

Creating an Effective & Efficient Conservation Strategy

Landscape Conservation Forecasting™

Problem Statement

In a complex landscape, choosing the restoration strategy that provides the most benefit for the available budget is challenging for resource managers.

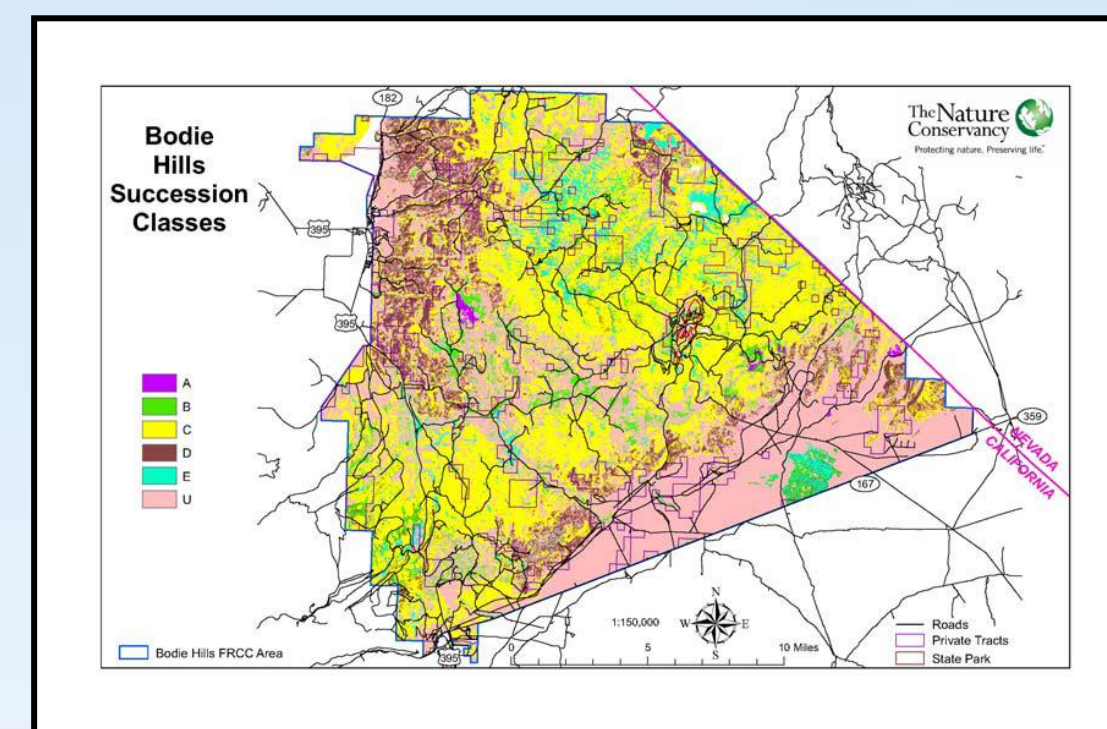
Landscape Conservation Forecasting™

Landscape Conservation Forecasting (LCF) can help planners and stewards identify a set of restoration strategies that provide the most bang for the buck!

