Aspen Restoration

USDA FOREST SERVICE LAKE TAHOE BASIN UNIT Stephanie Coppeto

Ecologically Significant Areas at Risk

- Less than 2% of LTBMU yet support high biodiversity.
- Historic land uses with adverse affects on aspen:
  - Comstock-era logging (1860-1920): eliminated aspen.
  - Cattle and sheep grazing (1850's-1950's): reduced aspen survival and regeneration.

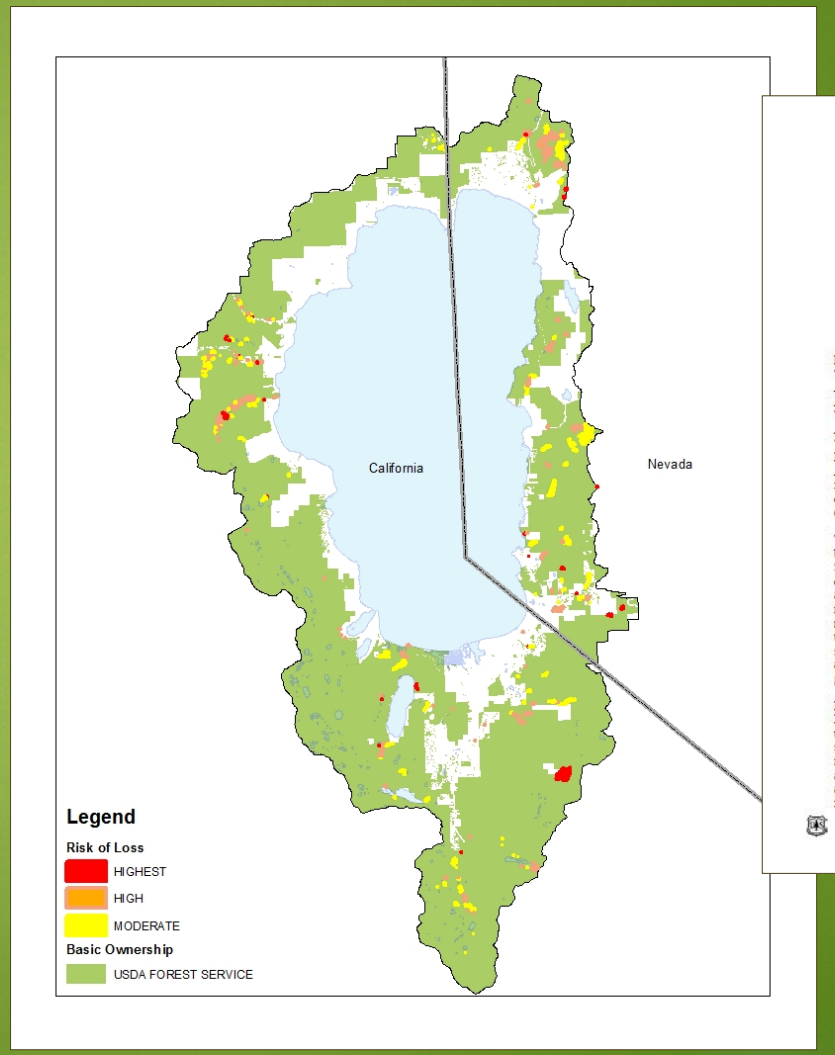
Ecologically Significant Areas at Risk

- Rapid human development (1960-1980): split, truncated or eliminated aspen stands.
- Fire suppression (1911-present): allowed conifers to become more dense and overtop aspen, reducing aspen regeneration and leading to type-conversions and loss of aspen stands.

Conifers Taking Over

Aspen Community Restoration Project

- 2002-2007 Aspen Mapping and Condition Assessment Project.
- 2009 Aspen Community Restoration Project.
  - Reduce conifer encroachment, increase aspen regeneration, spatial extent, and diversity and abundance of associated species.
  - Conifer removal and pile burning.



USDA Forest Service
Pacific Southwest Region
Lake Tahoe Basin Management Unit

Decision Memo for Implementation of the Aspen Community Restoration Project

Washoe and Douglas Counties, and Carson City, Nevada
Placer, El Dorado and Alpine Counties, California

BACKGROUND:
The Aspen Community Restoration Project originated from the Lake Tahoe Watershed Assessment (USDA 2000), which identified aspen stands as Ecologically Significant Areas because of their ecological value and relative scarcity on the landscape. The Lake Tahoe Basin Management Unit (LTBMU) initiated the Aspen Mapping and Condition Assessment Project (2002-2007) to address Lake Tahoe Watershed Assessment "Biological Integrity Issue 6: The Need to Understand the Integrity and Condition of Ecologically Significant Areas in the Basin." The Aspen Mapping and Condition Assessment Project identified that approximately 65% (by area) of aspen stands on the forest are currently at moderate, high, or highest risk of loss. Risk of loss is an assessment of the probability that an aspen stand may not persist on the landscape based on stand conditions such as conifer encroachment and lack of aspen regeneration.

