

Landscape Genetics of Blue Gramma, *Bouteloua gracilis*

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Basic Goals

- Drive around the CP and collect grass
- Characterize allelic and cytogenetic diversity
- Explore correlations between this diversity and environmental variables
- Ultimately, evaluate whether these correlations are meaningful (STZs)

Fine Scale Adaptation in Scarlet Gilia

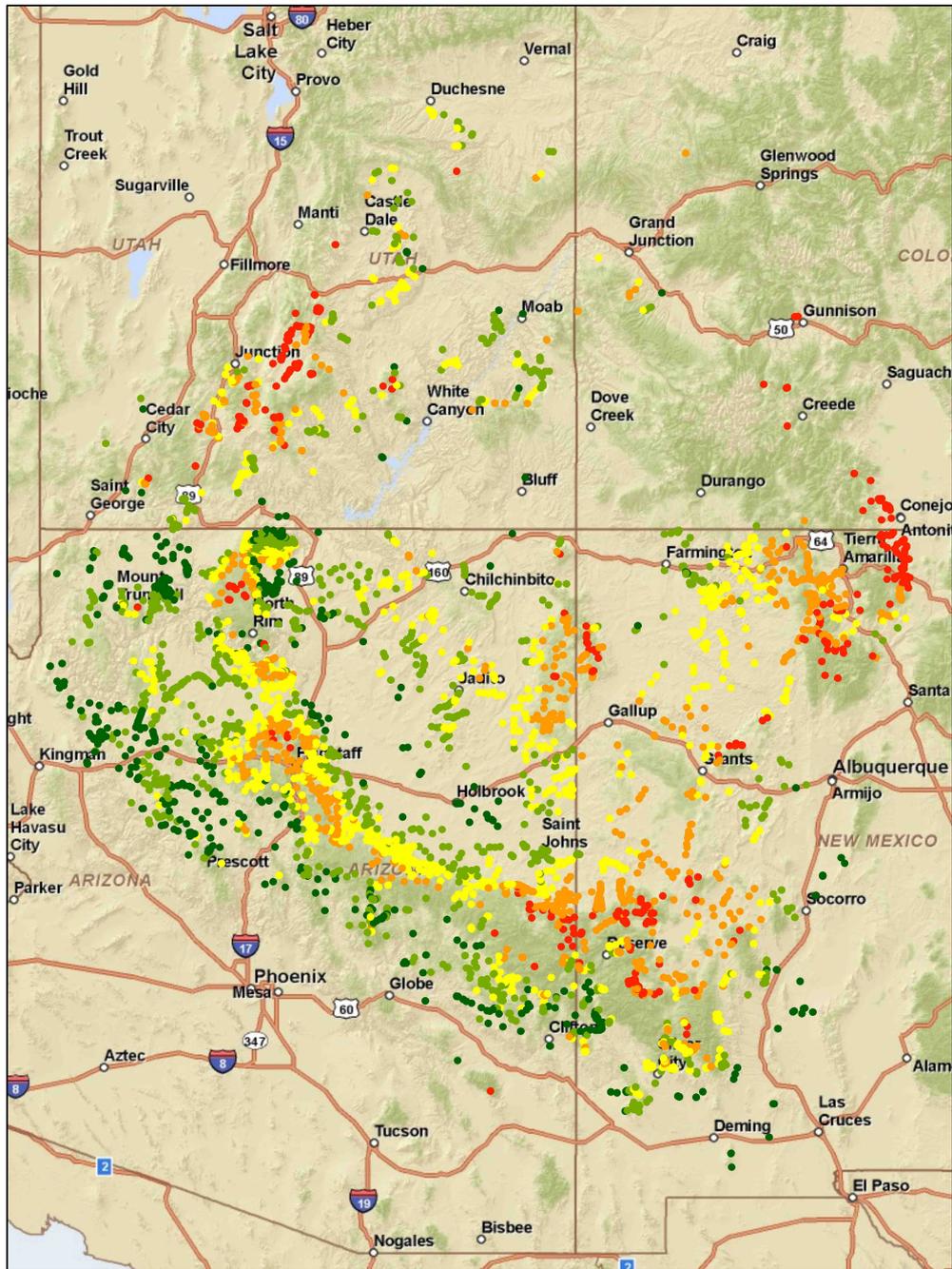


Nick Waser and Mary Price (89) reported a strong effect of crossing distance on offspring fitness--fitness reduced by almost half at 90m (!) relative to optimum

Bouteloua gracilis (blue grama)



- Establishes in disturbed sites
- Ecologically diverse
- Southern CP species
- Increases under grazing
- Cultivars available
- Variation in ploidy level
- Warm season
- Long collecting season
- Relatively easy to cultivate



Why blue grama?

Perceptions and Opportunities for Native Plant Production

Table 3. Estimated total production hectares and government investment needed to supply the southern Colorado Plateau with enough seed to post-fire seeding demands (ha) during an average fire year.

| Top Eight Species in Highest Demand (Next 5 Years) | Avg. Yield (kg/ha) ^a | Seeds/kg ^b | Production Hectares | Viability ^c | Commercial Price/kg ^d | Discount | Total Investment | Avg. Wildfire Seeding Rate PLS/m ² | He Se |
|---|---------------------------------|-----------------------|---------------------|------------------------|----------------------------------|----------|------------------|---|-------|
| <i>Bouteloua gracilis</i> (blue grama) | 157 | 1,818,823 | 47 | 0.87 | \$26.46 | 50% | \$84,119 | 600 | 4, |
| <i>Festuca arizonica</i> (Arizona fescue) | 224 | 1,212,549 | 30 | 0.97 | \$26.46 | 50% | \$86,131 | 600 | 3, |
| <i>Bouteloua curtipendula</i> (side-oats grama) | 157 | 421,085 | 24 | 0.90 | \$30.86 | 50% | \$53,178 | 600 | |
| <i>Achnatherum hymenoides</i> (Indian ricegrass) | 392 | 310,853 | 24 | 0.93 | \$44.09 | 50% | \$196,254 | 600 | 1, |
| <i>Poa fendleriana</i> (muttongrass) | 39 | 1,962,124 | 21 | 0.85 | \$198.42 | 50% | \$69,710 | 600 | |
| <i>Elymus elymoides</i> (squirreltail) | 224 | 423,290 | 14 | 0.90 | \$88.19 | 50% | \$128,260 | 600 | |
| <i>Distichlis spicata</i> (inland saltgrass) | 168 | 1,146,410 | 11 | 0.92 | \$110.23 | 50% | \$94,550 | 600 | |
| <i>Sporobolus airoides</i> (alkali sacaton) | 168 | 3,858,110 | 11 | 0.90 | \$39.68 | 50% | \$33,298 | 600 | 2, |
| Interested membership | | | | | | | 50.00% | | |
| Total | | | 183 | | | | \$372,751 | | 14, |

Sampling thus far:

- tissue samples: 15 individuals X 72 accessions
- 35 accessions under cultivation (hopefully)

Timeframe:

- April, samples off for ploidy determination (fresh tissue)
- May and June, send off samples for genotyping
- score genotypes in Fall/conduct analyses Fall/Winter '12/13
- design common garden X marker studies Spring '13

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- Kirsten Ironside
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