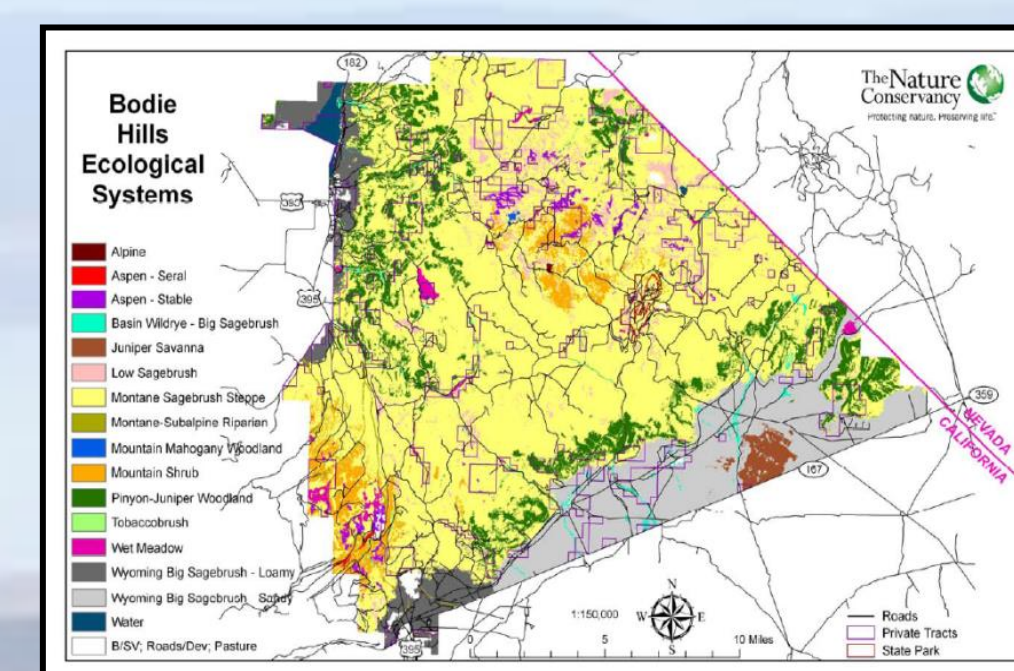
LCF was developed by the TNC Nevada Field Office (Louis Provencher, Greg Low and Susan Abele) with assistance from the TNC LANDFIRE Team.

LCF works by using public domain tools to forecast the ways that activities and environmental changes may impact potential departure from desired future conditions, helping managers balance restoration activities and associated costs.

LCF Example-Bodie Hills



Map of Historic Conditions on the Bodie Hills Landscape



Map of Current Vegetation Seral States

Ecological System	Ecological Condition: Departure from NRV	Relative % of High Risk Vegetation Classes
Alpine	Very Slight	n/a
Tobacco Brush	Very Slight	n/a
Montane-Subalpine Riparian	Slight	Very Low
Mountain Mahogany	Slight	Very Low
Pinyon-Juniper Woodland	Slight	Moderate
Juniper Savanna	Moderate	n/a
Low Sagebrush	Moderate	Very Low
Mountain Shrub	Moderate	Very Low
Stable Aspen	Moderate	High
Wet Meadow	Moderate	Very Low
Basin Wildrye-Big Sagebrush	High	High
Montane Sagebrush Steppe	High	Moderate
Seral Aspen	High	Low
Wyoming Big Sagebrush-Loamy	High	High
Wyoming Big Sagebrush-Sandy	High	High

Compute current departure from the desired condition

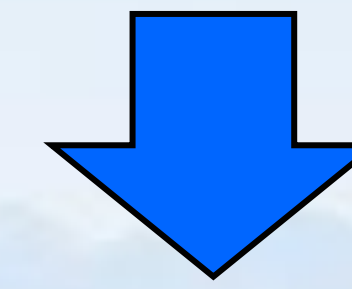


Incorporate management activities

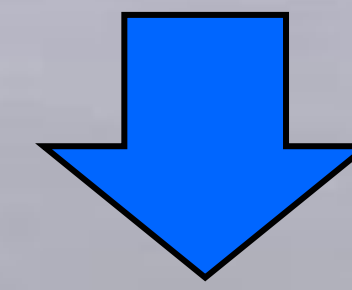
Ecological System	Current	20 Years No Mgmt	20 years Ecological Mgmt
Alpine	5	5	n/a
Aspen	41	49	33
Basin Wildrye-Big Sagebrush	78	79	45
Juniper Savanna	35	29	n/a
Low Sagebrush	41	37	37
Montane Sagebrush Steppe	72	69	57
Montane-Subalpine Riparian	21	33	27
Mountain Mahogany	22	15	n/a
Mountain Shrub	39	49	n/a
Pinyon-Juniper Woodland	29	30	n/a
Tobacco Brush	9	15	n/a
Wet Meadow	33	38	19
Wyoming Big Sagebrush-Loamy	74	70	58
Wyoming Big Sagebrush-Sandy	29	29	87

Compute impact on focal targets

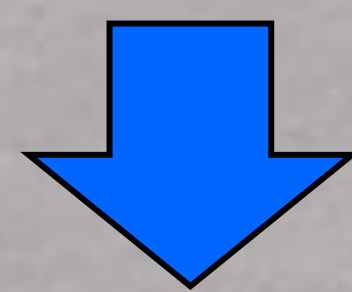
Identify targets, and assemble or create historic or desired conditions



