



Welcome!

Alta's Natural History and Future

From Alta Ski Area

Mark Polish Assistant Patrol Director

and

Maura Olivos Sustainability Coordinator

Our Mission is Sustainability...

To Protect and Improve the Well-being of Alta's

Environment

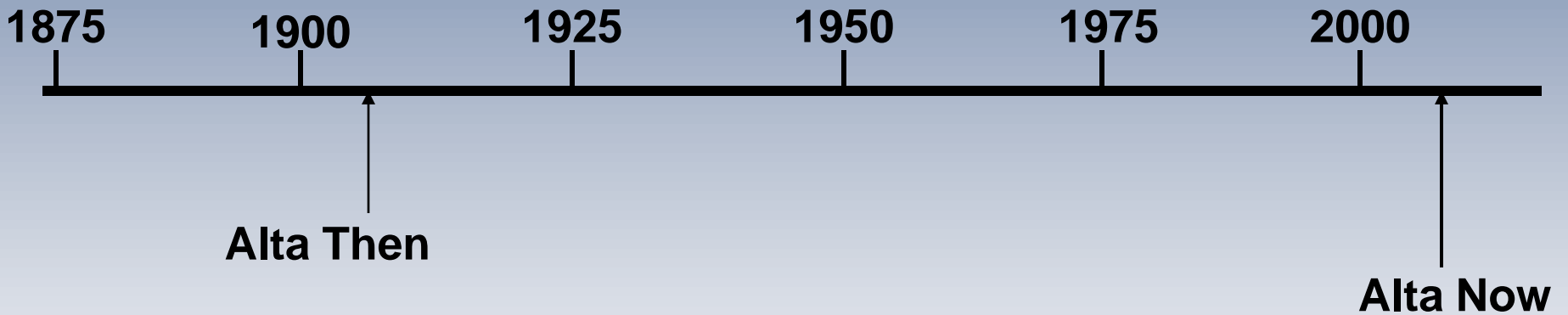
Ski Industry

Community



Reduce, Reuse, Recycle...Rethink

Alta's Natural History – A timeline



Reduce, Reuse, Recycle...Rethink

Black & White Photo from: Alta: A People's Story, By Dwayne Shrontz.

- A timeline



Alta Then



Alta Now



Black &

cle...Rethink

Dwayne Shrontz.

Alta's Natural History – The Mining Years

1875

1900

Mining
1865



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Alta's Natural History – The End of Mining

The end of Mining
1920s

1875

1900

1925

Mining
1865



Photo: Alta Historical Society--www.altahistory.org

Alta's Natural History – A New State Revenue



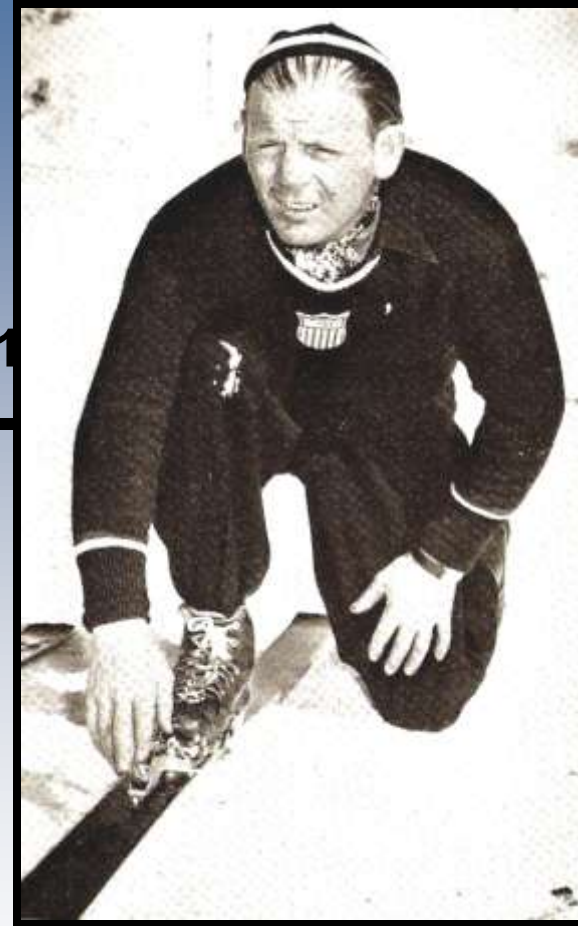
1872

Mining
1865

1925

End of
Mining
1920s

Skiing
1936



2000



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Black & White Photo from: Alta: A People's Story, By Dwayne Shrontz.

