

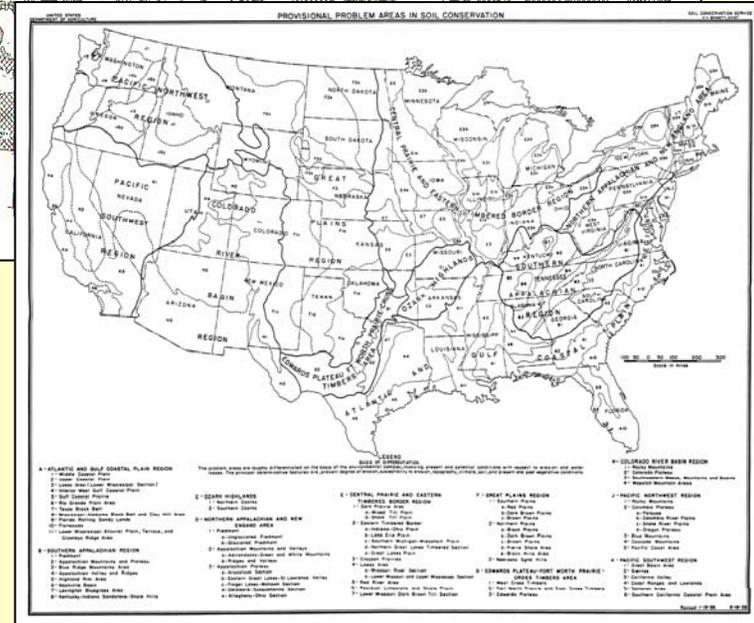
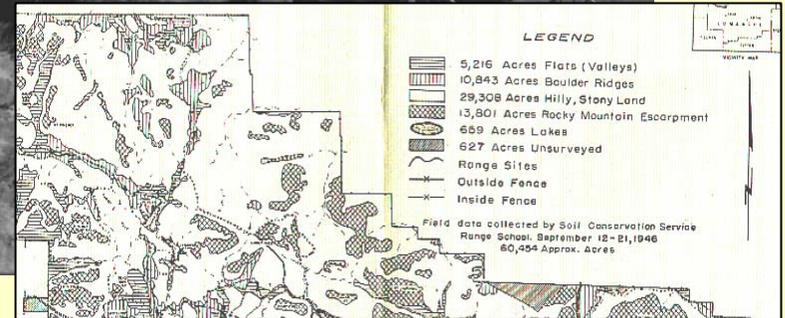
Ag Handbook 296
Land Resource Regions and
Major Land Resource Areas
of the United States

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Soil Scientist - Liaison to ARS
USDA-NRCS
Las Cruces, NM*

How far back are our roots??

How far back are our roots??

- First soil survey
 - 1898, Hagerstown, MD
- First use of site concept
 - Forest land- Site index, 1919
 - Rangeland - 1930-40's
- First "MLRA" map
 - 1938-39



The origins of broad land use areas



1938-39

"Problem areas are roughly differentiated on the basis of the environmental complex, involving present and potential conditions with respect to erosion and water losses. Principal determinative features are, present degree of erosion, topography, climate, soil, and present and past vegetative conditions."