The Aspen Community Restoration Project will restore aspen stands that are assessed to be at moderate, high, or highest risk of loss from the landscape on National Forest System lands within the LTBMU. An estimated 1,194 acres (74%) of the moderate, high, or highest risk aspen stands on the LTBMU are located outside other planned, proposed, and current vegetation treatment project areas or Wilderness areas. In total, the forest has identified approximately 2,391 acres including aspen stands and surrounding areas that may be treated to facilitate aspen stand restoration and expansion, as funding permits, by the Aspen Community Restoration Project described here. The project includes aspen stands discovered in the future that are located outside other project areas or Wilderness areas, as described above, or on lands acquired by the LTBMU, that are at moderate or greater risk of loss from the landscape.

DECISION:
It is my decision to implement the Aspen Community Restoration Project as described in this decision memo (as supported in the project record). Pre-implementation work (e.g., stand-specific surveys and prescriptions) will be completed for treatment stands prior to implementation. This work will occur by grouping treatment stands in concert with available funding. For example, if funding for the treatment of 150 acres out of the 2,391 acres identified is available then pre-implementation work on those 150 acres will occur, followed by 150 acres of treatments. Pre-implementation work and treatments on the

Caring for the Land and Serving People

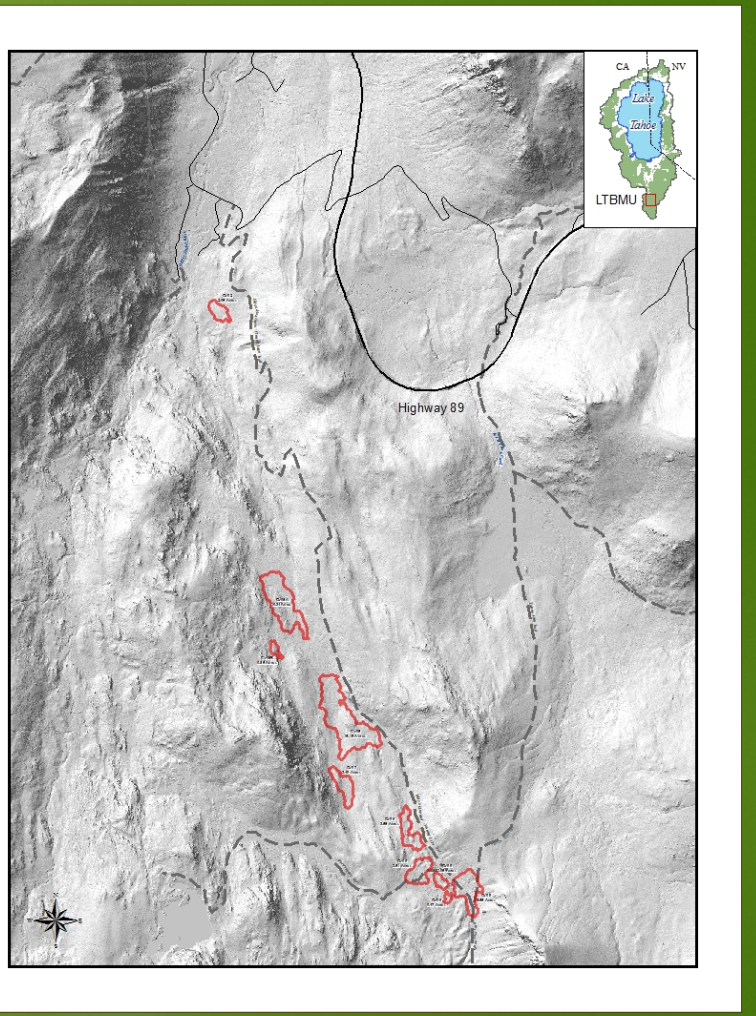
Aspen Treatments

- From 2009 to the present day, we have reduced conifer density in 335 acres of aspen.
- 110 acres mechanically (CTL)
- 225 acres by hand equipment
- 155 acres of pile burns

Treatment Constraints

- Access
- Water Quality
  - Stream Environment Zone
  - Mechanical Ops (Soil)
  - Pile Burning (Soil/Erosion).
- Biomass Utilization
  - No mill.
  - Pay for treatments.
- Stand conditions
  - Dense conifers.
  - Often heavy downed fuel.
  - Lack of understory space for piles.

