

Lanark District Maple Syrup Producer's Association Carbon Footprint Project

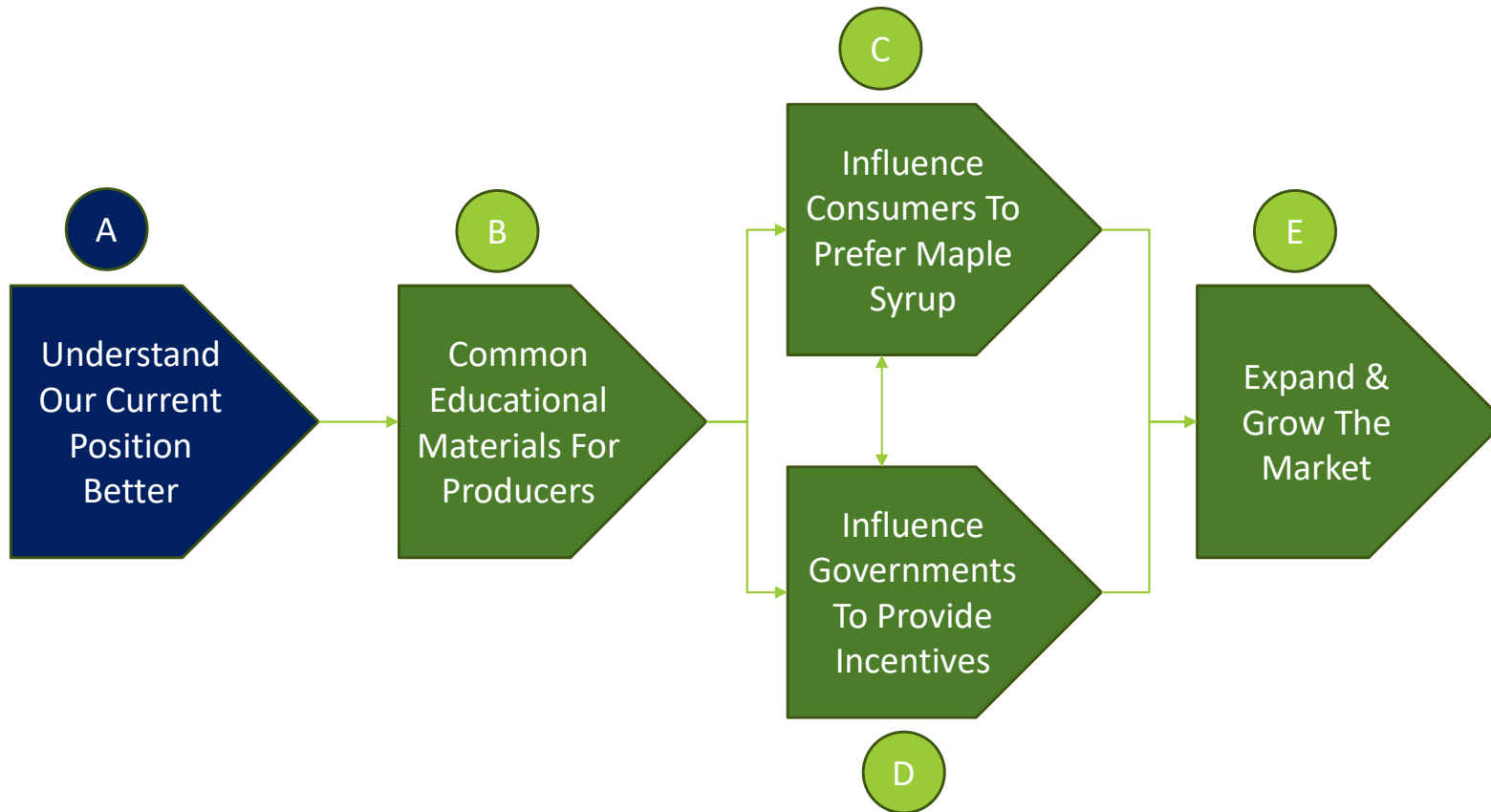
PAUL RENAUD

THE LANIGAN GROUP

Cette presentation est aussi disponible en français

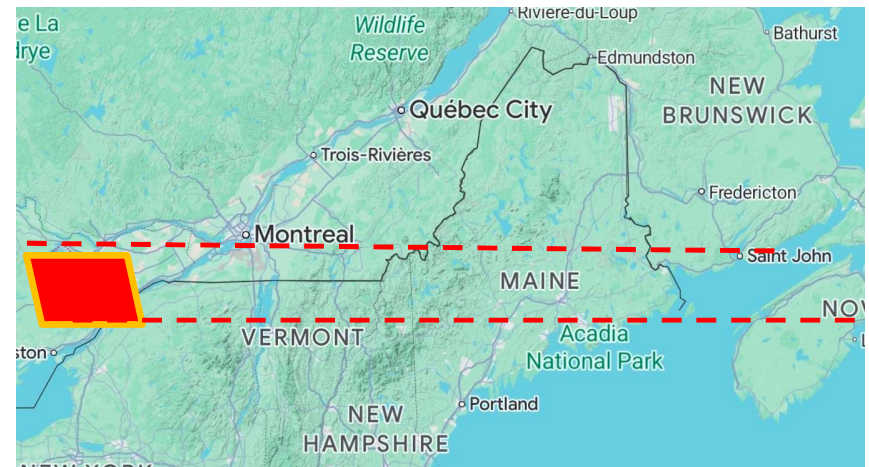


IMSI & OMSPA's Climate Strategy



Lanark District Maple Syrup Producers Association

- ❖ LDMSPA Is An Ideal Pilot Location For the IMSI
 - ❖ Same Eco-Region as Eastern Townships
 - ❖ Same latitude as Lower Eastern Townships, Northern Vermont, South-Central Maine
- ❖ The largest maple syrup producing district in OMSPA
 - ❖ 228,000 taps circa 2021
 - ❖ > 86 producers, average producer size = 2,650 taps
 - ❖ Demographically comparable to Nicolet-Yamaska in Quebec, but larger geographically
- ❖ Prior Studies Done by The Lanigan Group in LDMSPA
 - ❖ 5 producers already proved to be climate friendly
 - ❖ Ranging in size from 250 to 7,000 taps



Lanark Pilot Project Objectives

1. Estimate the Net Carbon Footprint of participating maple syrup producers
 - Efficiently establish sugarbush carbon inventories by using LIDAR mapping provided by the Ont Woodlot Assoc (OWA)
 - Obtain emissions data from producers, focusing on direct and energy-related emissions (Scopes 1 & 2)
 - Estimate the net carbon footprint
2. Determine the extent to which they are representative of the non-participating members of the LDMSPA
 - Based on demographics of participating producers (e.g. size)
3. Identify opportunities to improve their carbon footprint
 - Identify any trends / similarities / differences across producers
 - Identify best practices and opportunities for either reducing emissions or improving sequestration
4. Present and share learnings within LDMSPA, OMSPA and the IMSI
 - Present summarized findings
 - Identify whether the pilot should be scaled across Ontario and other parts of Canada where LIDAR data exists

