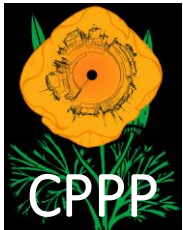


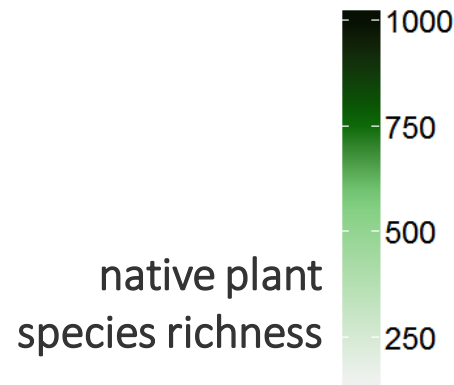
Conserving the evolutionary diversity of the California flora

Matthew Kling,
Brent Mishler, Bruce Baldwin,
Andrew Thornhill, David Ackerly



California:

- World biodiversity hotspot
- Biodiversity data hotspot
- Land conservation hotspot



Los Angeles Times

CALIFORNIA

LOCAL

Couple donates \$165 million to preserve 24,000 acres at Point Conception



By THOMAS CURWEN DEC 22, 2017 | 3:00 AM



CALIFORNIA LOCAL

Couple donates \$165 million to preserve 24,000 acres at Point Conception



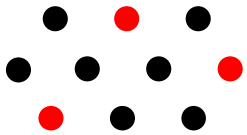
By THOMAS C. CASPERSON

Where are the top priorities to conserve biodiversity?



What is biodiversity?

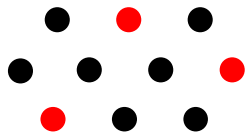
Species
richness



3 species

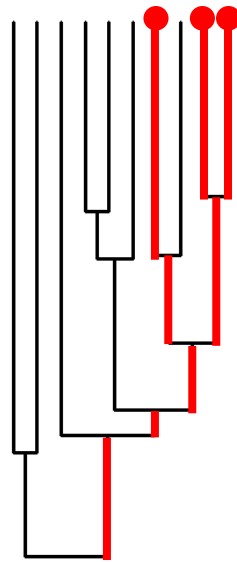
What is biodiversity?

Species
richness



3 species

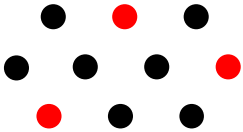
Phylogenetic
diversity



7 My

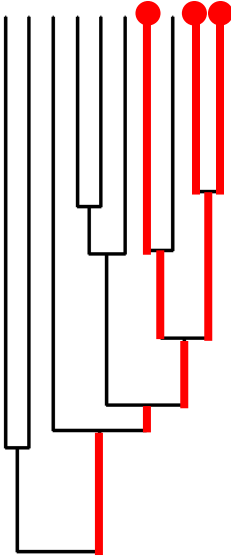
What is biodiversity?

Species richness

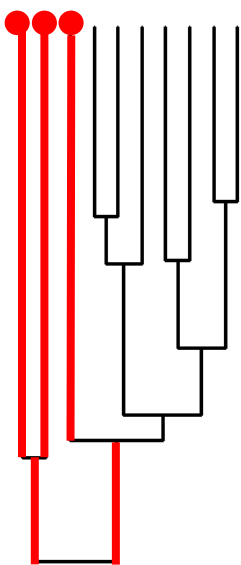


3 species

Phylogenetic diversity



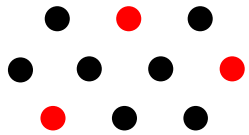
7 My



20 My

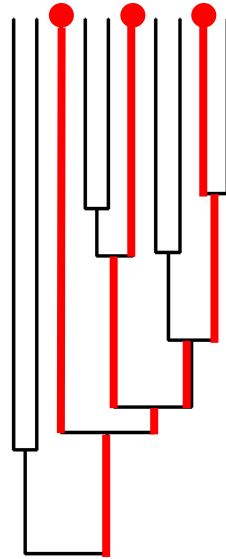
What is biodiversity?

Species richness



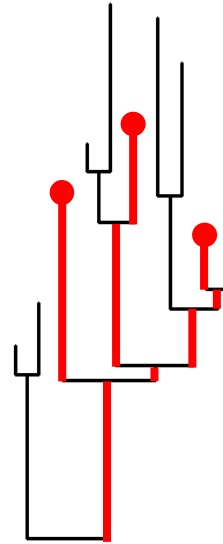
3 species

Evolutionary time



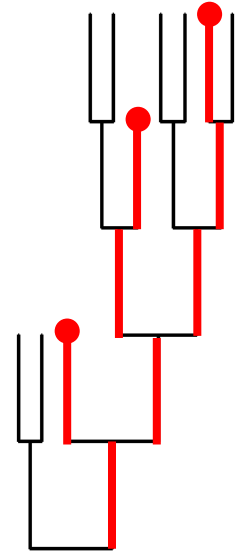
12 My

Accumulated mutations



617 changes

Cumulative net speciation



6 splits

Why protect phylodiversity?

Phylodiversity facets

Conservation values

	Mutations	Time	Speciation
Functional diversity	✓	✓	
Information content	✓	✓	
Evolutionary potential	✓	✓	✓
Geographic properties		✓	✓