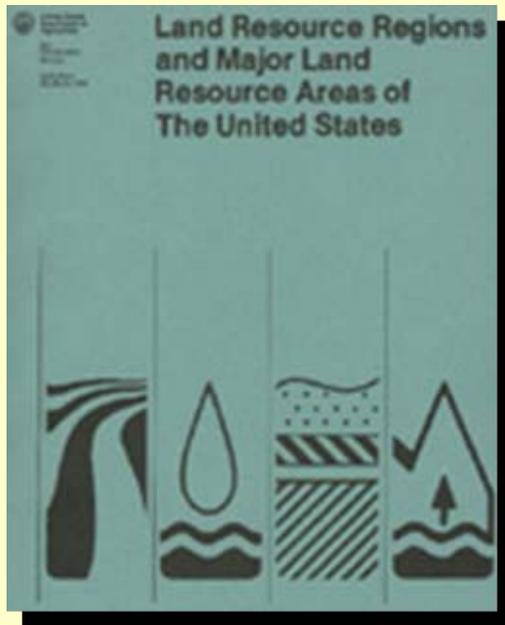


10 regions (A-K), 56 Problem Areas and 30 subdivisions

LEGEND		BASIS OF DIFFERENTIATION	
The problem areas are roughly differentiated on the basis of the environmental complex, involving present and potential conditions with respect to erosion and water losses. The principal determinative features are, present degree of erosion, susceptibility to erosion, topography, climate, soil, and present and past vegetative conditions.			
A - ATLANTIC AND GULF COASTAL PLAIN REGION		C - OZARK HIGHLANDS	E - CENTRAL PRAIRIE AND EASTERN TIMBERED BORDER REGION
1 - Middle Coastal Plain		1 - Northern Ozarks	1 - Dark Prairie Area
2 - Upper Coastal Plain		2 - Southern Ozarks	a - Mixed Till Plain
3 - Loess Area (Lower Mississippi Section)			b - Shale Till Plain
4 - Interior West Gulf Coastal Plain			2 - Eastern Timbers Border
5 - Gulf Coastal Prairie			a - Indiana-Ohio Plain
6 - Rio Grande Plain Area			b - Lake Erie Plain
7 - Texas Black Belt			c - Southern Michigan-Wisconsin Plain
8 - Mississippi-Alabama Black Belt and Clay Hill Area			d - Northern Great Lakes Timbers Section
9 - Florida Rolling Sandy Lands			e - Great Lakes Plain
10 - Flatwoods			3 - Cloydon Prairies
11 - Lower Mississippi Alluvial Plain, Terrace, and Crowley's Ridge Area			4 - Loess Area
			a - Missouri River Section
			b - Lower Missouri and Upper Mississippi Section
			5 - Red River Area
			6 - Residual Limestone and Shale Plain
			7 - Lower Missouri Dark Brown Till Section
B - SOUTHERN APPALACHIAN REGION		D - NORTHERN APPALACHIAN AND NEW ENGLAND AREA	F - GREAT PLAINS REGION
1 - Piedmont		1 - Piedmont	1 - Southern Plains
2 - Appalachian Mountains and Plateau		a - Unglaciated Piedmont	a - Red Plains
3 - Blue Ridge Mountains Area		b - Glaciated Piedmont	b - Dark Brown Plains
4 - Appalachian Valley and Ridges		2 - Appalachian Mountains and Valleys	c - Brown Plains
5 - Highland Rim Area		a - Adirondacks-Green and White Mountains	d - Black Plains
6 - Nashville Basin		b - Ridges and Valleys	b - Dark Brown Plains
7 - Lexington Bluegrass Area		3 - Appalachian Plateau	c - Brown Plains
8 - Kentucky-Indiana Sandstone-Shale Hills		a - Aroostook Section	d - Pierre Shale Area
		b - Eastern Great Lakes-St Lawrence Valley	e - Black Hills Area
		c - Finger Lakes-Mohawk Section	3 - Nebraska Sand Hills
		d - Delaware-Susquehanna Section	
		e - Allegheny-Ohio Section	G - EDWARDS PLATEAU-FORT WORTH PRAIRIE-CROSS TIMBERS AREA
			1 - West Cross Timbers
			2 - Fort Worth Prairie and East Cross Timbers
			3 - Edwards Plateau
			H - COLORADO RIVER BASIN REGION
			1 - Rocky Mountains
			2 - Colorado Plateau
			3 - Southwestern Mesas, Mountains and Basins
			4 - Wasatch Mountain Areas
			J - PACIFIC NORTHWEST REGION
			1 - Rocky Mountains
			2 - Columbia Plateau
			a - Palouse
			b - Columbia River Plains
			c - Snake River Plains
			d - Oregon Plateau
			3 - Blue Mountains
			4 - Cascade Mountains
			5 - Pacific Coast Area
			K - PACIFIC SOUTHWEST REGION
			1 - Great Basin Area
			2 - Sierras
			3 - California Valley
			4 - Coast Ranges and Lowlands
			5 - Sonoran Area
			6 - Southern California Coastal Plain Area