Project Phases

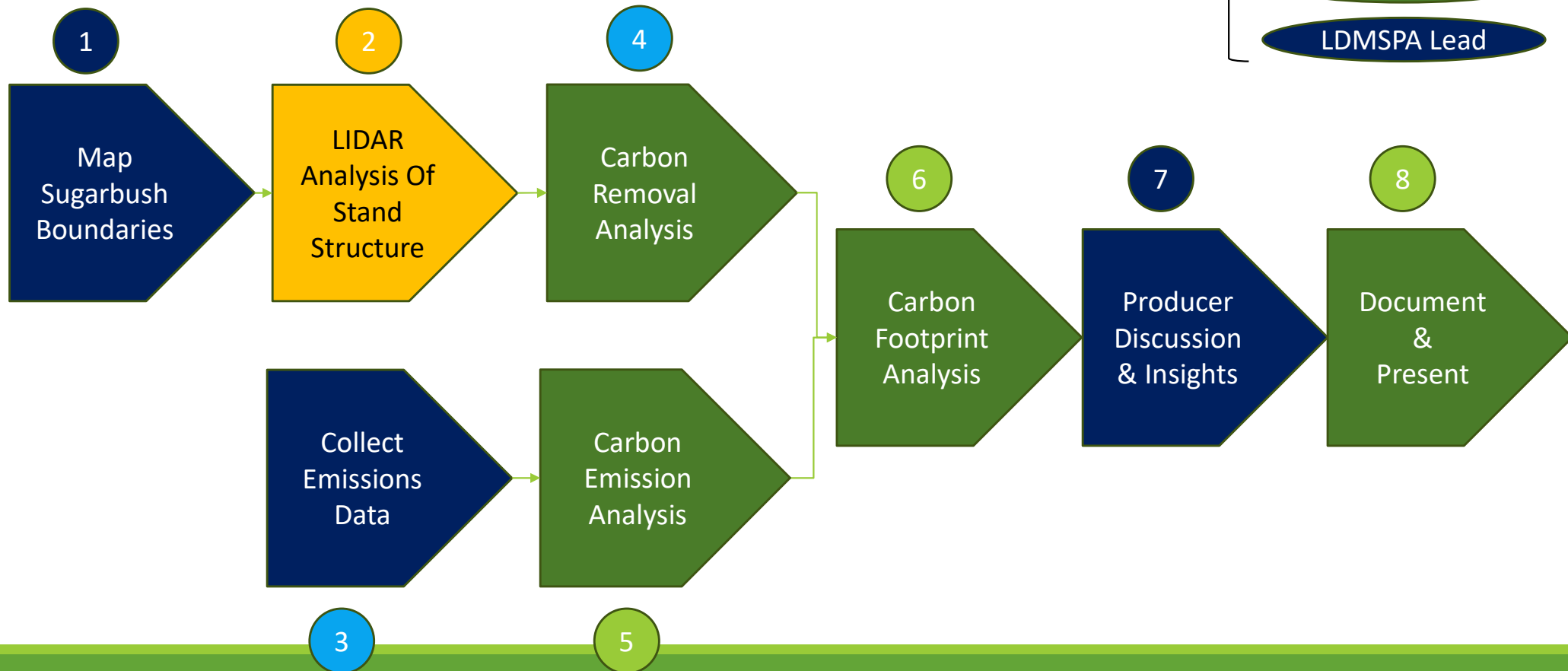
Legend

Current Status

OWA Lead

Lanigan Lead

LDMSPA Lead

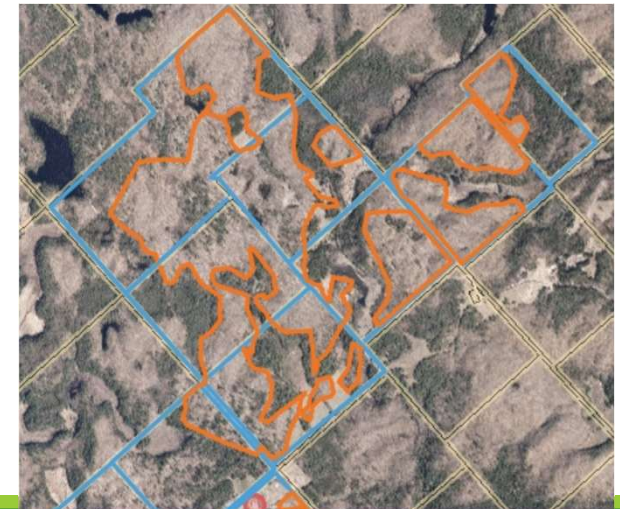


Producers Participating

11 Producers At Project Start
1 Added In August
2 More Expected This Fall

250 Taps (Smallest)
40,000 Taps (Largest)
3,200 Taps (Avg Excl. Above)
75,700 Taps Total From Current
100,000 Taps Expected

Wide Variety Of Sugarbush Topology
Widely Dispersed Locations
Both Single & Multi-Stand Sugarbushes