Alta's Natural History – A New State Revenue

George Watson - Forest Service
Land Deal and Tree Planting

End of Mining
1920s

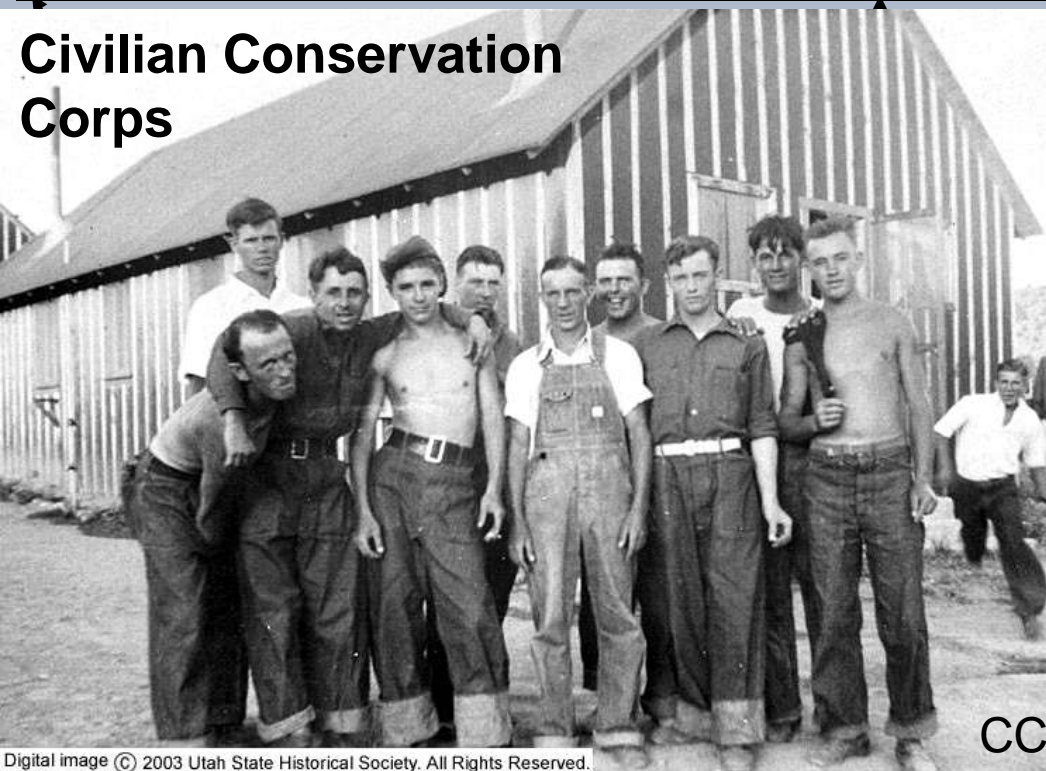
1925

1937

195

1875

1900



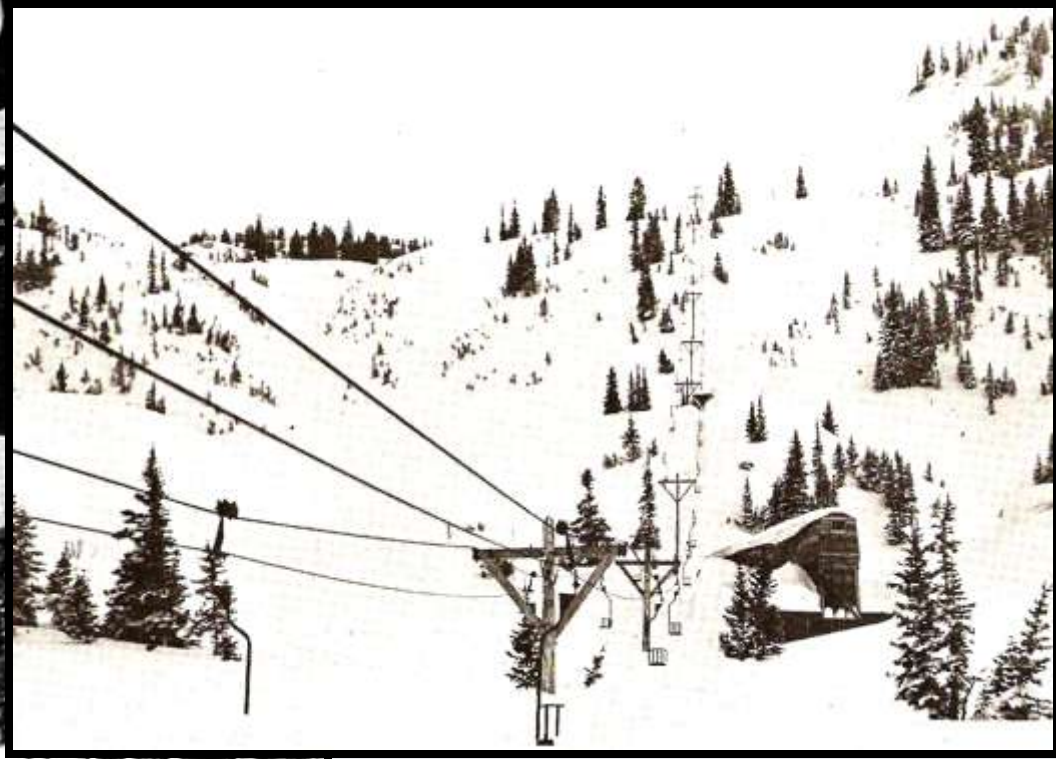
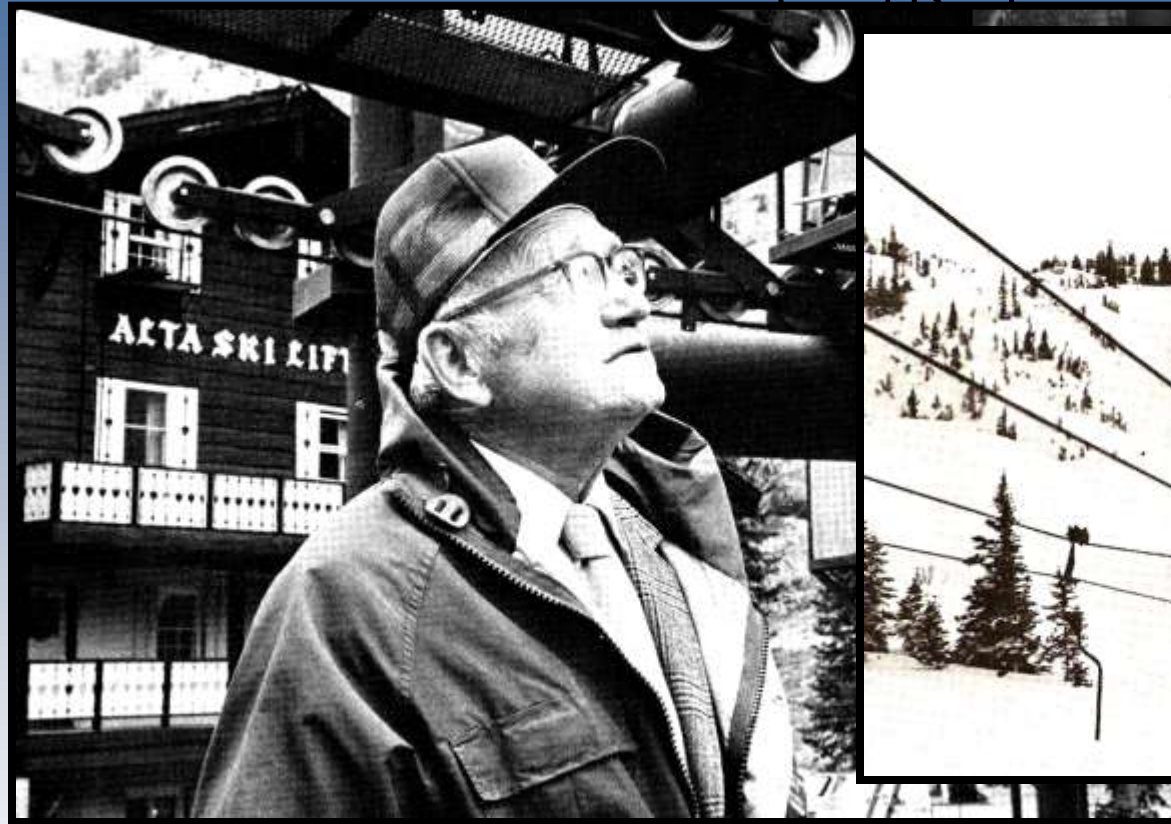
Civilian Conservation Corps



Engelmann Spruce

CCC Photo: Utah State Historical Society

Alta's Natural History – A New Ski Area



**Alta Ski Area
Opens 1938**



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Black & White Photo from: Alta: A People's Story, By Dwayne Shrontz.

Alta's Natural History – Ski Area Best Land Management Practices

Land Deal

CHAPTER 5:

RECLAIMING THE LAND

A good measure of reclamation success is often how quickly vegetation cover can be reestablished to disturbed areas.

Ski Area BMPs. 2001

1975

2000

First Industry
BMPs
1990s



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BMP Main Objective:

Grow grass and trees to prevent erosion

Alta's Old Standard Practices included:

1. **Grass Seed Mix**
2. **Straw Mulch Cover**
3. **Straw Anchoring & Soil Compaction (netting)**
4. **Erosion Blankets (without natural anchors)**



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Photos from: Ski Area BMPs. U.S. Forest Service 2001.