Alphabet soup for areas of land

LRR, MLRA, LRU, CRA



Austin, 1965; 1981

- Land Resource Regions - geographically associated MLRA's
- Major Land Resource Regions - geographically associated LRU's
- Land Resource Units - Coextensive with or a subdivision of State General Soil Map Units (STATSGO)
- Common Resource Areas - LRU's were designated as CRA's in 2005

2000-2006 update

- Republish LRR/MLRA map and narratives
- Hardcopy and digital
- Includes color photos, maps, graphs
- Peer review among various USDA and NRCS disciplines
- Ensure same MLRA concepts are in Digital General Soil Map of U.S. (STATSGO)

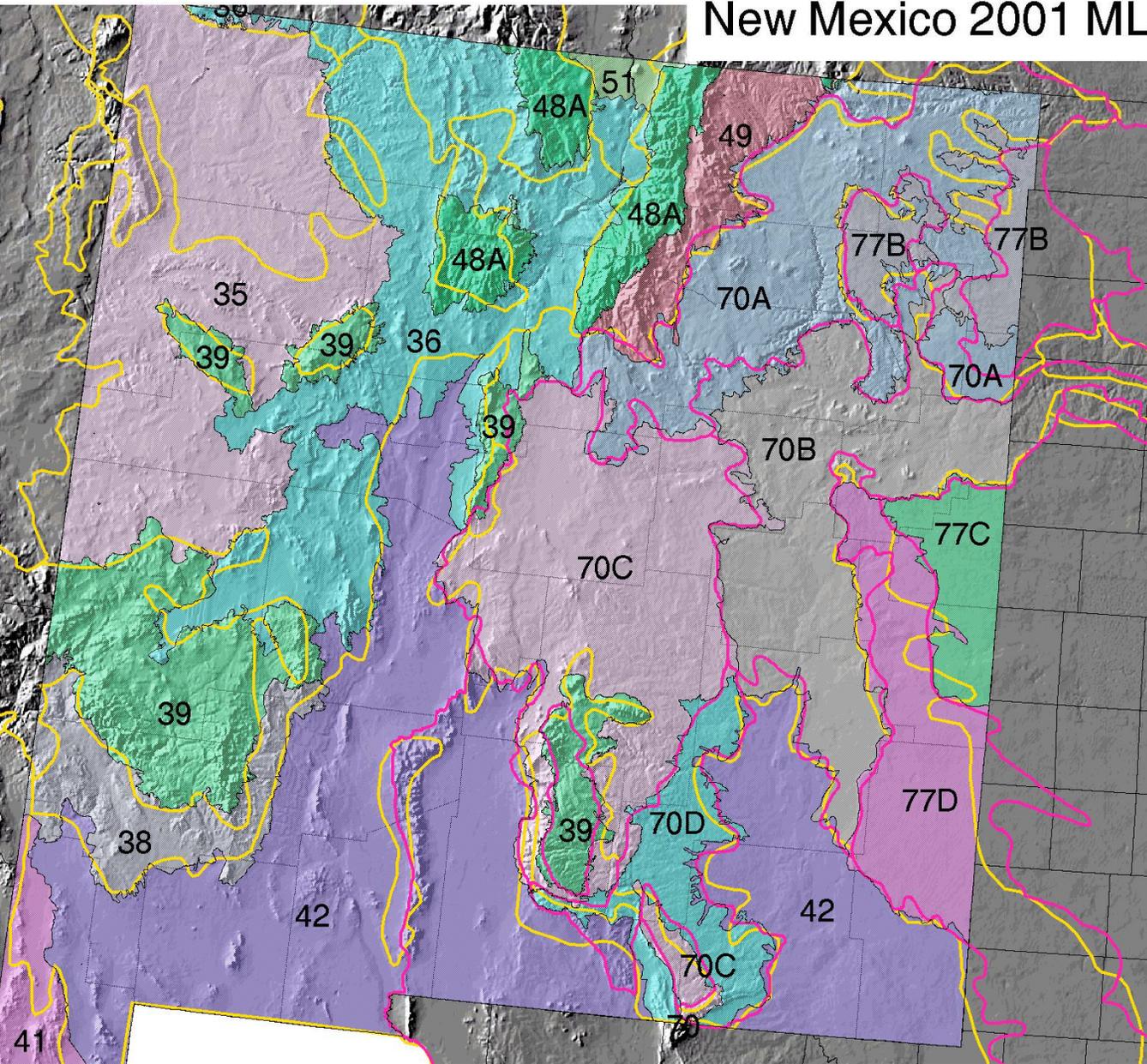
2006 draft: 28 Land Resource Regions and 278 MLRAs