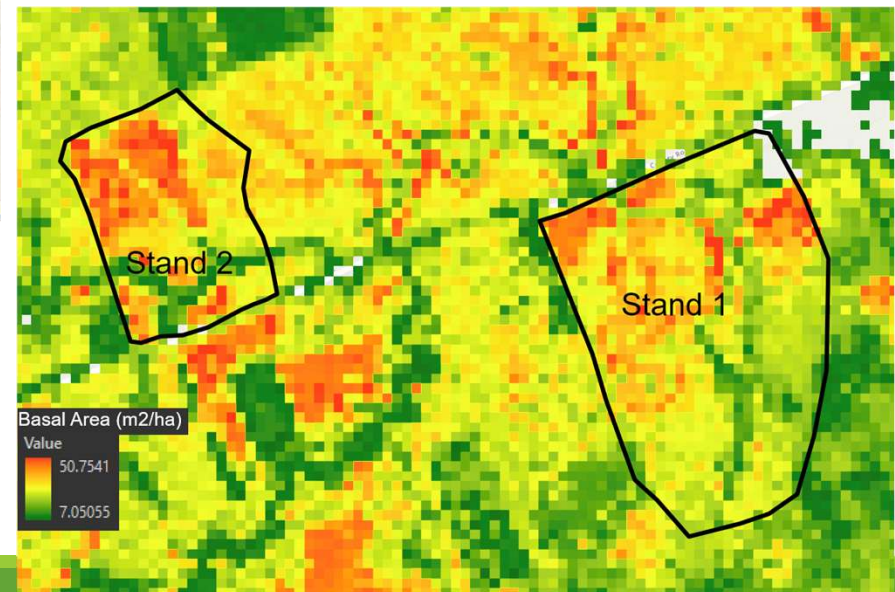


From Map To LIDAR

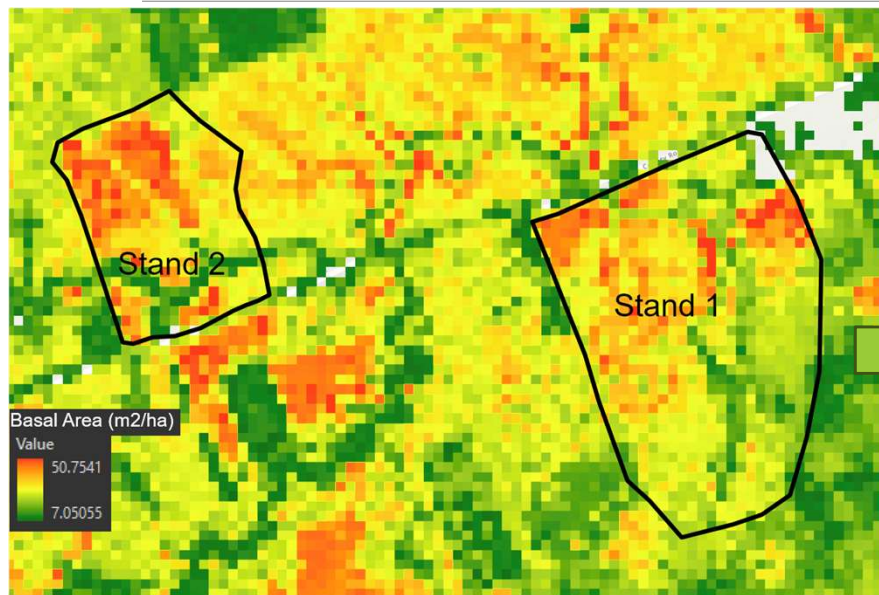


Sugarbush Boundary
With 1 Stand

LIDAR Example With 2 Stands



From LIDAR To Stand Structure Data



LIDAR Interpretation
By OWA Experts

Limitations Of Airborn Lidar Analysis

- 20m x 20m cell analysis with 2m resolution (avg per cell summed)
- Determines dominant species per cell but not multiple species
- Intolerant Hardwoods assumed to be Maple (reasonable)
- Edge Cells Excluded as well as cells having large open spaces (underestimates biomass)

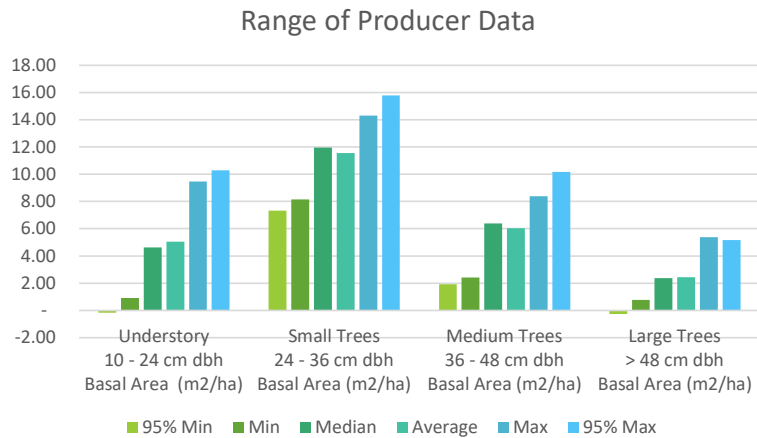
Forest Type	Size (ha)	Stand Basal Area	Understory 10 - 24 cm dbh Basal Area (m2/ha)	Small Trees 24 - 36 cm dbh Basal Area (m2/ha)	Medium Trees 36 - 48 cm dbh Basal Area (m2/ha)	Large Trees > 48 cm dbh Basal Area (m2/ha)	Average Height (m)	Stems per ha	dbhq (cm)	Kurtosis	Entropy
Sugar Maple	55.72	27.96	0.77	13.83	8.02	5.34	19.17	540.98	26.54	1.60	0.89
Sugarbush Conifer	0.84	0.39	0.14	0.16	0.06	0.04	17.61	10.79	21.65	2.24	0.89
Total	56.56	28.35	0.91	13.98	8.09	5.37		551.77		1.61	0.89