BMP Main Objective-

Grow grass and

Alta's Old Standard

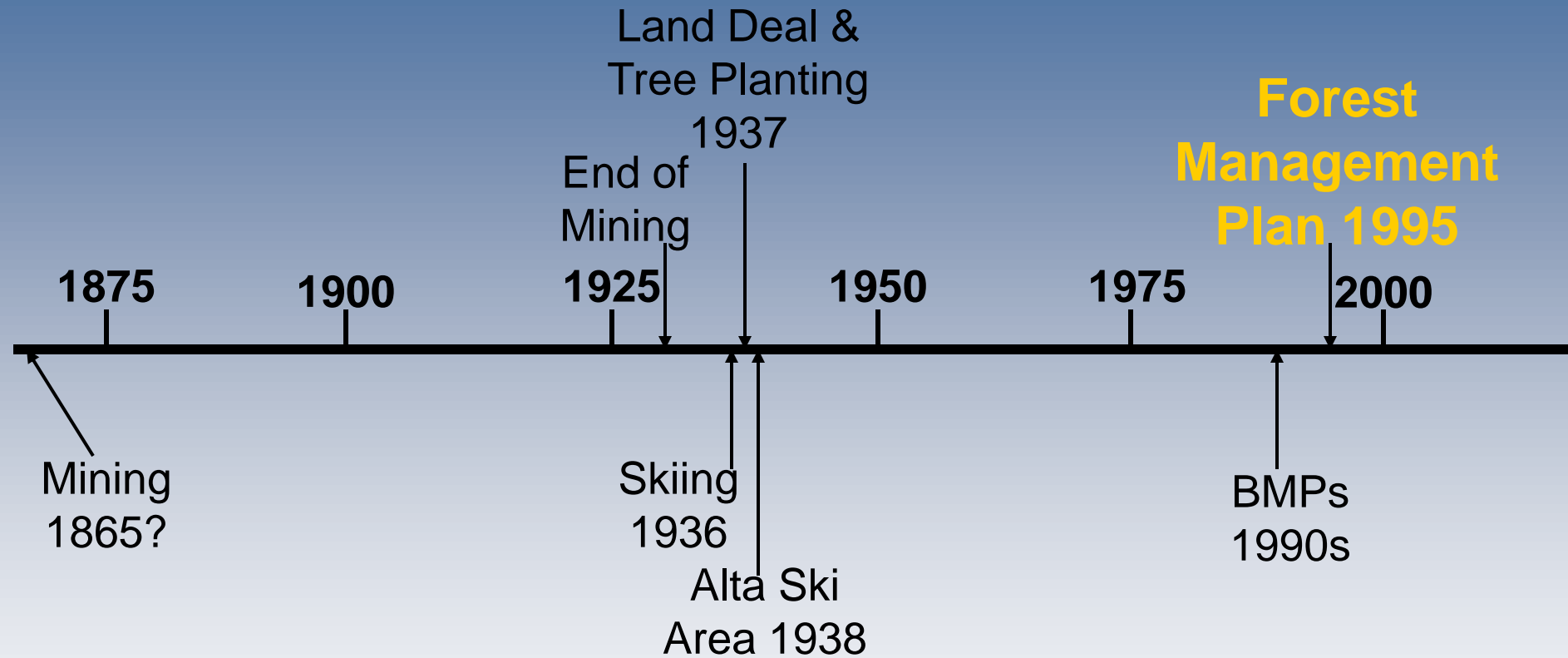
1. Grass Seed Mix



Smooth Brome
Orchard Grass
Mountain Brome (N)
Slender Wheatgrass (N)
Sheep Fescue



Alta's Natural History – Alta Ski Area Land Management Efforts



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Forest Management Plan

Objectives:

1. Determine stage and health of Forest
2. Designate Management Zones
3. Evaluate current forestry practices and offer recommendations.

Outcomes:

1. Healthy mature forest with 1st and 2nd generational growth.
2. 11 management zones (From advanced skiing conditions by maintaining glades, chutes & narrow openings - to - beginner terrain by maintaining forest openings & low density forest)
3. Relatively up to date forest management practices (tree planting, thinning, erosion control)



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Revegetation BMPs

Practices Post Forest Survey:

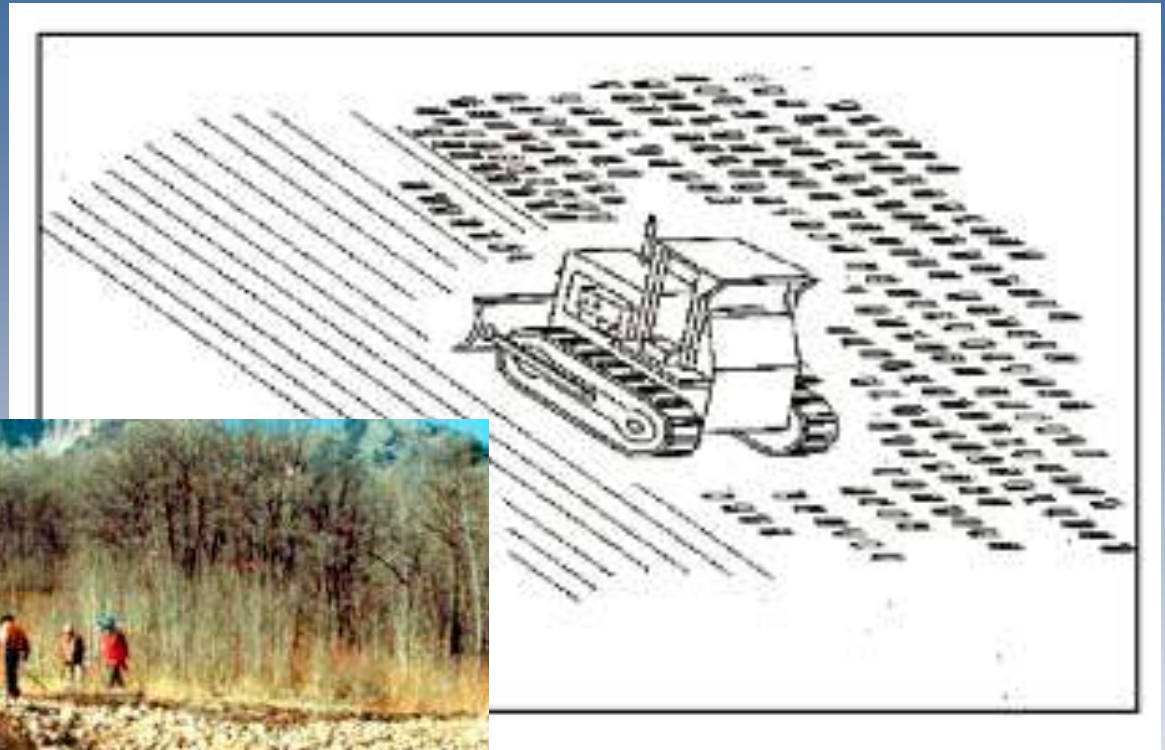
1. Regulations and processes: NEPA, required surveys, etc.
2. Native Seed Harvesting



