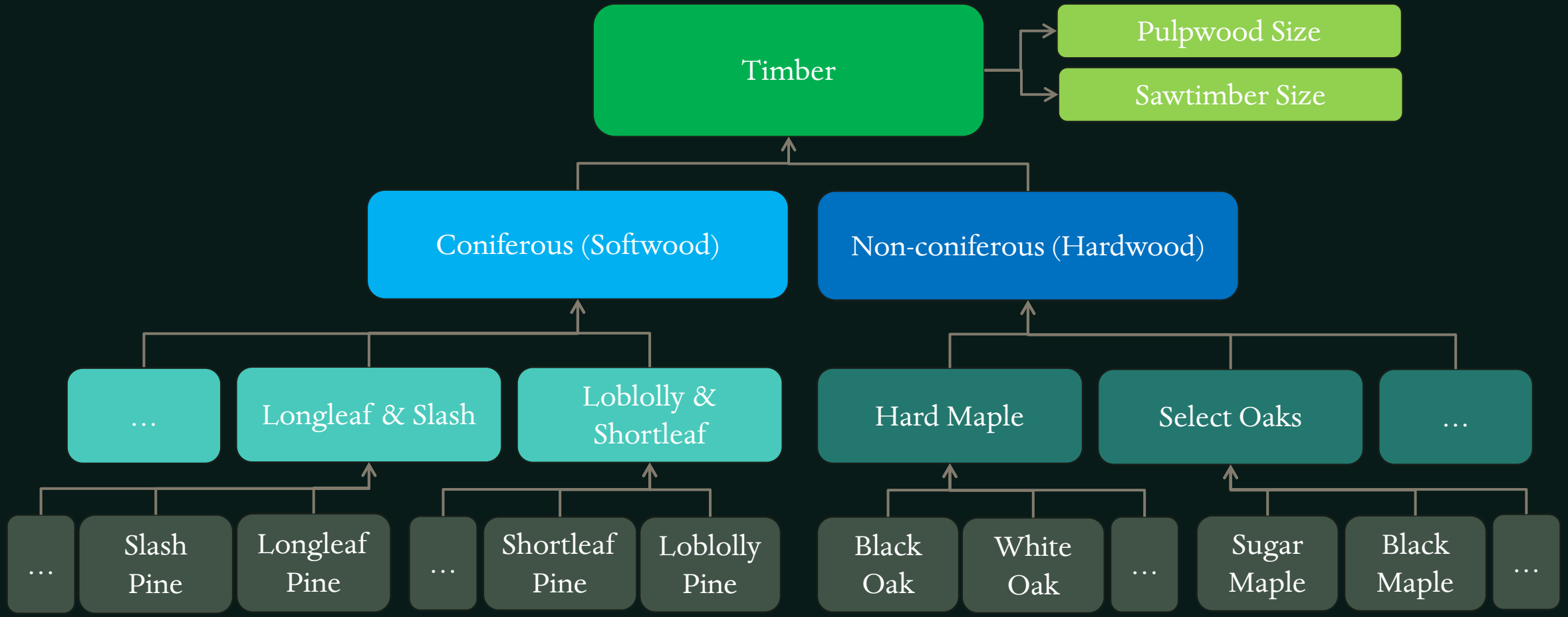
LONDON GROUP 2024

WASHINGTON, D.C., USA

Production Boundary



Tree Species Nesting



Southern Market **Physical** Account Table

Opening Stock 2021 – in tons

Species Group (level 2)	Species Class (level 1)	Pulpwood Size	Sawtimber Size
Loblolly & shortleaf pines	Coniferous (Softwood)	34,853 Mt	30,565 Mt
Yellow-poplar	Non-coniferous (Hardwood)	4,680 Mt	11,926 Mt
Select white oaks	Non-coniferous (Hardwood)	3,673 Mt	9,926 Mt
Sweetgum	Non-coniferous (Hardwood)	6,425 Mt	6,143 Mt
Hickory	Non-coniferous (Hardwood)	3,872 Mt	5,172 Mt
Longleaf & slash pines	Coniferous (Softwood)	6,165 Mt	4,087 Mt
Other red oaks	Non-coniferous (Hardwood)	1,235 Mt	3,265 Mt
Ash	Non-coniferous (Hardwood)	1,169 Mt	1,445 Mt
Cypress	Coniferous (Softwood)	493 Mt	1,427 Mt
Eastern white and red pines	Coniferous (Softwood)	341 Mt	927 Mt
Hard maple	Non-coniferous (Hardwood)	579 Mt	609 Mt