Ag Handbook 296 update

Land Resource Regions and Major Land Resource Areas of the United States

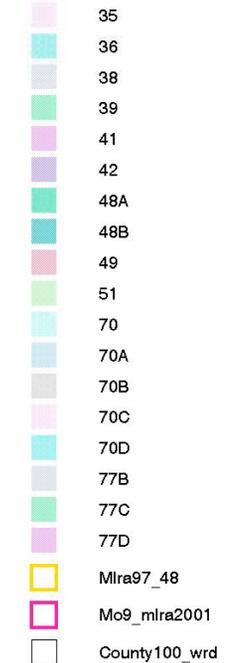
- Shows areas of land, at multiple scales, with significant geographic differences in
 - soils,
 - climate,
 - water resources,
 - land use, and
 - potential natural vegetation
- Uses:
 - National and regional agricultural concerns
 - Needs for resource inventories and research
 - Base for extrapolating results (NRI)
 - Framework for organizing soil surveys and conservation programs

New Mexico 2001 MLRA Revision Proposals



2001 MLRA Revision Proposals

Nm_mira2001

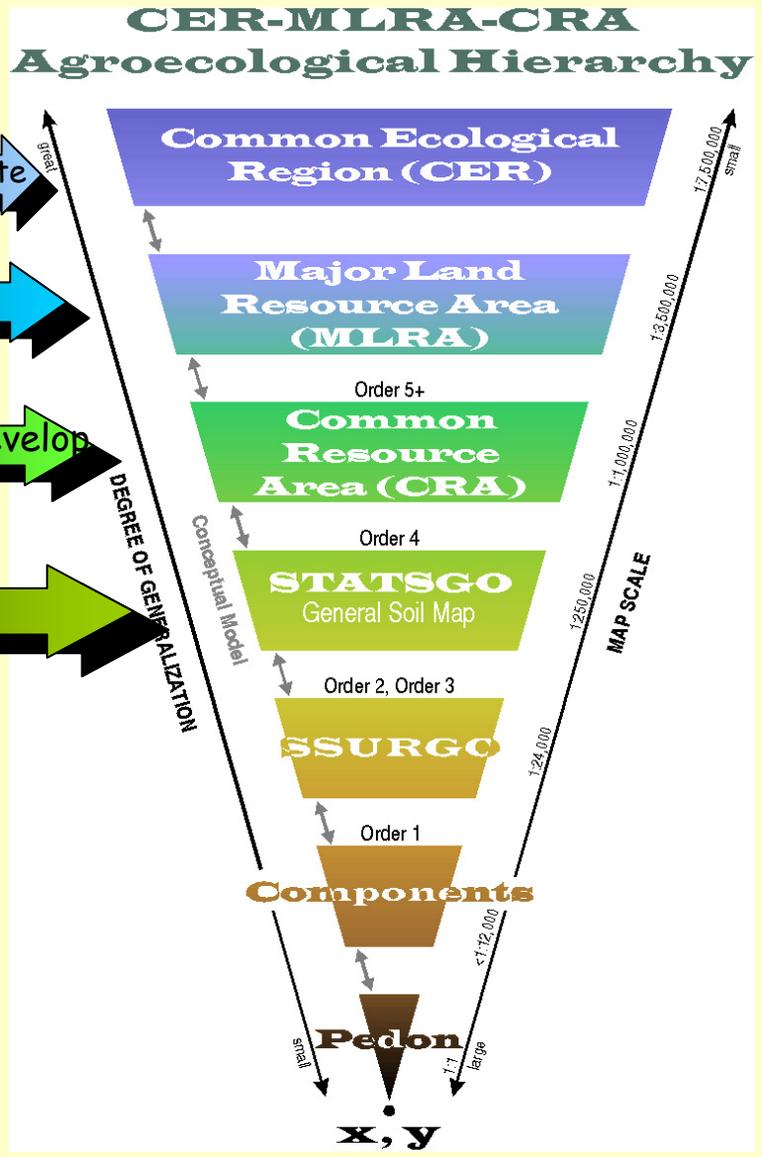
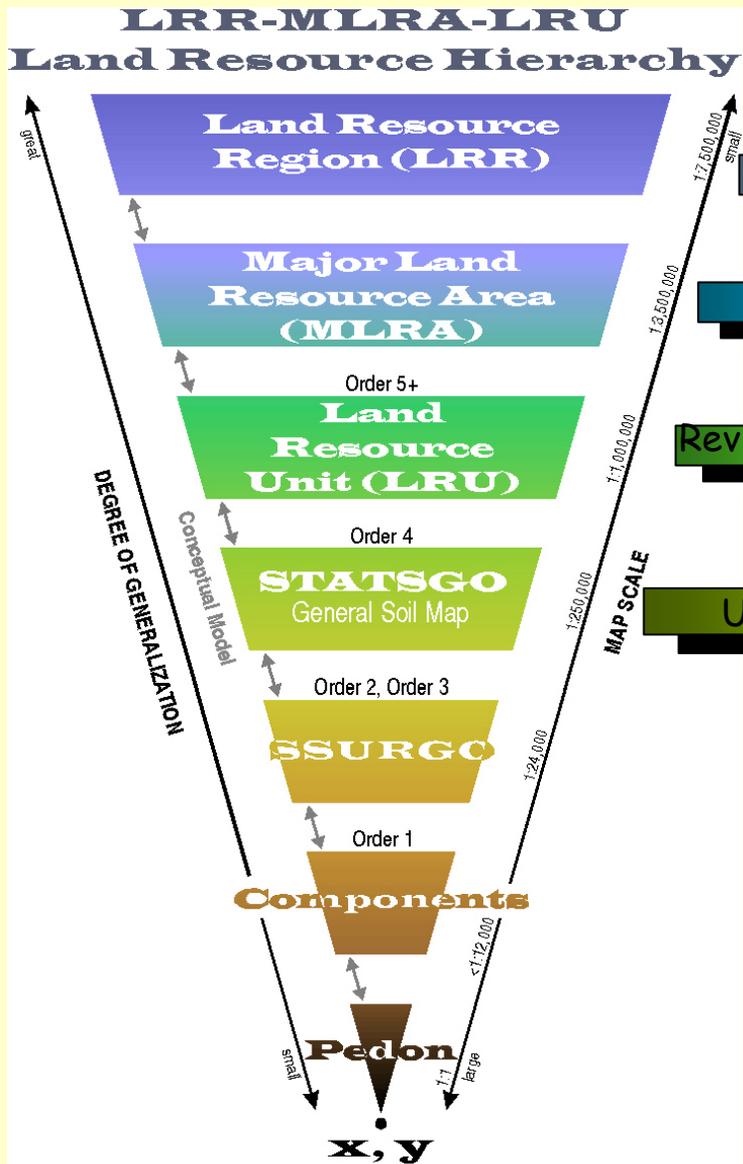