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Revegetation BMPs

3. Tracking top soil

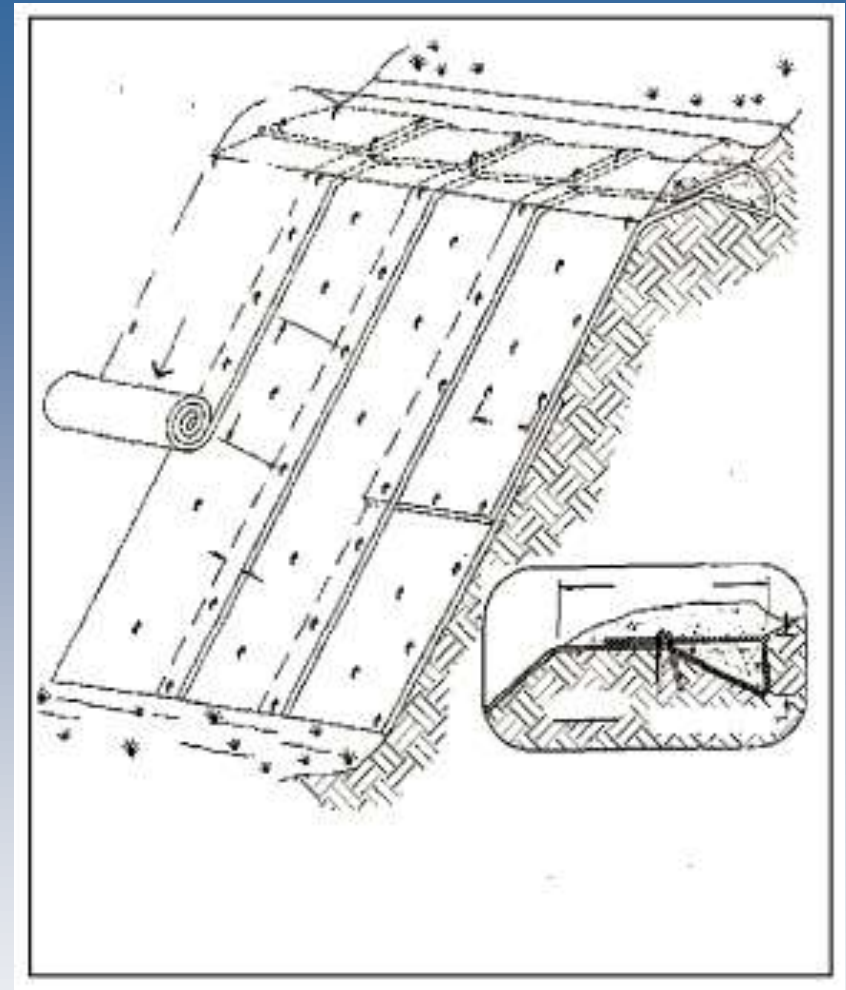


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Photos from: Ski Area BMPs. U.S. Forest Service 2001.

Revegetation BMPs

4. Erosion control blankets



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Photos from: Ski Area BMPs. U.S. Forest Service 2001.

Revegetation BMPs

5. Tree planting

- **Engelmann Spruce** – *Picea engelmannii*
- **Limber Pine** – *Pinus flexilis*

Coming Soon...