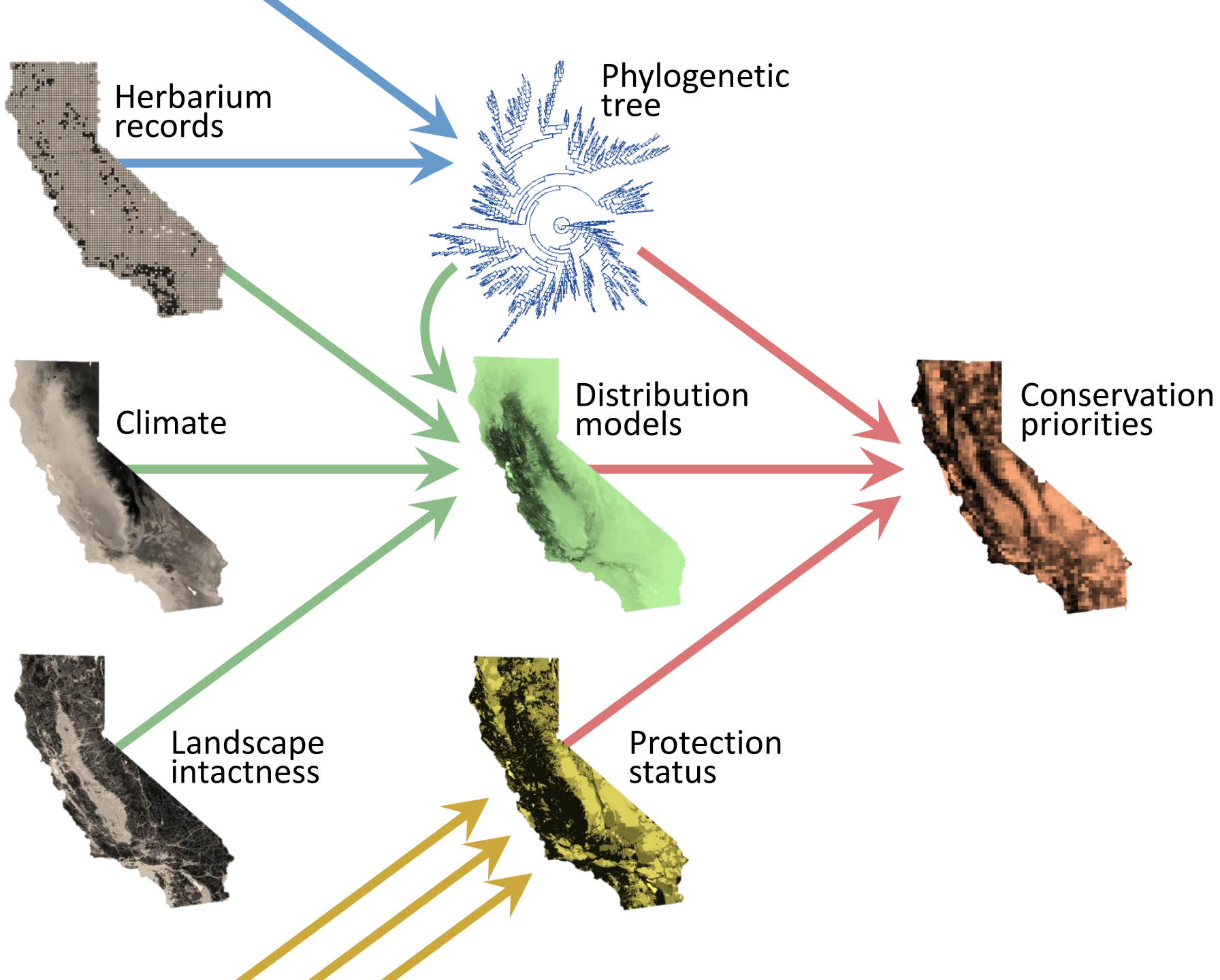
Why protect
phylodiversity?

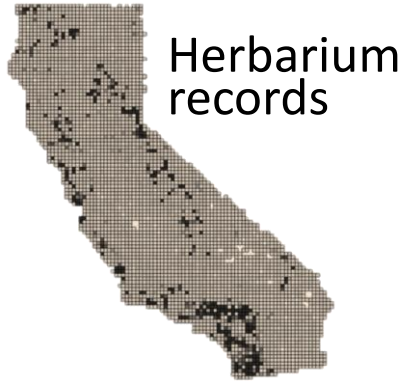
Phylodiversity facets

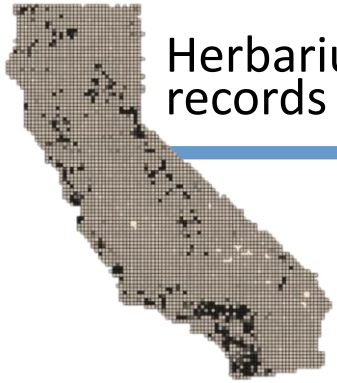
	Mutations	Time	Speciation
Functional diversity	✓	✓	
Information content	✓	✓	
Evolutionary potential	✓	✓	✓
Geographic properties		✓	✓

QUESTION:

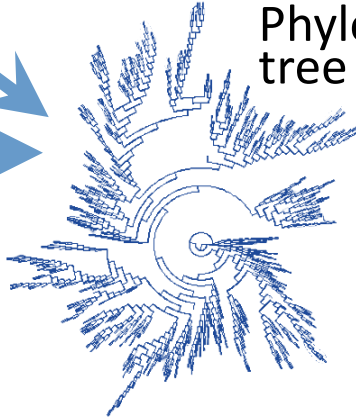
**How do priority conservation sites
differ by diversity facet?**