Photo courtesy of Pascal Berrill/Christa Dagely (HSU)



Aspen Treatments– conifer removal

Before

After

Aspen Treatments– conifer removal

Before

After

Aspen Treatments– conifer removal

Before

After

Aspen Treatments– conifer removal

Before

After

Aspen Treatments – prescribed fire

Photo courtesy of Pascal Berrill and Christa Dagely (HSU)

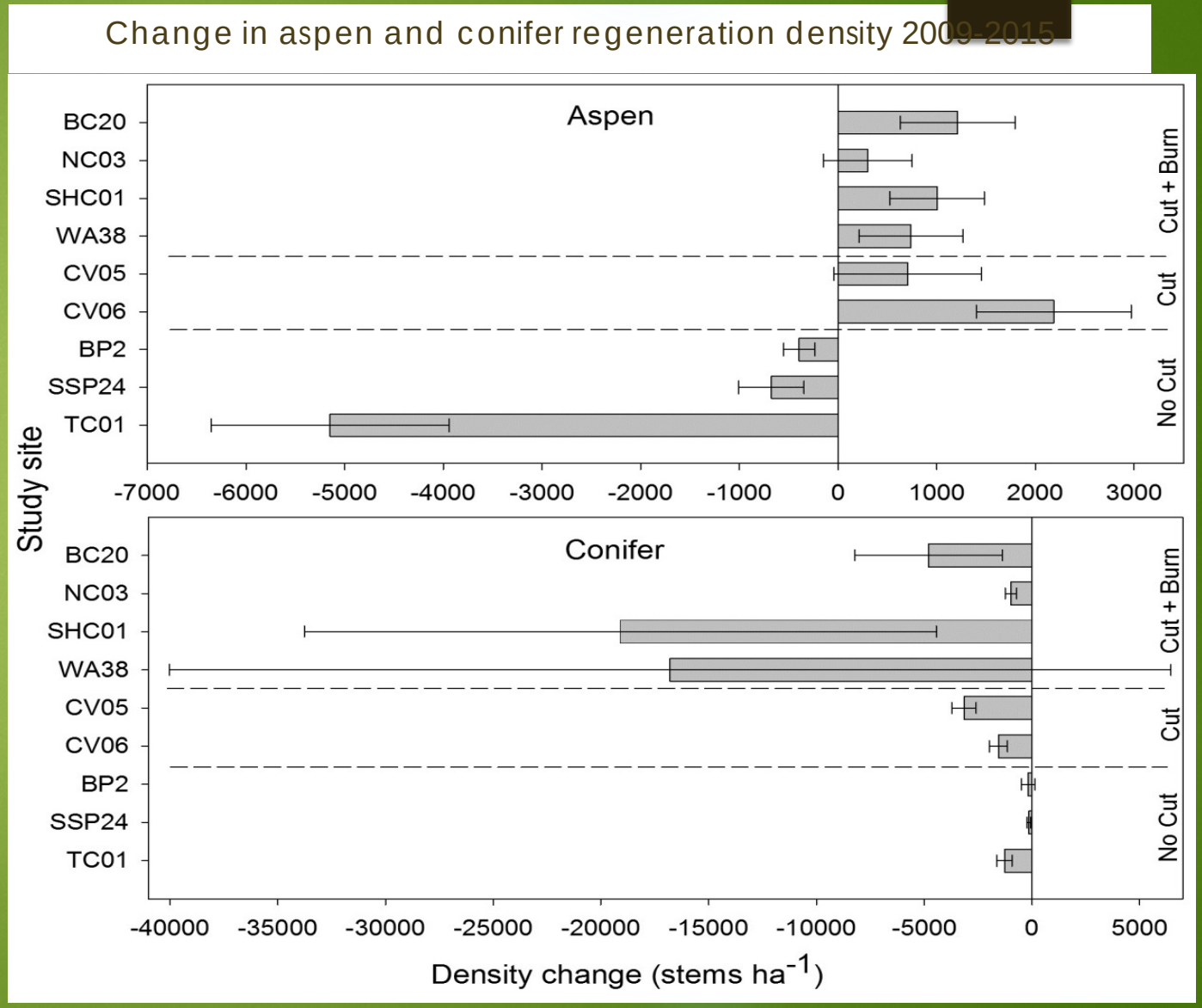
Aspen Treatments– prescribed fire

Treatment ≠ Restored

- Treatments = first step in restoring aspen.
- Conifers remain, including large seed trees and dense thickets of seedlings and saplings.
- Delays in re-introducing fire to treated stands.
- There is a need for multiple stand entries.
- There is a need for more aggressive and/or more frequent treatments as evidenced by monitoring.