- **Narrowleaf Cottonwood** – *Populus angustifolia*
- **Douglas Fir** – *Pseudotsuga menziesii*



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6. Native Commercial Seed Mix (2000)

Mountain Bromegrass -- *Bromus marginatus*

Slender Wheatgrass -- *Elymus trachycaulus*

Alpine Bluegrass -- *Poa alpina*

Sheep Fescue -- *Festuca ovina*

Bluebunch Wheatgrass -- *Pseudoroegneria spicata*

Mountain Lupine -- *Lupinus argenteus ssp.rubricaulis*

Rocky Mountain Penstemon -- *Penstemon strictus*

Sticky Purple Geranium -- *Geranium viscosissimum*

Western Yarrow -- *Achillea millefolium*

Aspen Daisy -- *Erigeron speciosus*



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Some Photos From: USDA-NRCS PLANTS Database



k J. Alexander



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Some Photos From: USDA-NRCS PLANTS Database

7. Noxious Weed and Non-Native Control

- **Broadleaf Pepperweed** – *Lepidium latifolium*
- **Scotch Thistle** – *Onopordum acanthium*
- **Canada Thistle** – *Cirsium arvense*
- **Common Mullein** – *Verbascum thaspus*
- **Yellow Sweet Clover** – *Melilotus officinalis*
- **Dalmatian Toadflax** – *Linaria dalmatica*
- **Curly Dock** – *Rumex crispus*
- **Foxtail Barley** – *Hordeum jubatum*
- **Smooth Brome** – *Bromus inermis*



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Photos from: Michael Clifford

Revegetation BMPs

The Bad

7. Noxious Weed and Non-Native Control



Photos from: Michael Clifford

8. Tree condition observations

Mountain Pine Beetle



Mountain Pine Beetle. Colorado State University.
By D.A. Leatherman, I. Aguayo, and T.M. Mehall

Spruce Bark Beetle

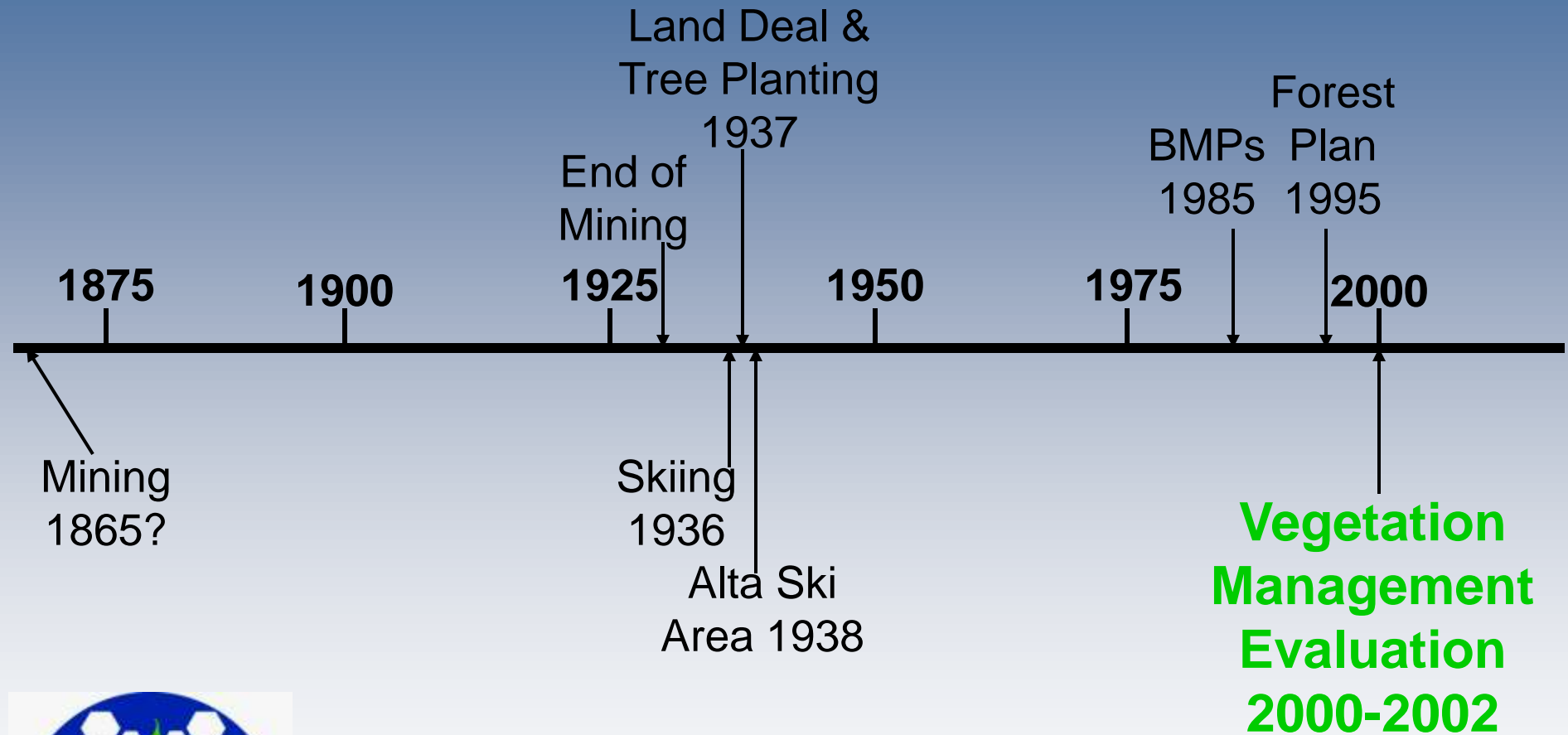


Figure 4 - An adult spruce beetle.