40 0 40 80 Miles



Map prepared by
USDA-NRCS-NSSC Staff
NSSC-4007-10032001-5
DRAFT 10/5/01 sww

Ag Handbook and STATSGO Update FY 00-06



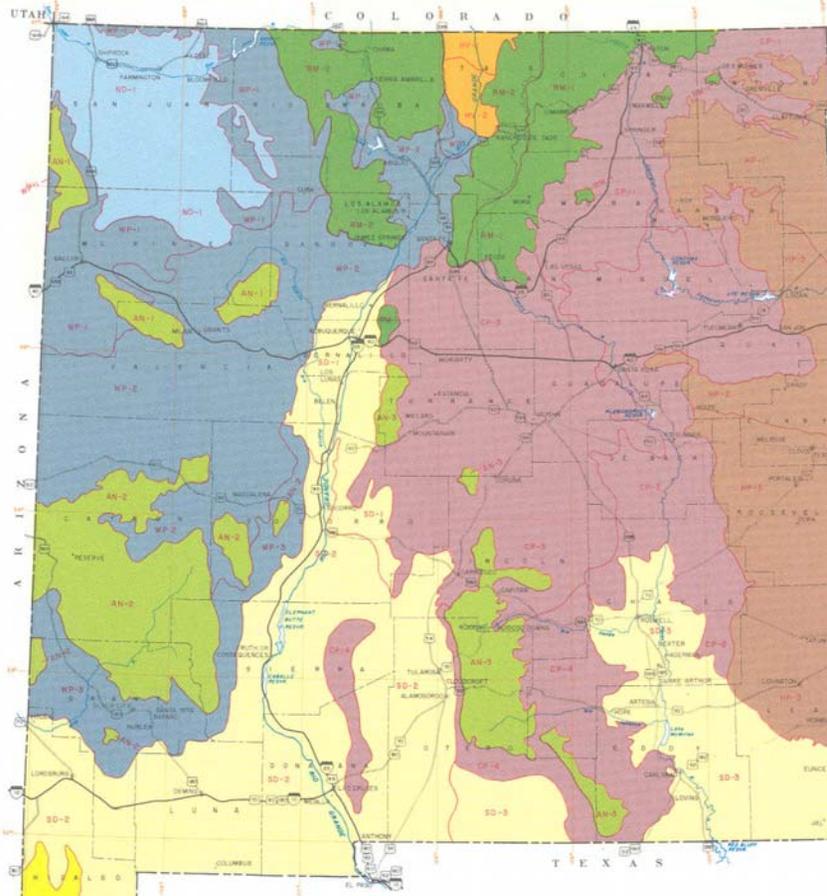
Correlate

Update

Review-Develop

Update

MLRA's, LRU's



NOTE:
Because the scale of this map does not permit
delineation of areas smaller than several square
miles, contrasting areas up to this size may
occur in any of the delineations.