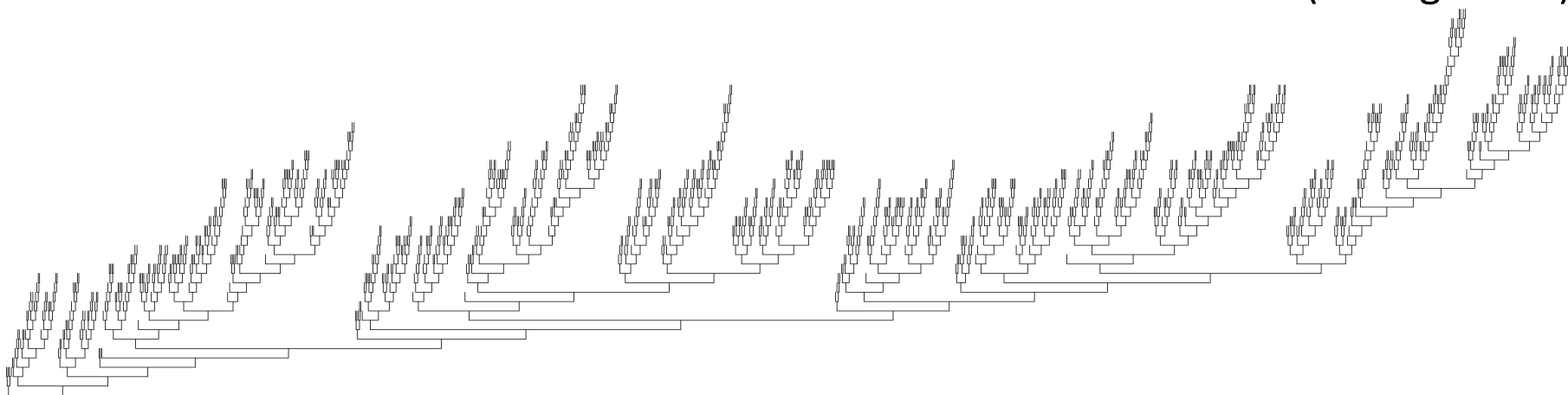
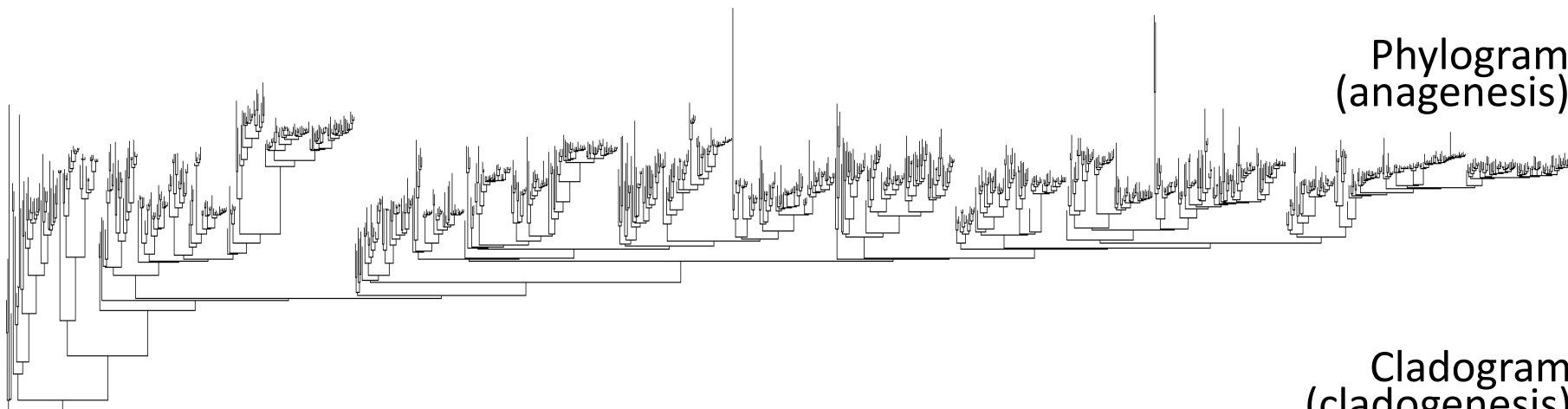
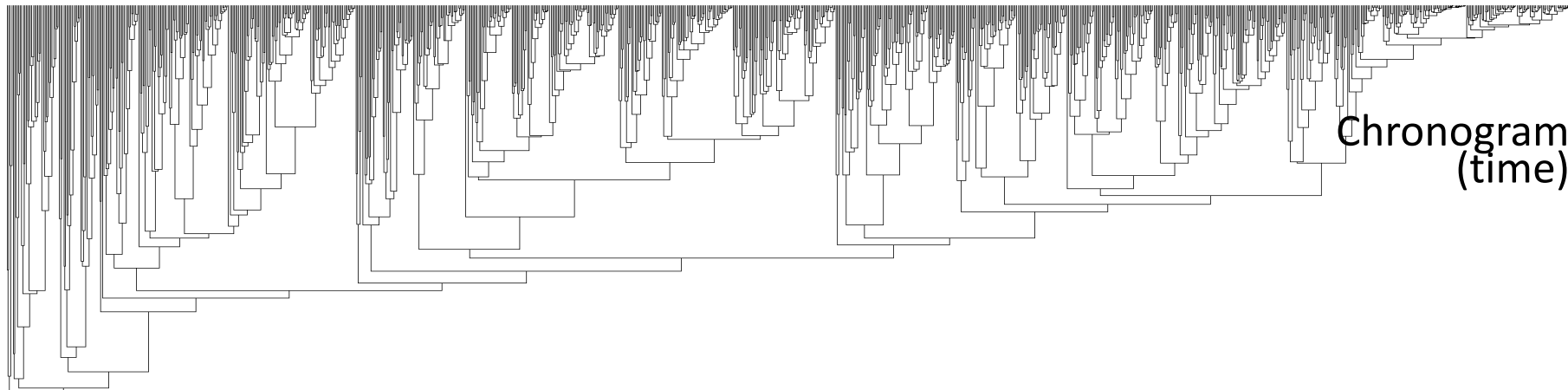


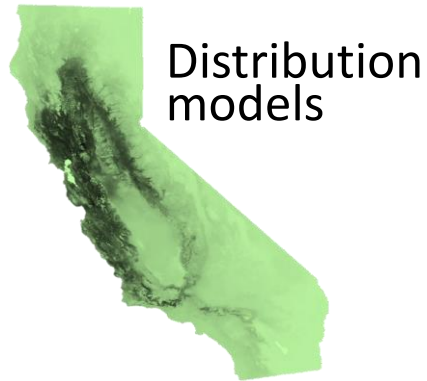
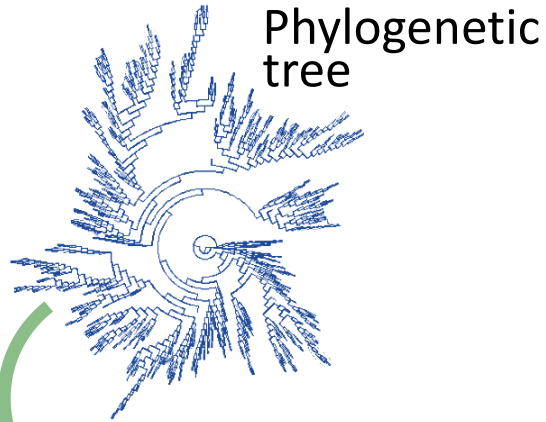
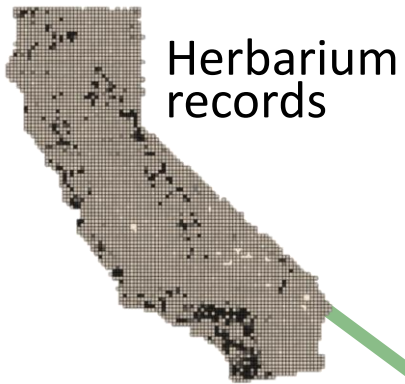