Forest Insect & Disease Leaflet 127: The Spruce Beetle. USDA: Forest Service. 1999

Alta's Natural History – Alta Ski Area Land Management Efforts



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Vegetation Management Evaluation

University of Montana Master's Thesis

By Rebecca Lawrence

2000 – 2002

Objective: To evaluate revegetation efforts by comparing disturbed sites to recovered sites by plant community type.

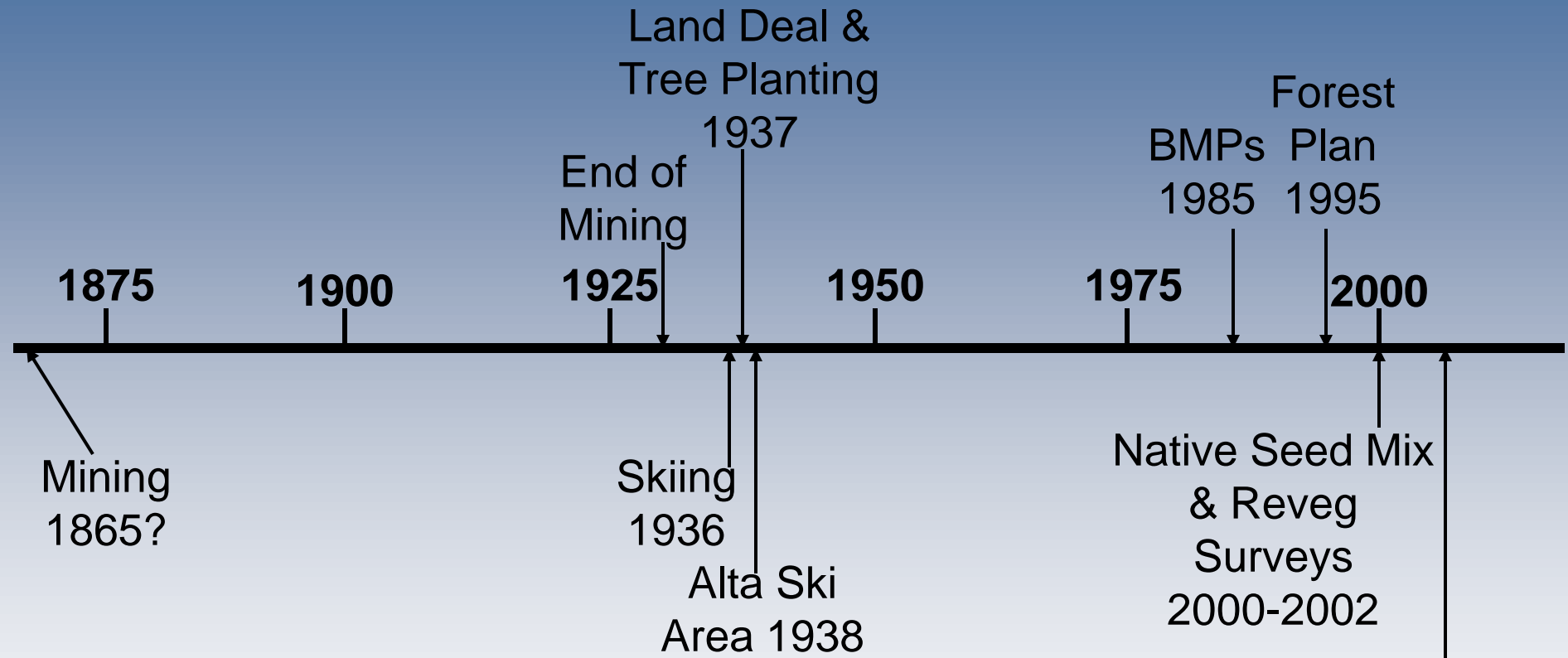
Methods: Data collection by plot surveys of plant species' percent coverage. Analysis completed with a Similarity Index Comparison equation.

Preliminary Results:

Coefficient of similarity index	
Community	2001
Tall Forb	28%
Short Forb	35%
Alpine Forb	22%
Aspen Tall Forb	23%
Willow/ Tall Forb	9%
Wetland	25%



Alta's Natural History – Alta Ski Area Management Efforts



Alta

Environmental
Center 2008

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Vegetation Management Evaluation

2008-2009 Evaluation

Objective: To continue the evaluation (Monitoring Program) of revegetation efforts and evaluate the feasibility of methods.

Methods: Data collection by plot surveys of plant species' percent coverage. Analysis completed with a Similarity Index Comparison equation. Slight changes in data collection methods.