Southern Market **Monetary** Account Table

Opening Stock 2021 – in billions of $US

Species Group (level 2)	Species Class (level 1)	Pulpwood Size	Sawtimber Size
Loblolly & shortleaf pines	Coniferous (Softwood)	$ 779	$ 6,849
Yellow-poplar	Non-coniferous (Hardwood)	$ 87	$ 3,695
Select white oaks	Non-coniferous (Hardwood)	$ 77	$ 3,128
Sweetgum	Non-coniferous (Hardwood)	$ 152	$ 1,950
Hickory	Non-coniferous (Hardwood)	$ 80	$ 1,640
Longleaf & slash pines	Coniferous (Softwood)	$ 162	$ 957
Other red oaks	Non-coniferous (Hardwood)	$ 38	$ 1,051
Ash	Non-coniferous (Hardwood)	$ 25	$ 457
Cypress	Coniferous (Softwood)	$ 11	$ 320
Eastern white and red pines	Coniferous (Softwood)	$ 7	$ 169
Hard maple	Non-coniferous (Hardwood)	$ 9	$ 192

Next Steps

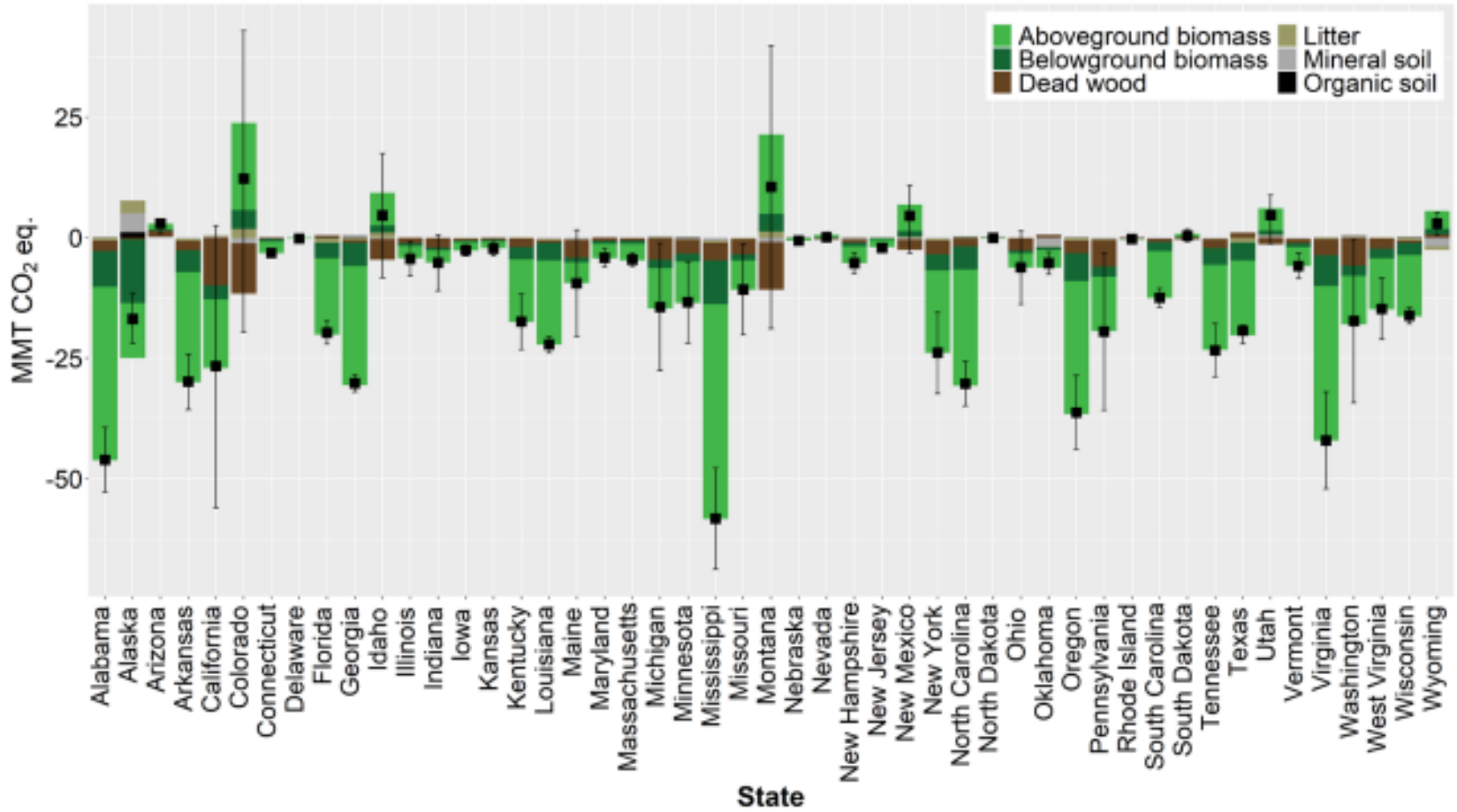
- Pre-merchantable valuation
- Refine timber species selection
- Connect tables across years