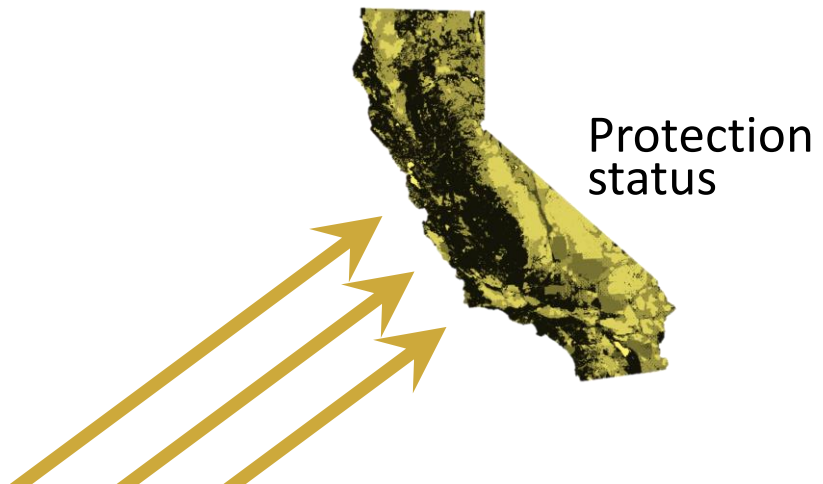
Herbarium records

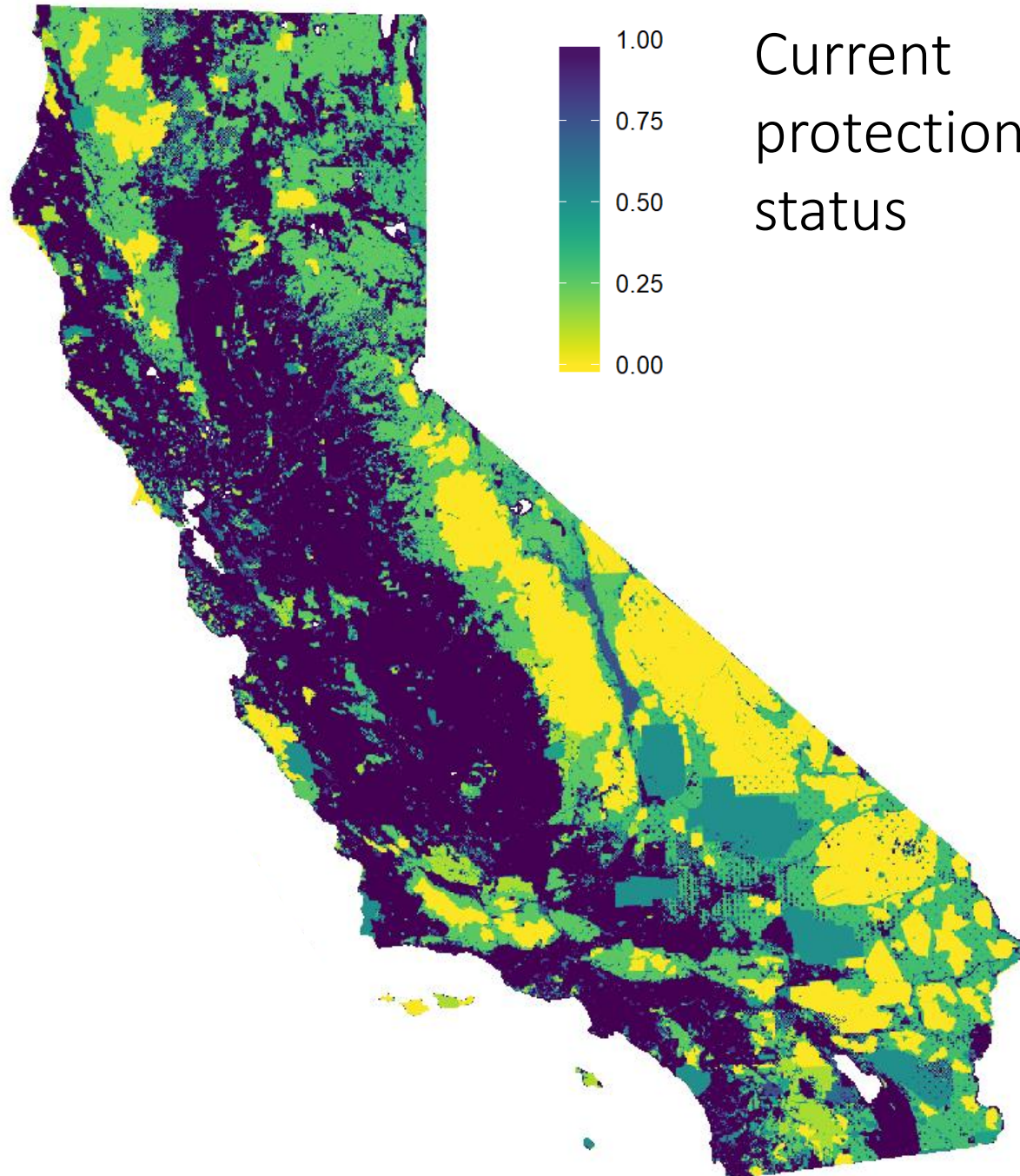


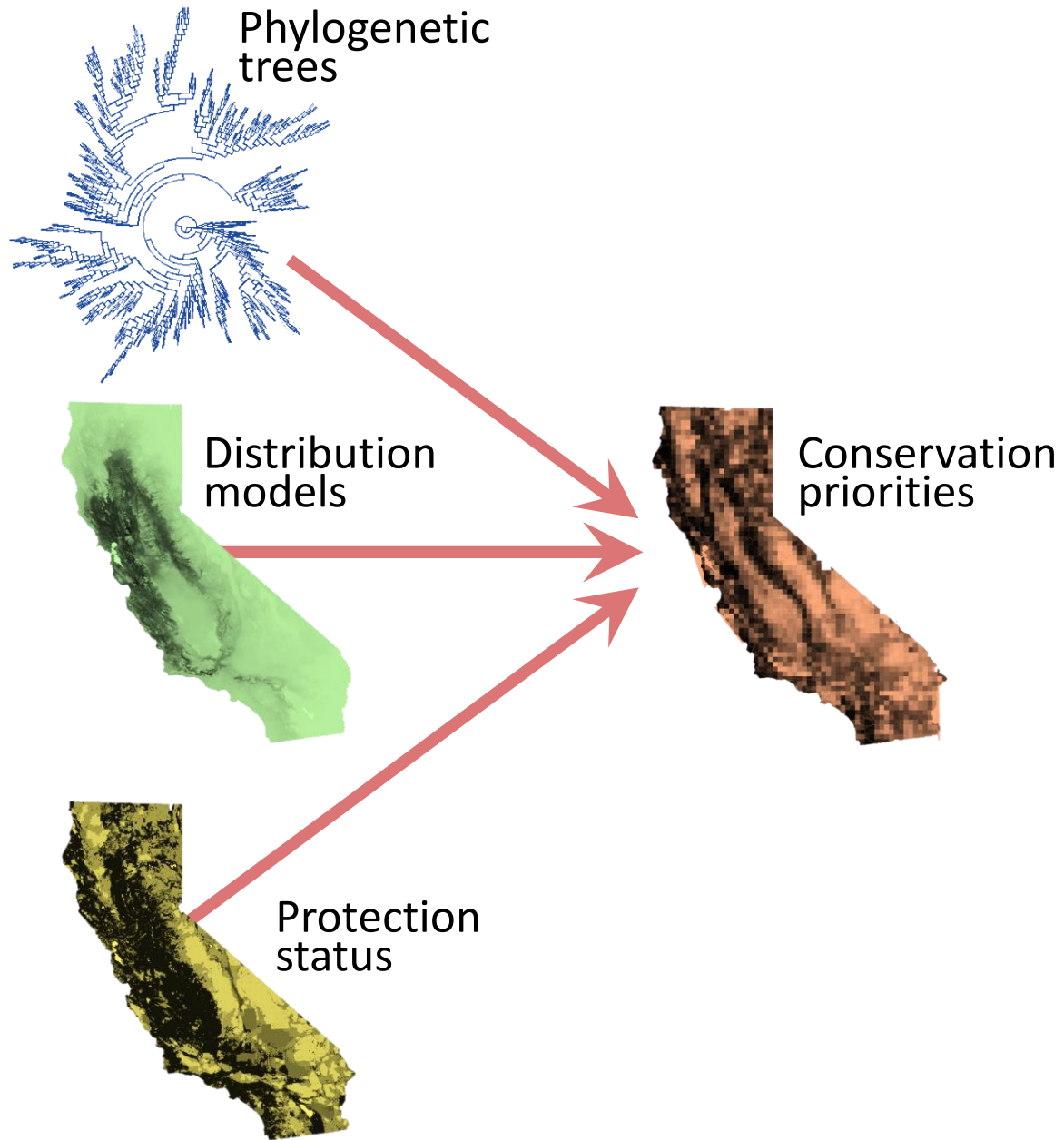