LEGEND (see other side for detail descriptions)

- New Mexico and Arizona Plateaus and Mesas (36)
- WP-1
- WP-2
- WP-3
- Son Juan River Valley, Mesas and Plateaus (37)
- HD-1
- HD-2
- HD-3
- Arizona and New Mexico Mountains (39)
- AN-1
- AN-2
- AN-3
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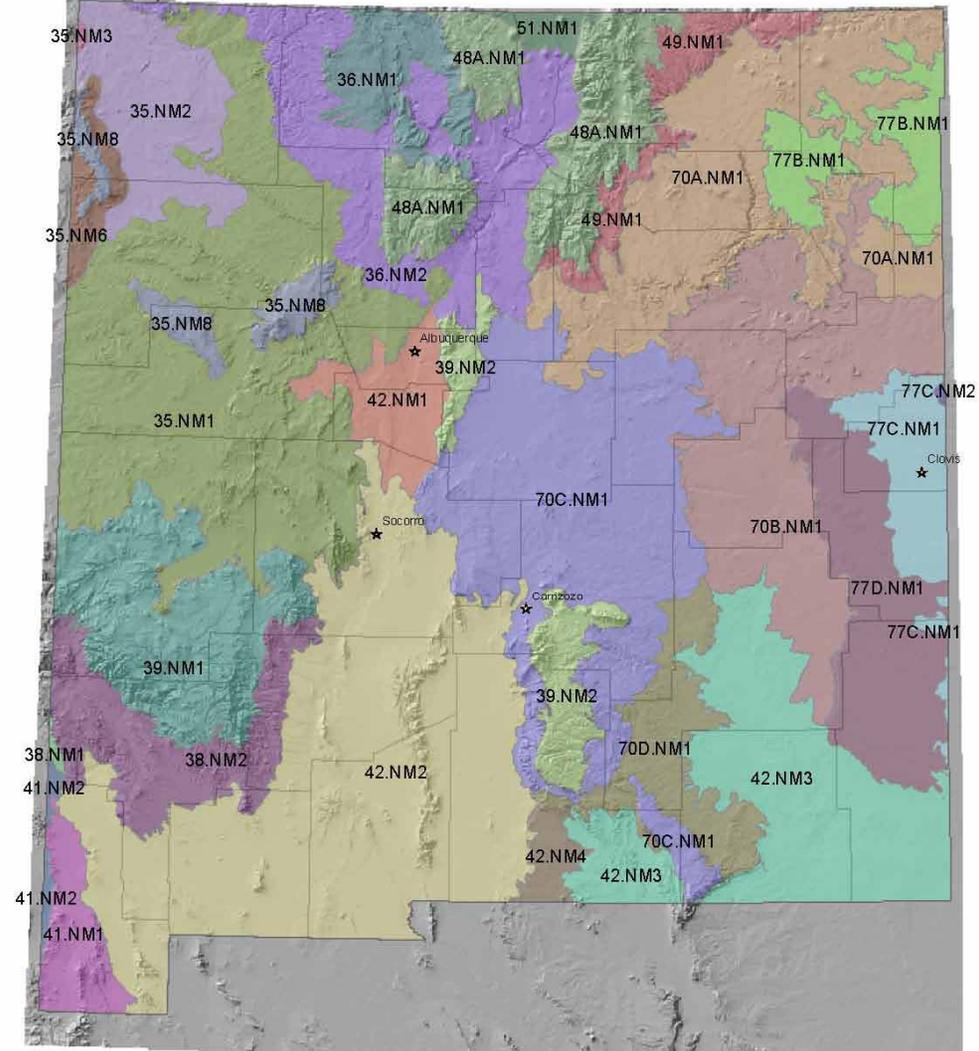
Detailed descriptions are available from:
PLANT SCIENCE
SCI., BOX 2005
ALBUQUERQUE, N.M., 87102



MAJOR LAND RESOURCE SUBRESOURCE AREAS NEW MEXICO

JUNE 1980
SCALE 1:3,400,000

CRA'S New Mexico Common Resource Areas



USDA Natural Resources Conservation Service
Universal Transverse Mercator Projection
North American Datum 1927
Draft Common Resource Area Layer Developed by
The USDA Natural Resources Conservation Service, New Mexico
December 12, 2003