Acreage, Species & BA

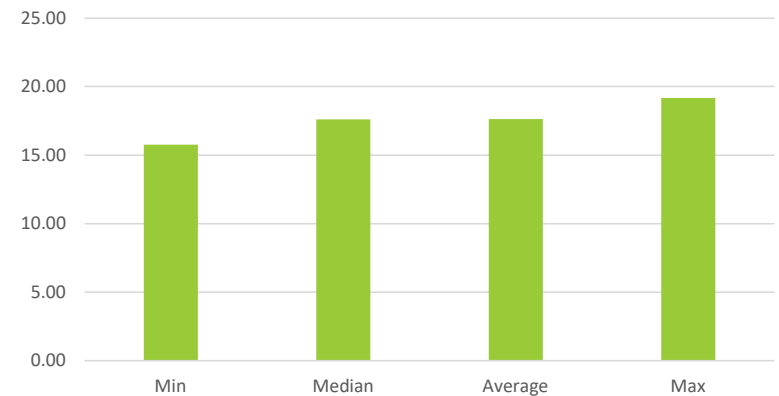
Stand Structure By Diameter Class & Overall Averages

Similarity

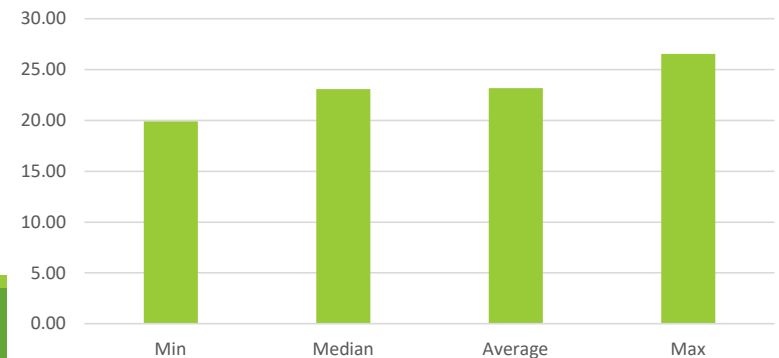
Discovering Low Variability Across Producers



Average Maple Tree Height Across Producers

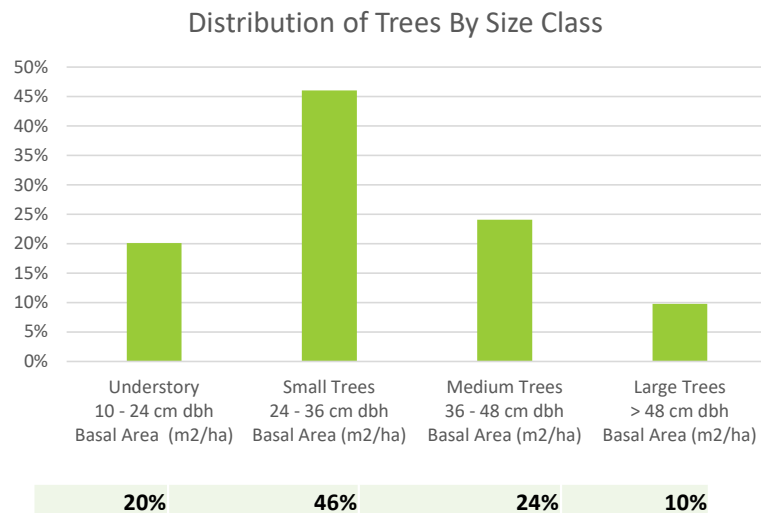


Average Mean Quadratic Diameter Across Producers



- **Sample Min & Max well within 95% confidence range**
- **High agreement between median & average**
- **Low Kurtosis (< 2) => Even Aged Stands**
- **Entropy across cells < 1**
- **Reasonable to assume Normally Dist'd Data**

Sugarbushes are Younger Than Expected



- **Low Understory BA as expected due to low contribution of biomass & management**
- **Highest BA in smallest tappable diameter class**
- **Reverse J-Shape suggests effect of thinning activity over time to maintain open canopy**
- **Biodiversity < 1% influenced by excluding edge cells**

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Pure Maple Syrup

Carbon-Negative Emissions



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www.espritdanslaforet.ca

Questions?

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See also the Net-Zero page at www.spiritintheforest.ca

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Supplementary Info