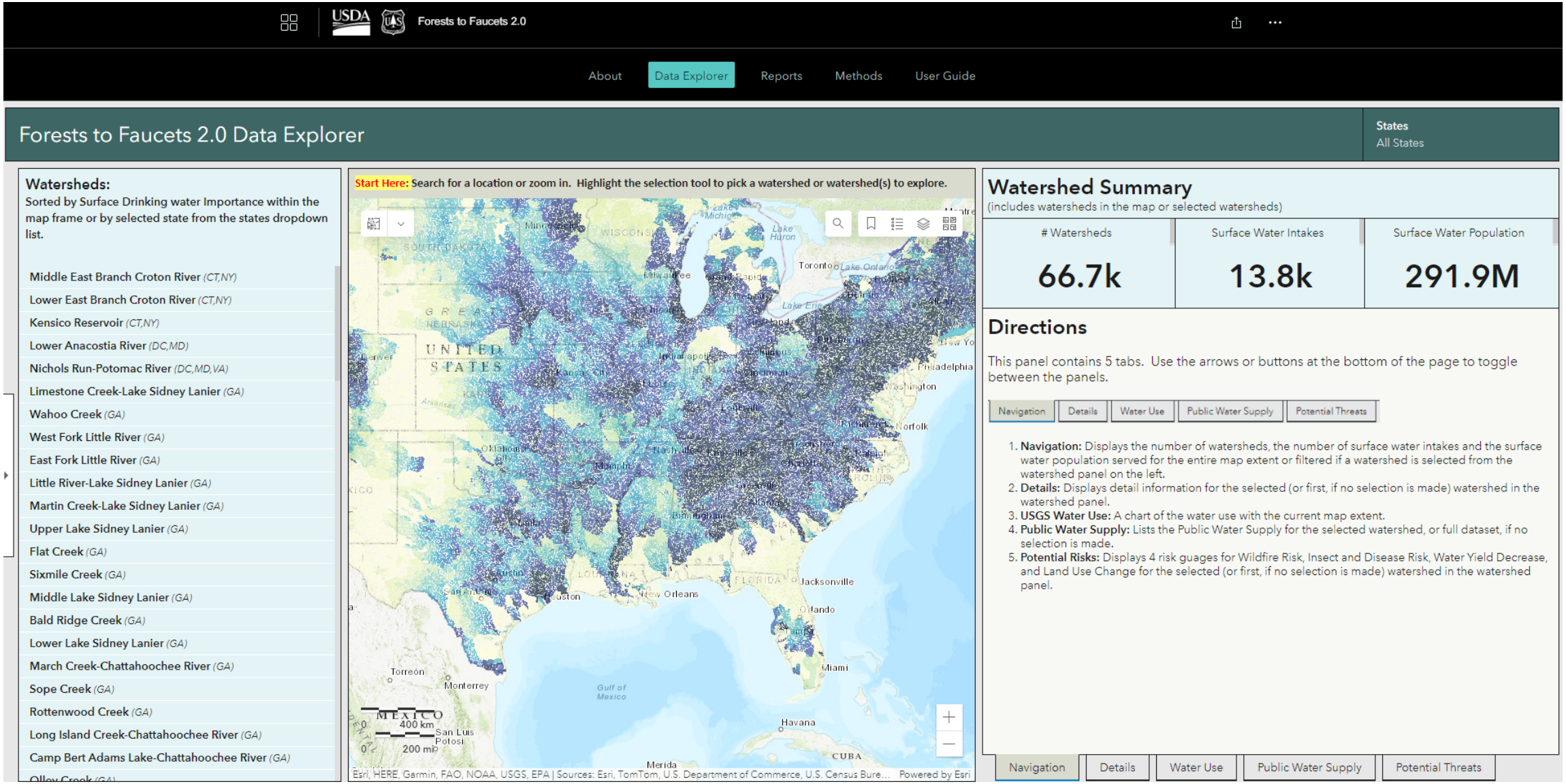
Ecosystem Services

Emissions and removals from land use change (MMT CO2 eq)