Monitoring aspen treatments

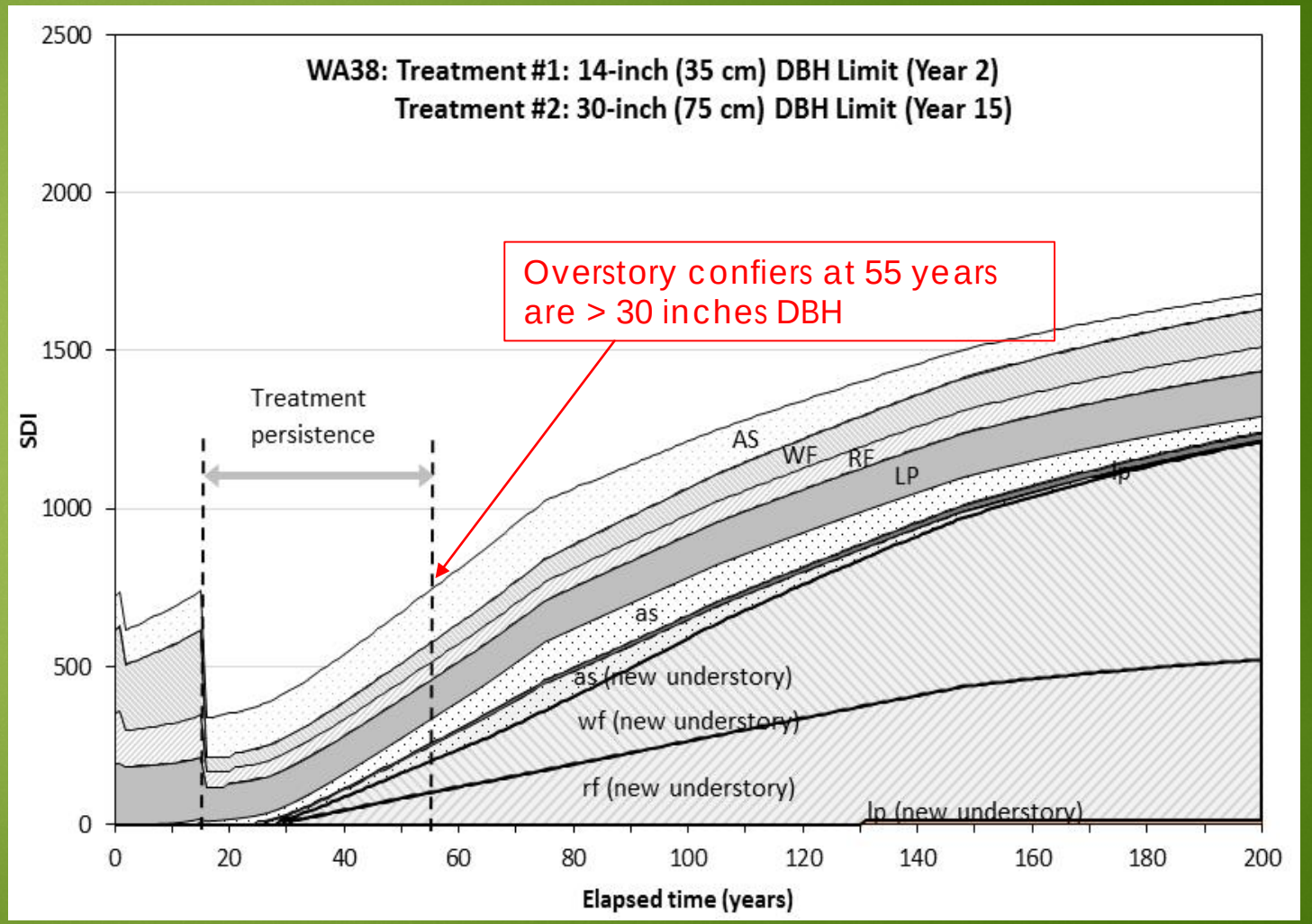
- Pascal Berrill and Christa Dagley (Humboldt State University)
- 2009-2015
- Aspen regeneration is enhanced while conifer regeneration is declining (though still abundant).
  - Aspen density increased at treated sites and declined at untreated sites.
  - Regenerating conifers declined at all 9 sites.
  - No effect of treatment type.