Assemble or create current landscape information, including potential management activities and costs



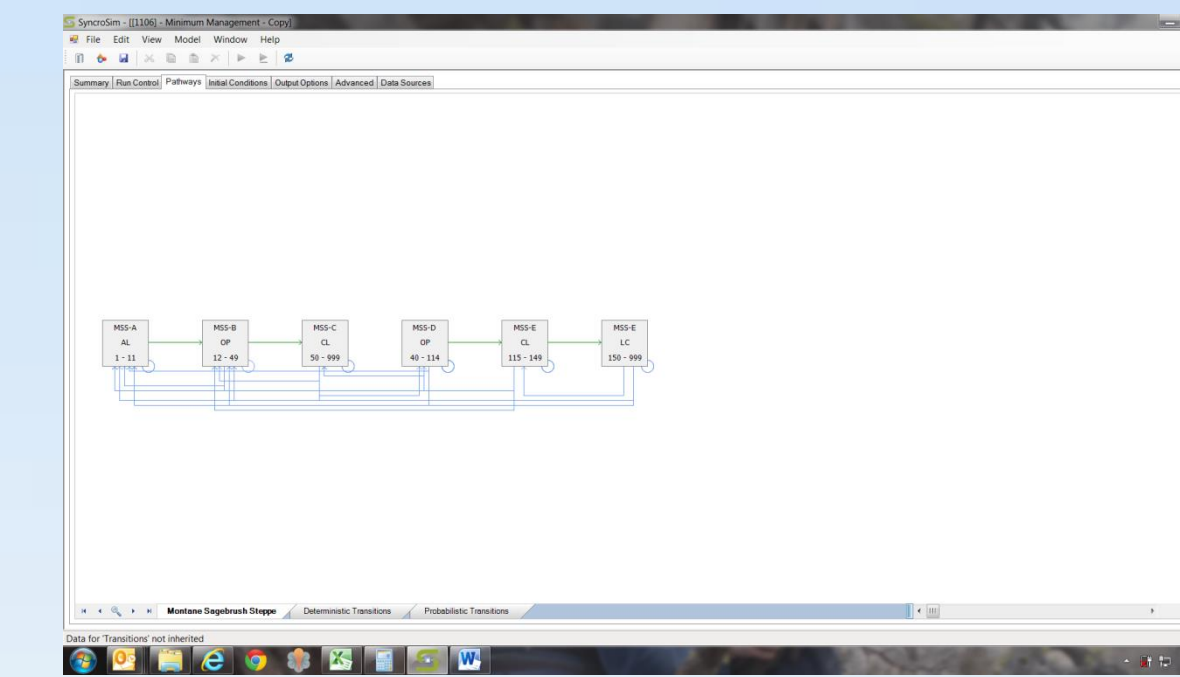
Compute current departure from historic or desired conditions



Revise models to incorporate potential management activities, values, and costs, and rerun them for the desired planning period



Recalculate departure for the various strategies with their associated costs, compare and identify the most effective and efficient suite of actions