Phylogenetic tree





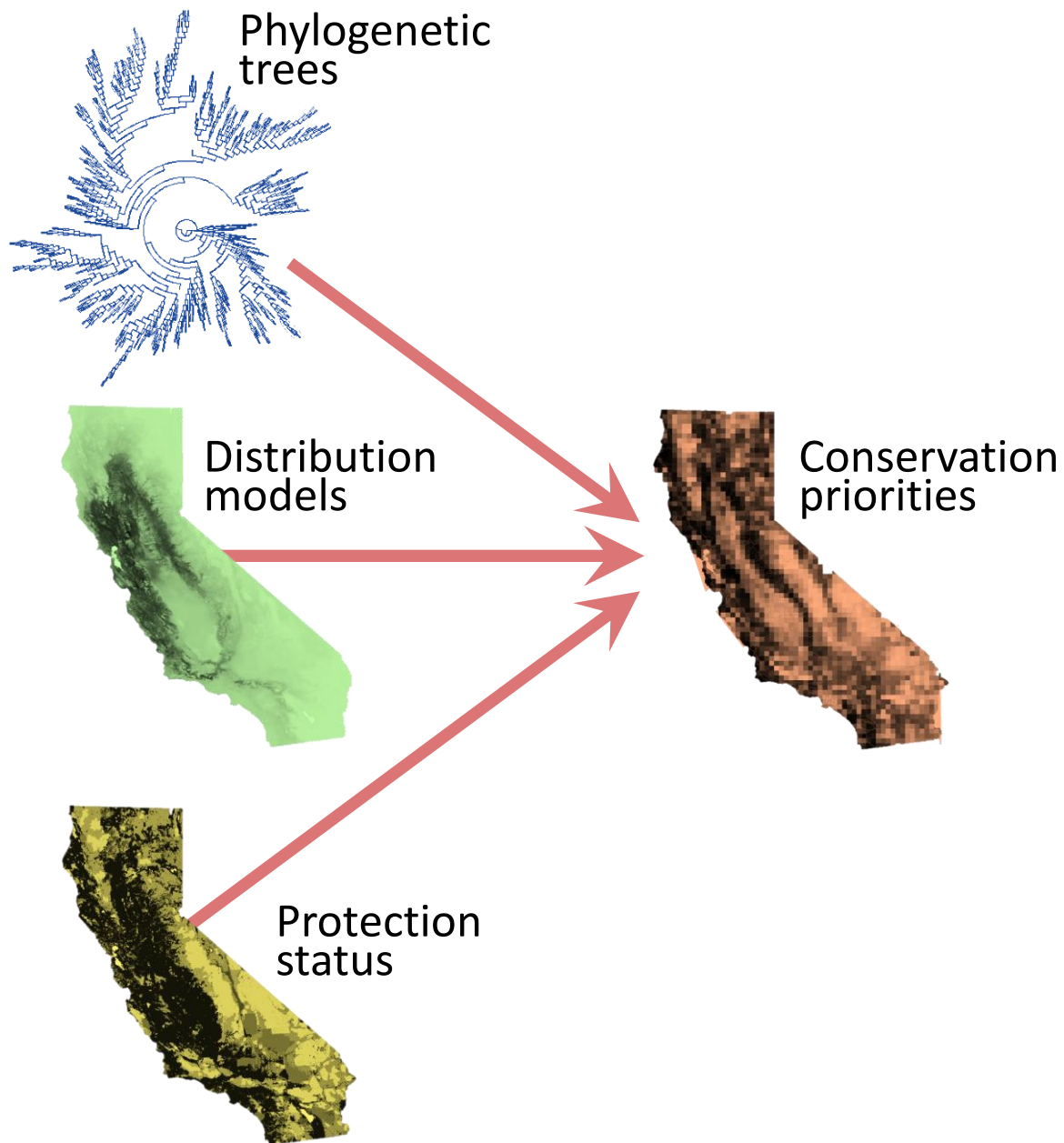




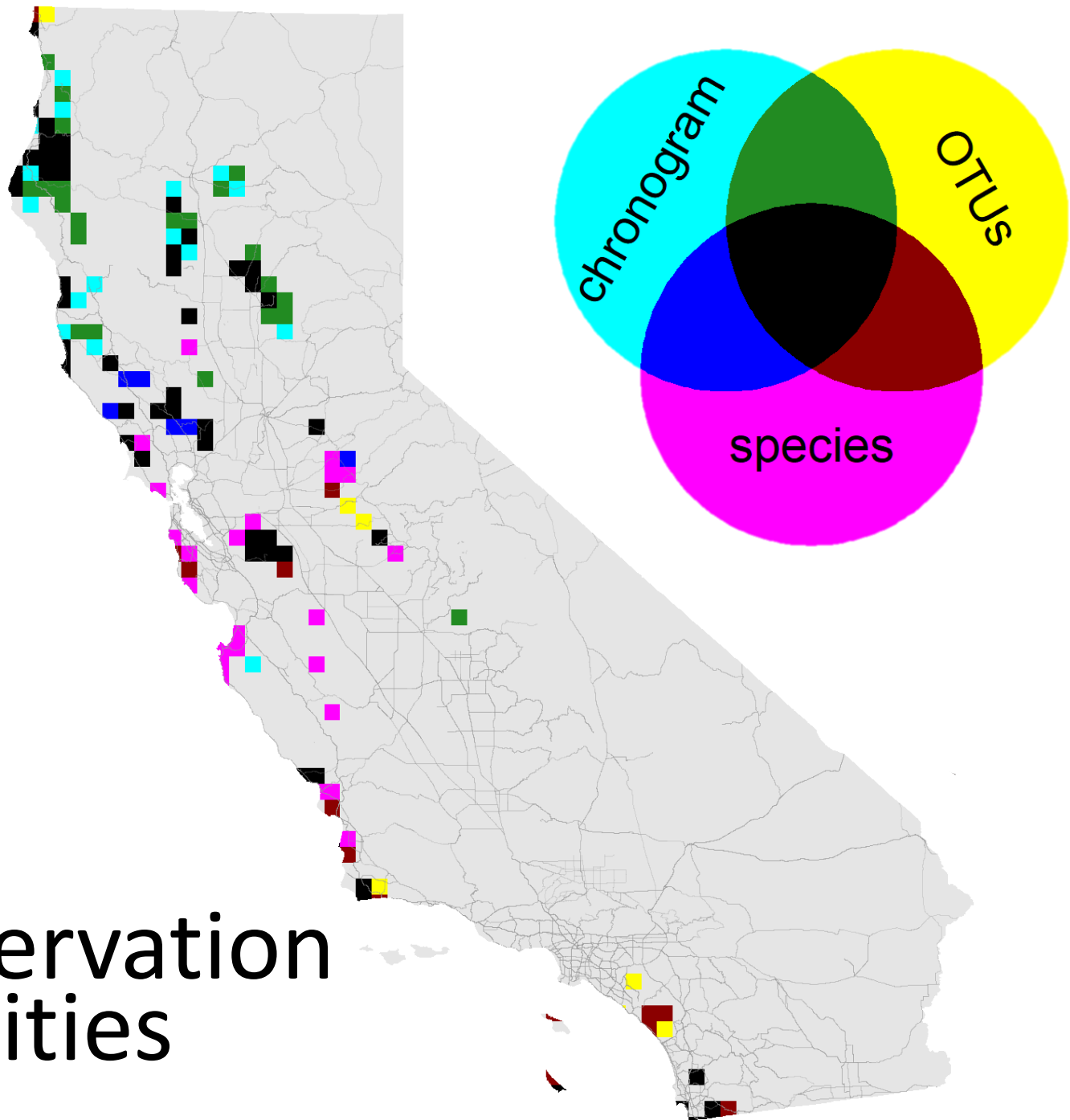


Optimal conservation targets:

