Correlations between Terrain and Garlic Mustard Presence: Southwest Portland, Oregon

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BACKGROUND: A Successful Invader

Native Range : Western Eurasia

- Biennial life cycle
- Adapted for invasion
- Adapted to seasonality

Rodgers, V., Stinson, K. and Finzi, A. 2008. *Ready or Not, Garlic Mustard Is Moving In: Alliaria petiolata as a member of Eastern North American Forests.* Bioscience 58: 426-436

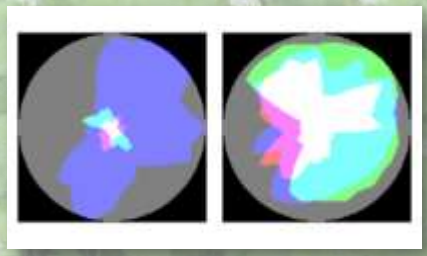
BACKGROUND:
Early Detection, Rapid Response

- **Targeted Efforts**
- **Repeated Treatment**
- **Predictive studies**

METHODS:
Water Flow

- Convert lines to points
- Flow Direction
- Flow Accumulation
- Watershed Delineation

METHODS:
Solar Analyst

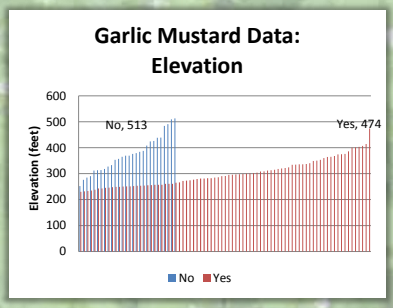


Absent Present

Sky Viewshed
Area Solar Radiation tool
- Duration of 2011
- Monthly interval

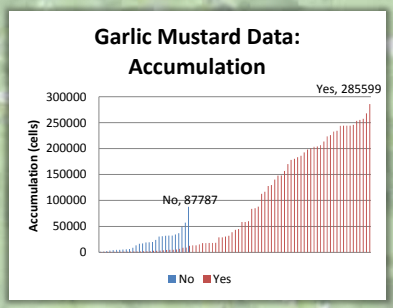
METHODS:
Extract Values to Points

RESULTS: Elevation



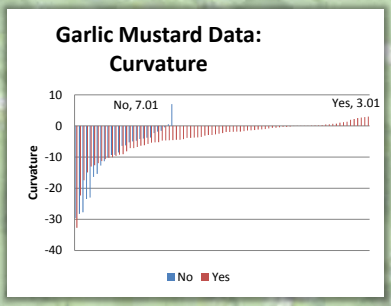
Environmental Variable	Statistic	Garlic Mustard Present	Garlic Mustard Absent
Elevation (feet)	mean	301	375
	min	230	252
	max	474	513
	range	244	261

RESULTS: Flow Accumulation



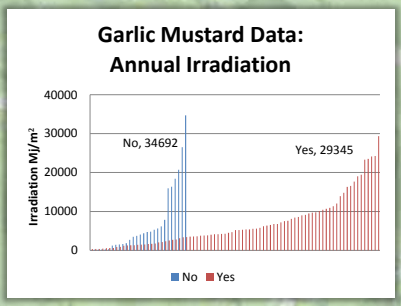
Environmental Variable	Statistic	Garlic Mustard Present	Garlic Mustard Absent
Flow accumulation (cells)	mean	93,543	21,545
	min	902	1,336
	max	285,599	87,787
	range	284,697	86,451

RESULTS: Curvature



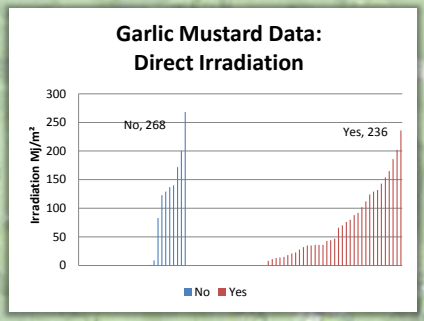
Environmental Variable	Statistic	Garlic Mustard Present	Garlic Mustard Absent
Curvature	mean	-4	-9.54
	min	-32.67	-30
	max	3	7
	range	36	37

RESULTS: Total Radiation



Environmental Variable	Statistic	Garlic Mustard Present	Garlic Mustard Absent
Total Radiation (MJ/m²)	mean	6,919	6,939
	min	324	61
	max	29,345	34,692
	range	29,021	34,631

RESULTS: Direct Radiation



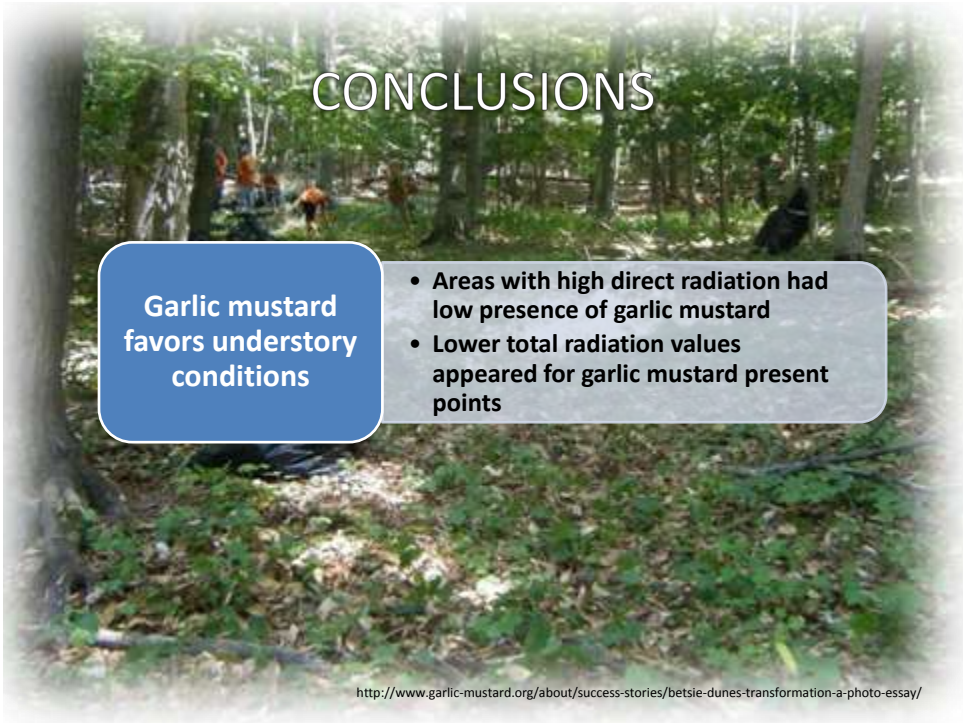
Environmental Variable	Statistic	Garlic Mustard Present	Garlic Mustard Absent
Direct Radiation (MJ/m²)	mean	32	45
	min	0	0
	max	236	268
	range	236	268

http://www.widerange.org/photo/plitvice-waterfalls-croatia/

CONCLUSIONS

Convex curvature	• Results highly negative
Analysis error	• Extract curvature values from streams

http://uweb.cas.usf.edu/~dslone/Pathfinders/register.html



http://www.garlic-mustard.org/about/success-stories/betsie-dunes-transformation-a-photo-essay/

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