Emissions and Removals Category[a]	1990	1995	2000	2005	2010	2017	2018	2019
Forest land remaining forest land[b]	(663.8)	(647.1)	(624.5)	(555.5)	(611.8)	(564.0)	(599.8)	(583.3)
Non-CO_2 emissions from fire	1.5	0.5	2.9	8.2	4.7	18.3	15.7	15.7
N_2O emissions from forest soils	0.1	0.3	0.5	0.5	0.5	0.5	0.5	0.5
Non-CO_2 emissions from drained organic soils	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forest land converted to non-forest land[b]	117.3	119.0	121.0	122.9	124.5	125.3	125.3	125.3
Non-forest land converted to forest land[b]	(98.2)	(98.3)	(98.4)	(98.7)	(98.8)	(99.1)	(99.1)	(99.1)
Harvested wood products	(123.8)	(112.2)	(93.4)	(106.0)	(69.1)	(95.7)	(98.8)	(108.5)
Woodlands remaining woodlands[c]	4.1	4.1	4.0	3.9	3.8	3.5	3.5	3.5
Urban trees in settlements[d]	(96.4)	(103.3)	(110.4)	(117.4)	(124.6)	(129.8)	(129.8)	(129.8)
Total Emissions and Removals	**(859.1**	**(837.0)**	**(798.3)**	**(742.0)**	**(770.8)**	**(740.9)**	**(782.4)**	**(775.7)**

Annual emissions and removals by carbon pool for forest land remaining forest (2019)




Forests to Faucets 2.0
About
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User Guide
Forests to Faucets 2.0 Data Explorer
States
All States
Watersheds:
Sorted by Surface Drinking water Importance within the map frame or by selected state from the states dropdown list.
Middle East Branch Croton River (CT,NY)
Lower East Branch Croton River (CT,NY)
Kensico Reservoir (CT,NY)
Lower Anacostia River (DC,MD)
Nichols Run-Potomac River (DC,MD,VA)
Limestone Creek-Lake Sidney Lanier (GA)
Wahoo Creek (GA)
West Fork Little River (GA)
East Fork Little River (GA)
Little River-Lake Sidney Lanier (GA)
Martin Creek-Lake Sidney Lanier (GA)
Upper Lake Sidney Lanier (GA)
Flat Creek (GA)
Sixmile Creek (GA)
Middle Lake Sidney Lanier (GA)
Bald Ridge Creek (GA)
Lower Lake Sidney Lanier (GA)
March Creek-Chattahoochee River (GA)
Sope Creek (GA)
Rottenwood Creek (GA)
Long Island Creek-Chattahoochee River (GA)
Camp Bert Adams Lake-Chattahoochee River (GA)
Start Here: Search for a location or zoom in. Highlight the selection tool to pick a watershed or watershed(s) to explore.
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA | Sources: Esri, TomTom, U.S. Department of Commerce, U.S. Census Bure... Powered by Esri
Watershed Summary
(includes watersheds in the map or selected watersheds)
Watersheds
66.7k
Surface Water Intakes
13.8k
Surface Water Population
291.9M
Directions
This panel contains 5 tabs. Use the arrows or buttons at the bottom of the page to toggle between the panels.
Navigation
Details
Water Use
Public Water Supply
Potential Threats
1. Navigation: Displays the number of watersheds, the number of surface water intakes and the surface water population served for the entire map extent or filtered if a watershed is selected from the watershed panel on the left.
2. Details: Displays detail information for the selected (or first, if no selection is made) watershed in the watershed panel.
3. USGS Water Use: A chart of the water use with the current map extent.
4. Public Water Supply: Lists the Public Water Supply for the selected watershed, or full dataset, if no selection is made.
5. Potential Risks: Displays 4 risk guages for Wildfire Risk, Insect and Disease Risk, Water Yield Decrease, and Land Use Change for the selected (or first, if no selection is made) watershed in the watershed panel.
Navigation
Details
Water Use
Public Water Supply
Potential Threats

Region	Population served by national forests		Gallons of drinking water from national forests		Household spending on water from national forests (millions)
	Thousands of People	Percent of population	Millions of gallons	Percent of surface withdrawals	
U.S.	**17,306.1**	**10%**	**891,633.3**	**12%**	**$ 8,348.2**
Region 1	165.5	16%	9,128.4	19%	$ 51.7
Region 2	3,025.1	31%	169,570.8	33%	$ 1,509.6
Region 3	1,642.0	35%	101,876.5	35%	$ 579.2
Region 4	900.4	27%	62,453.3	27%	$ 460.0
Region 5	8,199.1	27%	400,007.4	28%	$ 4,514.0
Region 6	1,052.0	20%	52,868.0	21%	$ 552.1
Region 8	1,857.1	3%	76,688.4	3%	$ 525.2
Region 9	464.8	1%	19,040.5	1%	$ 156.4

Thank you

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