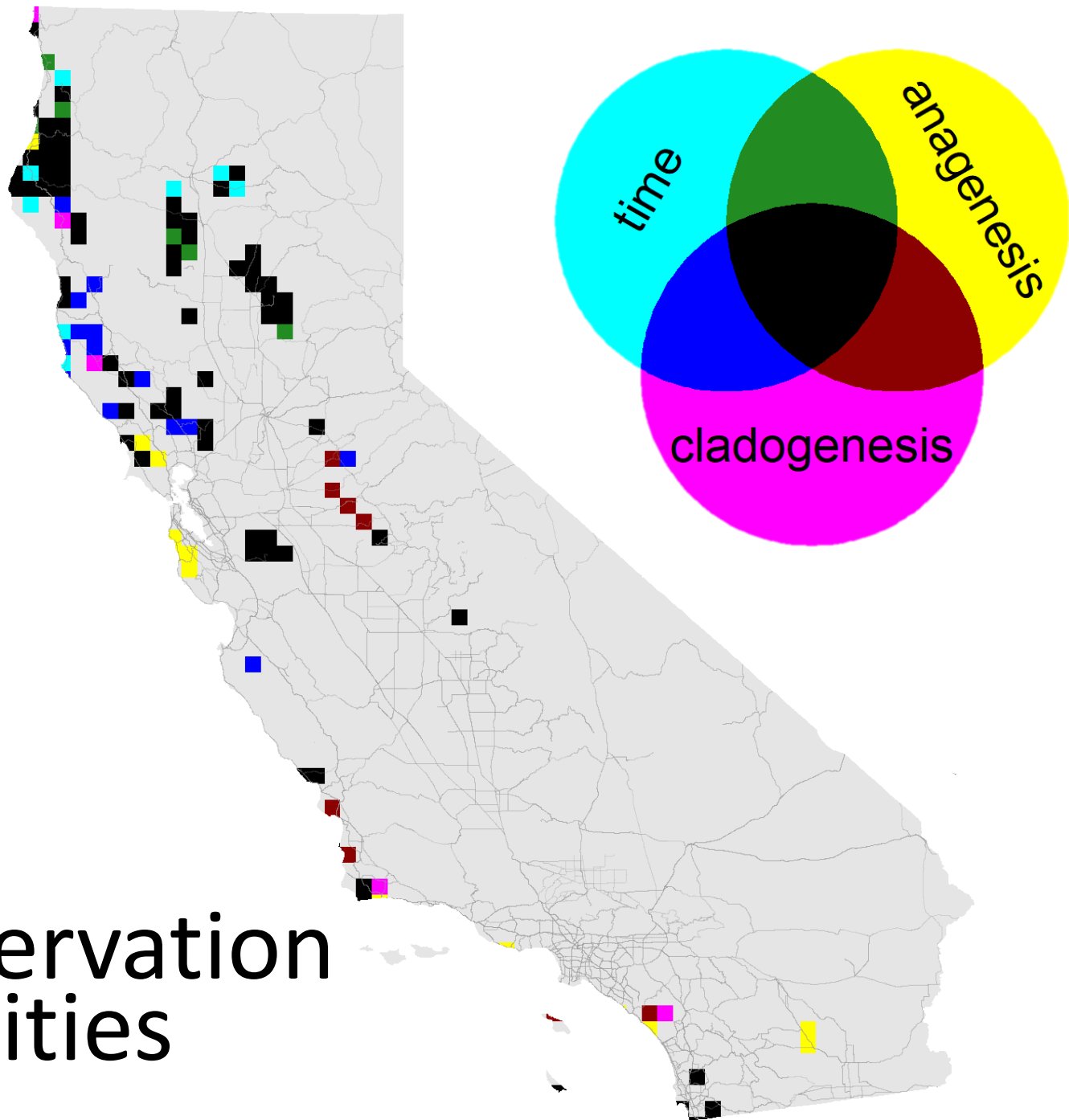
- Poorly protected
- Many resident taxa with:
 - Long branches
 - Small ranges
 - Poor protection across ranges