C. Dagley, J-P. Berrill, S. Coppeto (in prep.) Regen. Response...

Monitoring aspen treatments

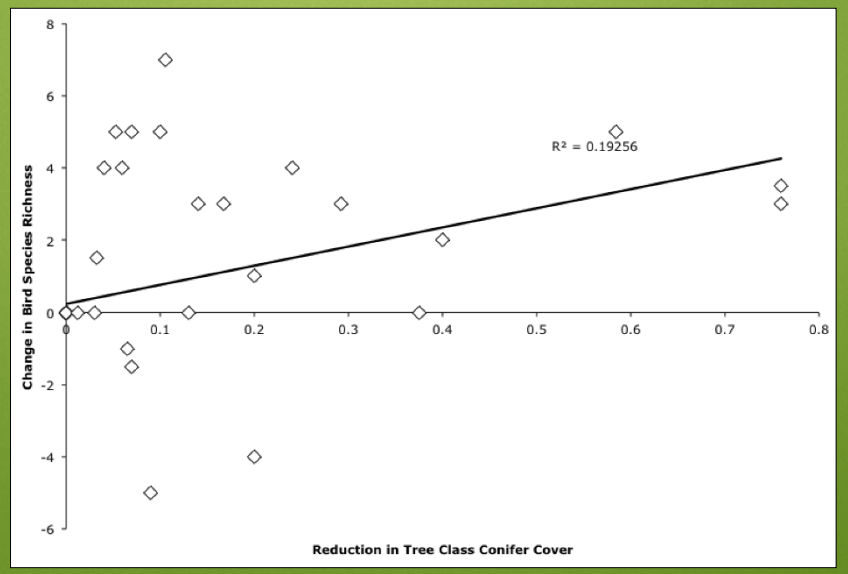
- More intense stands density reduction favors aspen and plants and provides for longer treatment persistence.
- In the future, cutting both the small, understory conifers and trees > 30 inches will be necessary to maintain aspen dominance in the stand.
- Regenerating fir grow more slowly than aspen after restoration. After heavy cutting, conifers take 14-20 years to reach 4.5 feet but aspen can take only 4 years.

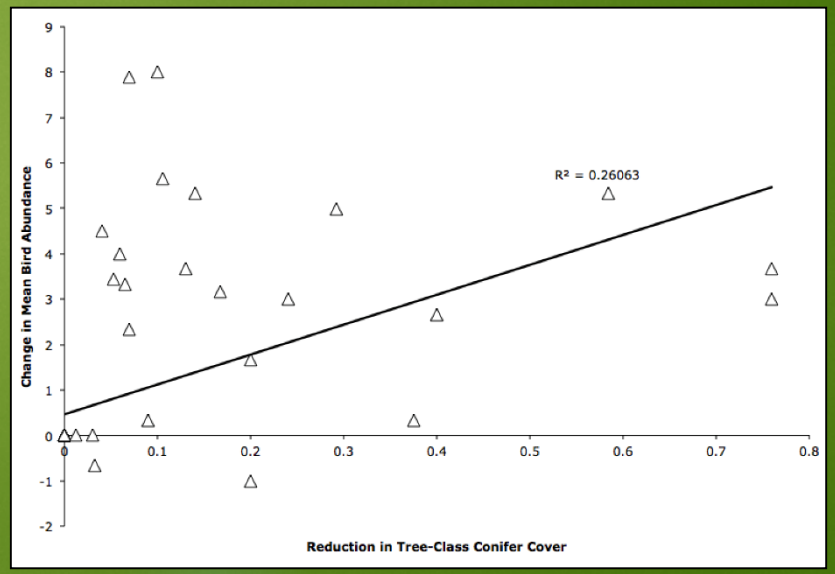


J-P. Berrill, C. Dagley & S. Coppeto 2016. Ecol. Restoration

Avian response to aspen treatments

- Tahoe Institute for Natural Science
- Surveys in aspen 2002-2016.
- All post-treatment sites demonstrated a high volume of bird activity immediately following treatments and in subsequent surveys.
- Mean bird abundance and bird species richness exhibited a non-significant increasing trend with treatment (power issue?).





Figures and photos courtesy of Will Richardson (TINS)

The future of aspen treatments

Conifer seed sources

Young conifer thickets

Fire

Thanks!

- Bureau of Land Management Southern Nevada Public Land Management Act (SNPLMA).
- Forest Service staff and contractors.
- Pascal Berrill and Christa Dagley (Humboldt State University).
- Will Richardson (Tahoe Institute for Natural Sciences).

Questions?

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