Results:

Coefficient of similarity index		
Community	2001	2009
Tall Forb	28%	22%
Short Forb	35%	39%
Alpine Forb	22%	22%
Aspen Tall Forb	23%	34%
Willow/ Tall Forb	9%	22%
Wetland	25%	39%



Vegetation Management Evaluation

2008-2009 Evaluation

General Conclusions & Management Guidelines:

1. Plant Community Types (Forest Management Plan)
2. Management Zones (Forest Management Plan)
3. Detailed Information on Revegetation Efforts
4. Research & Recommendations
5. Viable Format for Continual Data Acquisition

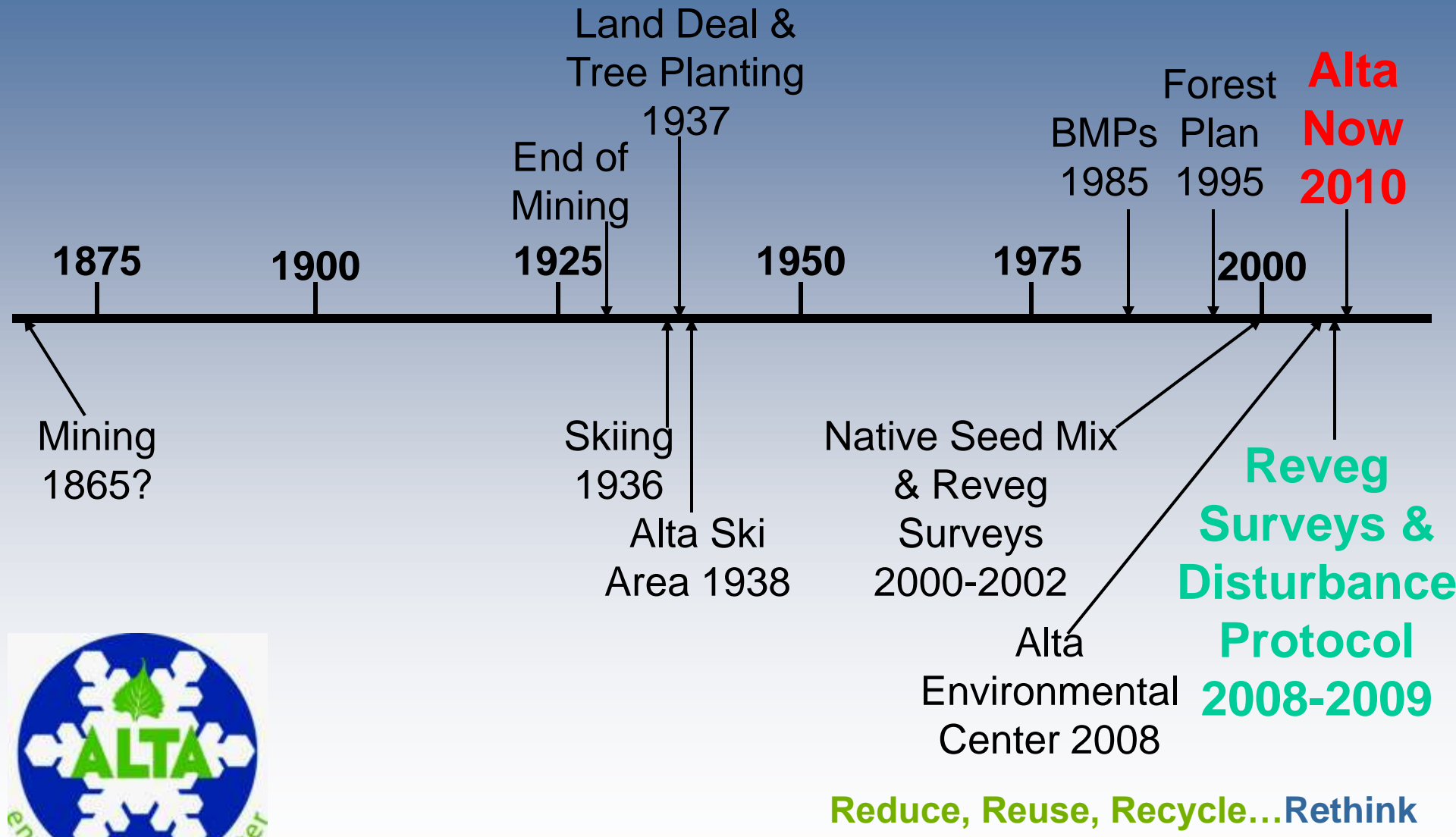


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Alta's Natural History – Alta Ski Area

Vegetation Management Efforts



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Alta's Current Vegetation Plans

1. Create a Vegetation Management Plan

- Monitoring Program (evaluation & data)
- **Disturbance Protocol (evaluation & data)**
- Noxious Weed Program
- Beetle Monitoring Program
- GIS Program

2. Updated Revegetation Treatments

3. Restoration Efforts



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Disturbance Protocol

- **Data Collection Format:** In order to better track efforts for long-term analysis
- **List of Newer Treatments that can be implemented**
 1. **Native Plugs**
 2. **Native Transplants**
 3. **Zero Soil Compaction**
 4. **Native Top Soil**
 5. **Native Hand Picked Seed Only**
 6. **Native Mulch**



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Alta's Future Plans

1. More Research
2. More Collaboration & Partnerships
3. More Internal Education & External Awareness



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Thank You!

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