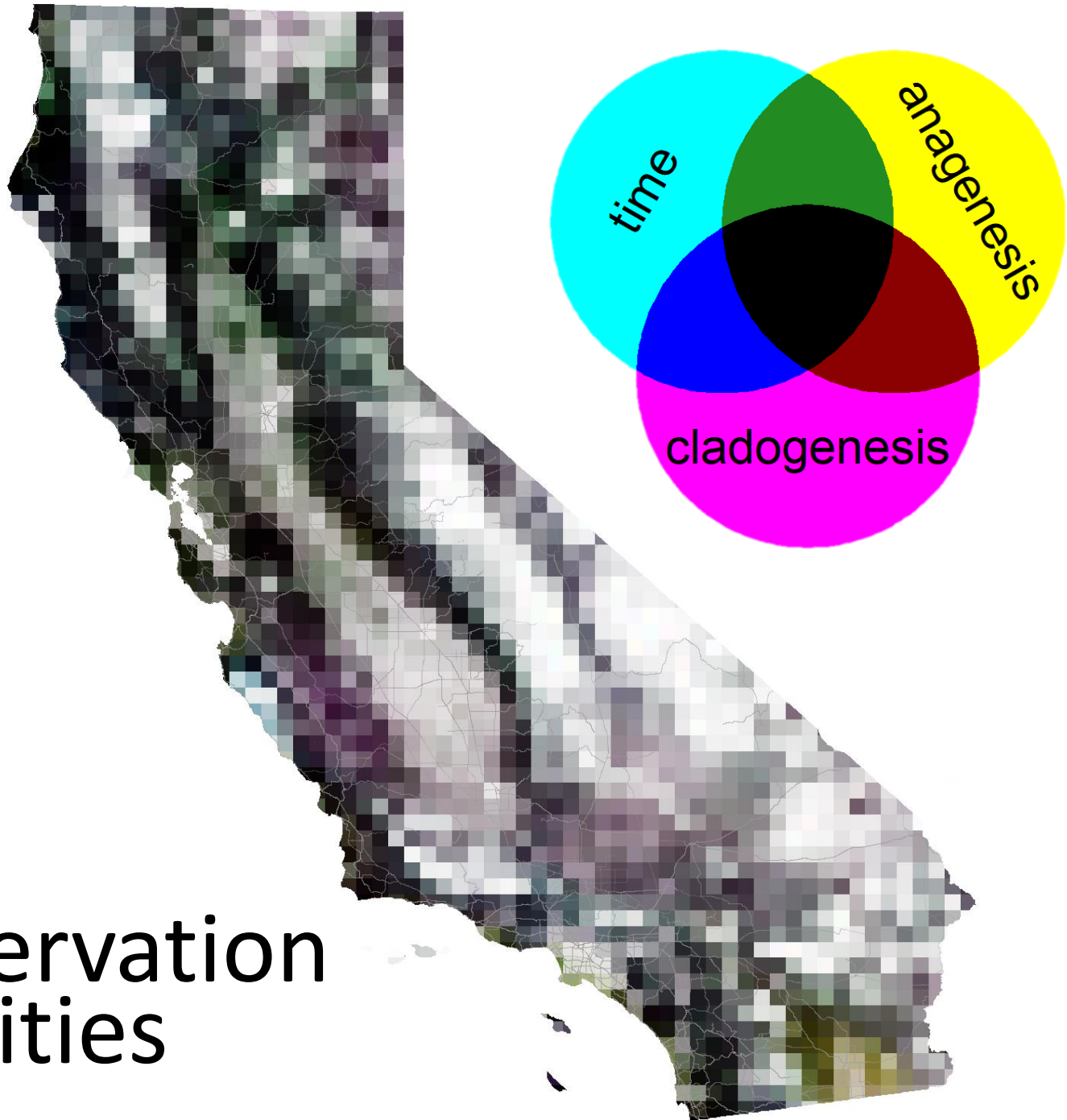
Top conservation priorities



Top conservation priorities



Top
conservation
priorities



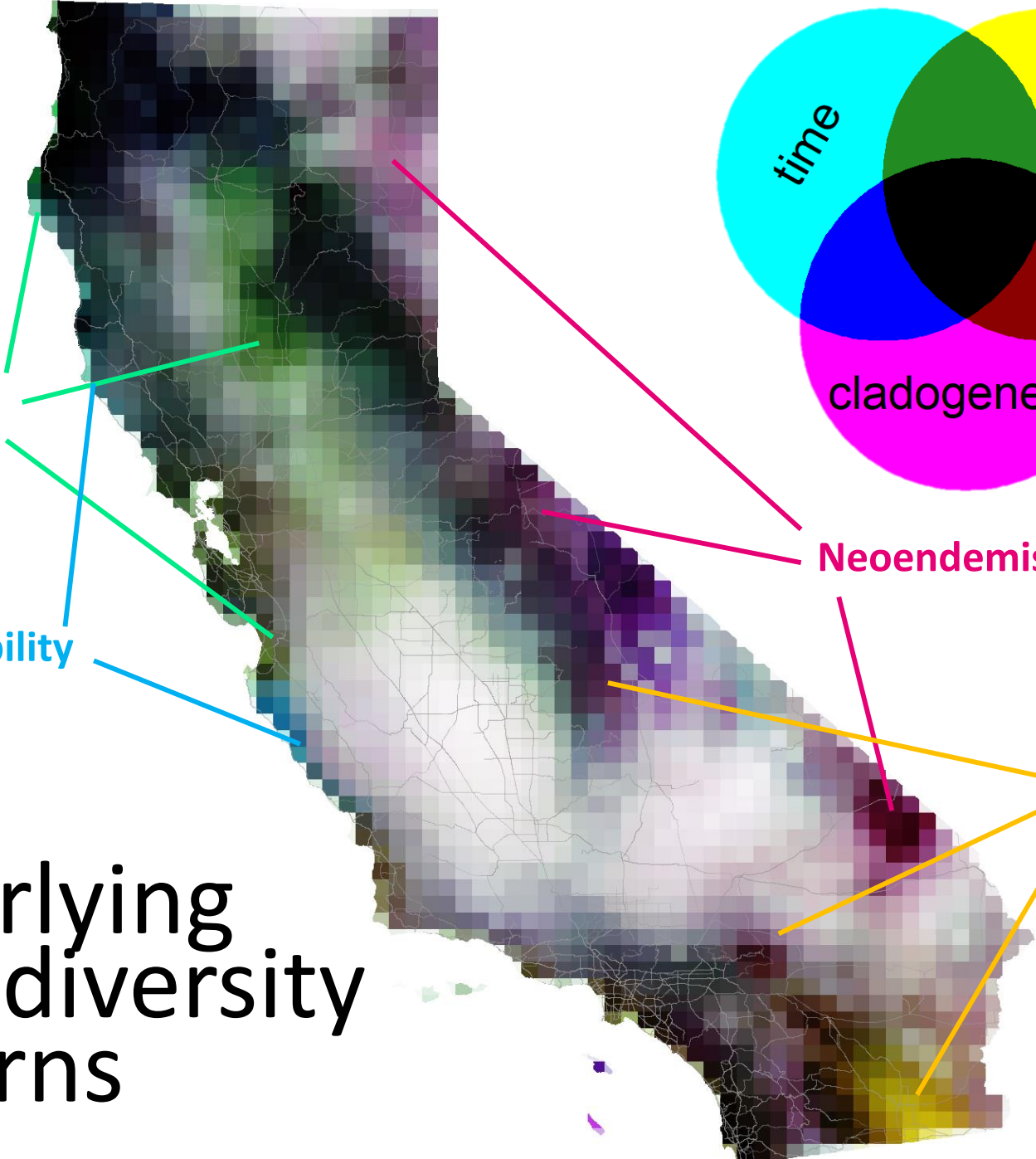
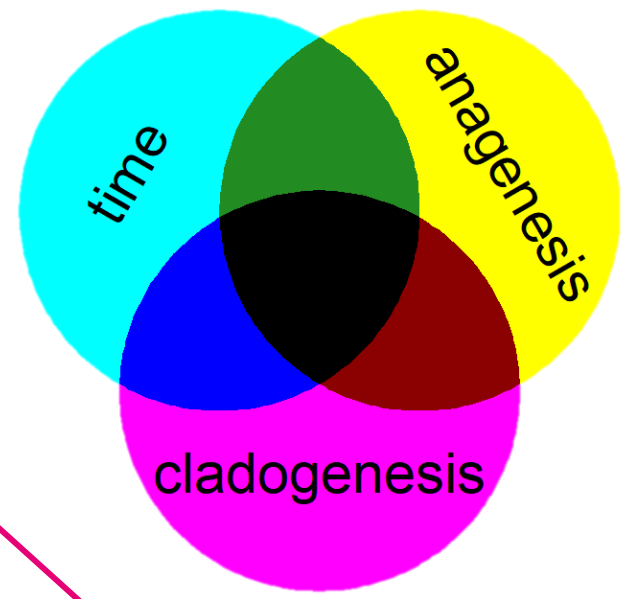
Underlying phylodiversity patterns

Paleoendemism

Stability

Neoendemism

Dynamism



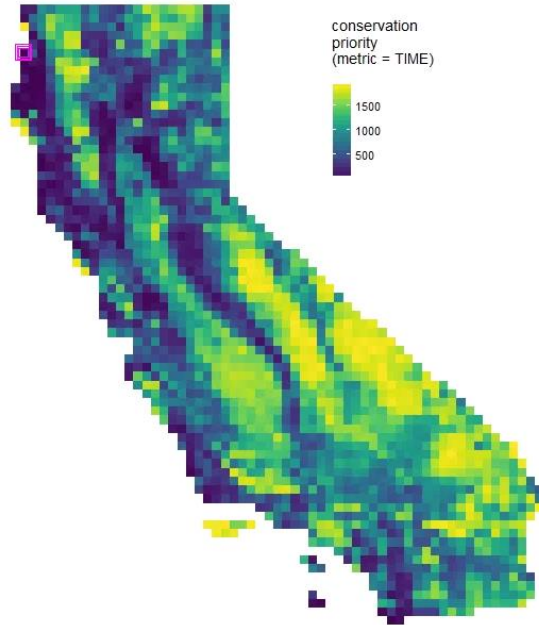
California plant phylodiversity atlas

Geography

Map variable

conservation priority

Overall conservation priority for this diversity facet. LOW values are HIGH priority sites, which contain concentrations of long-branch taxa with small ranges that are largely unprotected by current preserves or other top-priority sites.



Color scale

linear

Community

This table displays the floristic composition of the grid cell selected at left. The table is sortable and searchable.

Click to select a taxon. To map its range, change map variable to 'taxon range'. To view it in the evolutionary tree, change phylogeny variable to 'selected taxon'.

Show 10 entries Search:

	name	combined benefit	presence	endemism	branch length