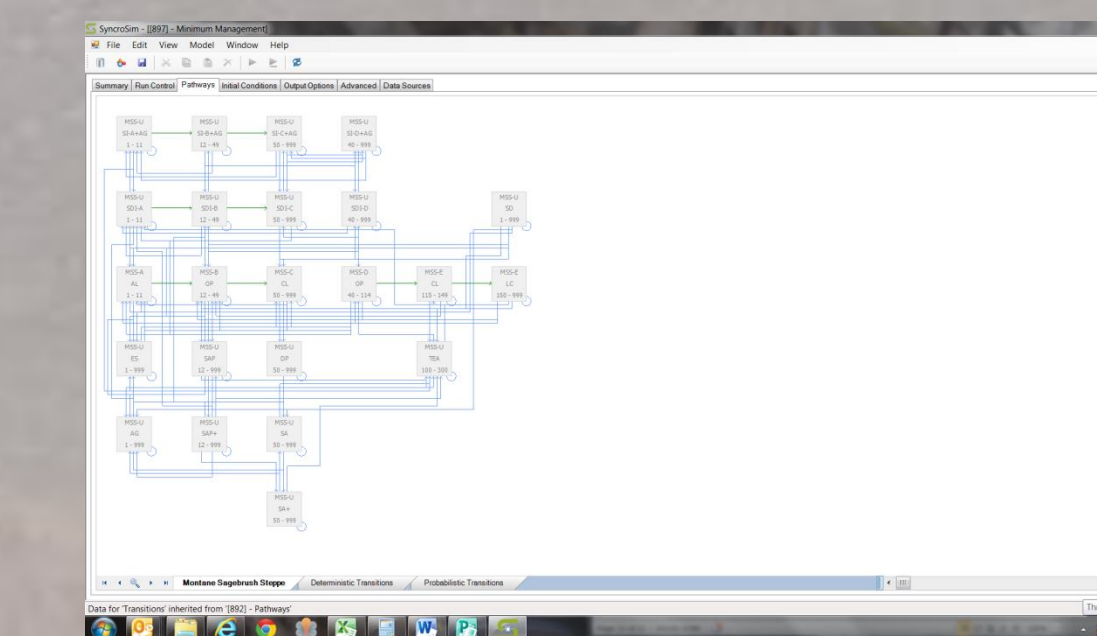
Example reference condition vegetation model in ST-Sim



Local experts discussing current conditions, management options and estimating relevant costs



Current degraded condition on the landscape



ST-Sim model modified to include invasive species and potential management options

Bodie Hills Ecological System	Conservation Strategy	Annual Cost	Probability of Success
Aspen (Stable)	Treat 50 acres/year of late successional aspen stands. Provide fencing for 200 years characteristic, acres and continue active land management	\$25,000	Very High
Big Wildrye - Big Sagebrush	Treat 50 acres/year of depleted basin wildrye to convert to early development class (e.g. one drainage) as field circumstances permit. Continue weed inventory & control. Add prescribed fire as needed in the future.	\$18,000	High
Low Sagebrush	Mechanically thin ~125 ac/yr of late successional low sagebrush to prevent low size encroachment.	\$11,000	High
Montane Riparian	Continue weed inventories, spot treatments and active hard management in riparian areas (23 ac on private land). Stabilize headcuts and restore natural channels on targeted creeks.	\$6,000	High
Montane Sagebrush Steppe	Treat ~1000 ac/yr of montane sagebrush steppe—with prescribed fire, mechanical burning, aerial seeding, logging and grass thinning.	\$97,000	High
Wet Meadows	Continue weed inventories, spot treatments and active hard management in wet meadows (20% are on private land, private landowners & agencies cooperating on coordinated weed management area). Treat iris/silver sage on targeted meadows.	\$10,000	High
Wyoming Big Sagebrush (Loamy)	Create WUI and ecological fuel breaks using mowing, seeding, mechanical brush control, possible aeration and some very small spring burning of riparian and Class C to convert to Classes B and A.	\$4,000	Medium
Wyoming Big Sagebrush (Sandy)	Create ecological fuel breaks along sandy roads and other WUI fuel breaks as needed.	\$18,000	High

Final Set of Effective Restoration Strategies

Who Has Used LCF?

- Bishop Field Office BLM
- Great Basin National Park
- Dixie-Fishlake National Forest
 - Fremont Ranger District
 - Powell River Ranger District
 - Pine Valley District
- Cherokee National Forest
- Ely BLM
- Humboldt-Toiyabe National Forest
- Nevada Field Office/TNC
- Cedar City UT BLM District

Questions?

Comments?

Suggestions?

Follow-up Contact?

Please let us know!

TNC LANDFIRE Team
landfire@tnc.org

Spatial Solutions, Inc
Jeff Campbell

jcampbell@spatial-solutions.com

Acknowledgements

Louis Provencher, TNC Nevada
Susan Abele, FWS Reno
Greg Low, Applied Conservation LLC

Social scientists are finding that collaborative planning reduces conflict and increases success during the implementation phase. The challenge is finding a process that engages partners AND produces credible and robust outputs. LCF is one such process because it provides a meaningful way for partners to test hypotheses and learn together.