1	Lysichiton	1	0.3909	0.0466	0.469
2	Lycopodium	0.8587	0.3618	0.0206	0.759
3	Lycopodiella	0.549	0.4619	0.0189	0.759
4	Thuja	0.2799	0.3508	0.0121	0.544
5	Lycopodium & Lycopodiella (2-OTU clade)	0.2348	0.6565	0.0108	0.304
6	Armeria	0.1876	0.2829	0.0212	0.314
7	Empetrum	0.1646	0.2338	0.0962	0.090
8	Chrysosplenium	0.1324	0.3886	0.0338	0.100
9	Ribes_Heritiera	0.1051	0.3841	0.0218	0.121
10	Dryopteris_1	0.096	0.4875	0.0055	0.319

Showing 1 to 10 of 2,164 entries

Previous 1 2 3 4 5 ... 217 Next

Note: 'range protection' values represent opportunity for protection increases, which is inversely related to actual current protection.

Phylogeny

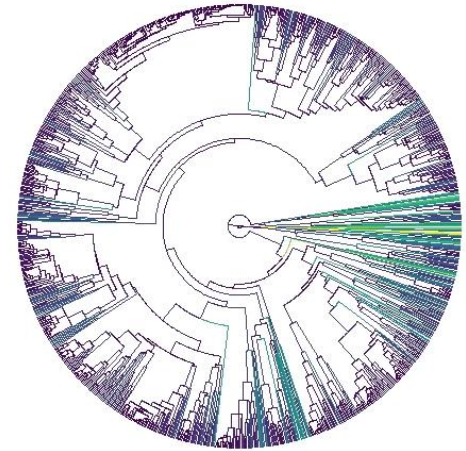
Select biodiversity facet

time

Time as a measure of biodiversity based on a 'chronogram' represents the total number of years that independent ancestral lineages persisted to give rise to taxon assemblage.

Lineages colored by

branch length



Options

- Plot only the clade selected in table (not yet working)
- Show tip labels

Color scale