0 12.5 25 50 75 100 Miles

Common Resource Areas

- | nm_cra2 | PROV_ST_CR | nm_cra2 | PROV_ST_CR |
|----------|------------|---------|------------|
| 35.NM1 | 35.NM1 | 49.NM1 | 49.NM1 |
| 35.NM2 | 35.NM2 | 70A.NM1 | 70A.NM1 |
| 35.NM3 | 35.NM3 | 70B.NM1 | 70B.NM1 |
| 35.NM4 | 35.NM4 | 70C.NM1 | 70C.NM1 |
| 35.NM5 | 35.NM5 | 70D.NM1 | 70D.NM1 |
| 35.NM6 | 35.NM6 | 70E.NM1 | 70E.NM1 |
| 35.NM7 | 35.NM7 | 70F.NM1 | 70F.NM1 |
| 35.NM8 | 35.NM8 | 70G.NM1 | 70G.NM1 |
| 35.NM9 | 35.NM9 | 70H.NM1 | 70H.NM1 |
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| 35.NM17 | 35.NM17 | 70P.NM1 | 70P.NM1 |
| 35.NM18 | 35.NM18 | 70Q.NM1 | 70Q.NM1 |
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| 35.NM20 | 35.NM20 | 70S.NM1 | 70S.NM1 |
| 35.NM21 | 35.NM21 | 70T.NM1 | 70T.NM1 |
| 35.NM22 | 35.NM22 | 70U.NM1 | 70U.NM1 |
| 35.NM23 | 35.NM23 | 70V.NM1 | 70V.NM1 |
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| 35.NM29 | 35.NM29 | 71B.NM1 | 71B.NM1 |
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| 35.NM31 | 35.NM31 | 71D.NM1 | 71D.NM1 |
| 35.NM32 | 35.NM32 | 71E.NM1 | 71E.NM1 |
| 35.NM33 | 35.NM33 | 71F.NM1 | 71F.NM1 |
| 35.NM34 | 35.NM34 | 71G.NM1 | 71G.NM1 |
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| 35.NM97 | 35.NM97 | 73R.NM1 | 73R.NM1 |
| 35.NM98 | 35.NM98 | 73S.NM1 | 73S.NM1 |
| 35.NM99 | 35.NM99 | 73T.NM1 | 73T.NM1 |
| 35.NM100 | 35.NM100 | 73U.NM1 | 73U.NM1 |

MLRA Description

- Land use
- Elevation and topography
- Climate
 - MAP for wettest and driest parts
 - PPT seasonal distribution
 - Range in MAT, Ave FFperiod
- Water resources
- Soils-representative series
- Potential natural vegetation (Kuchler)
 - Ecoregions in the MLRA

MLRA 42 Southern Desertic Basins, Plains, Mountains

LRU = SD-2 (1982)

- Elevation and topography
 - Elevation - 3,800- 5200 feet
 - Broad landscape description - "gently sloping plains broken by mountains"
- Climate
 - MAP and seasonal distribution - 8-10"
 - MAT and extremes - 60° F; 5 below zero to 110
 - Ave FFperiod - 200-215
- Soil
 - Temperature regime - Thermic
 - Moisture regime - Aridic (Ustic Aridic?)
 - Taxonomic groups and representative series - Argids, Calcids, Cambids, Torrispamments, etc.
- Potential natural vegetation
 - Functional type - Grassland, mixed grassland-shrub
 - Characteristic species - Black grama, bush muhly, giant dropseed, tobosa, soaptree yucca, creosote, tarbush

Using soil climate and vegetation to help identify LRUs

LRU (NM-TX)

Indicator species/conditions

Typic Aridic, thermic (8-10")

Mesquite/creosotebush dominant, dropseeds, bush muhly in restricted to shrub canopies

Ustic Aridic, thermic (10-13")

Black grama abundant, few blue grama, high grass diversity, ephedra common, bush muhly in shrub interspaces

Ustic Aridic, thermic (12-14")

Blue grama and sideoats grama common, few mesquite

Aridic Ustic, thermic (13-15")

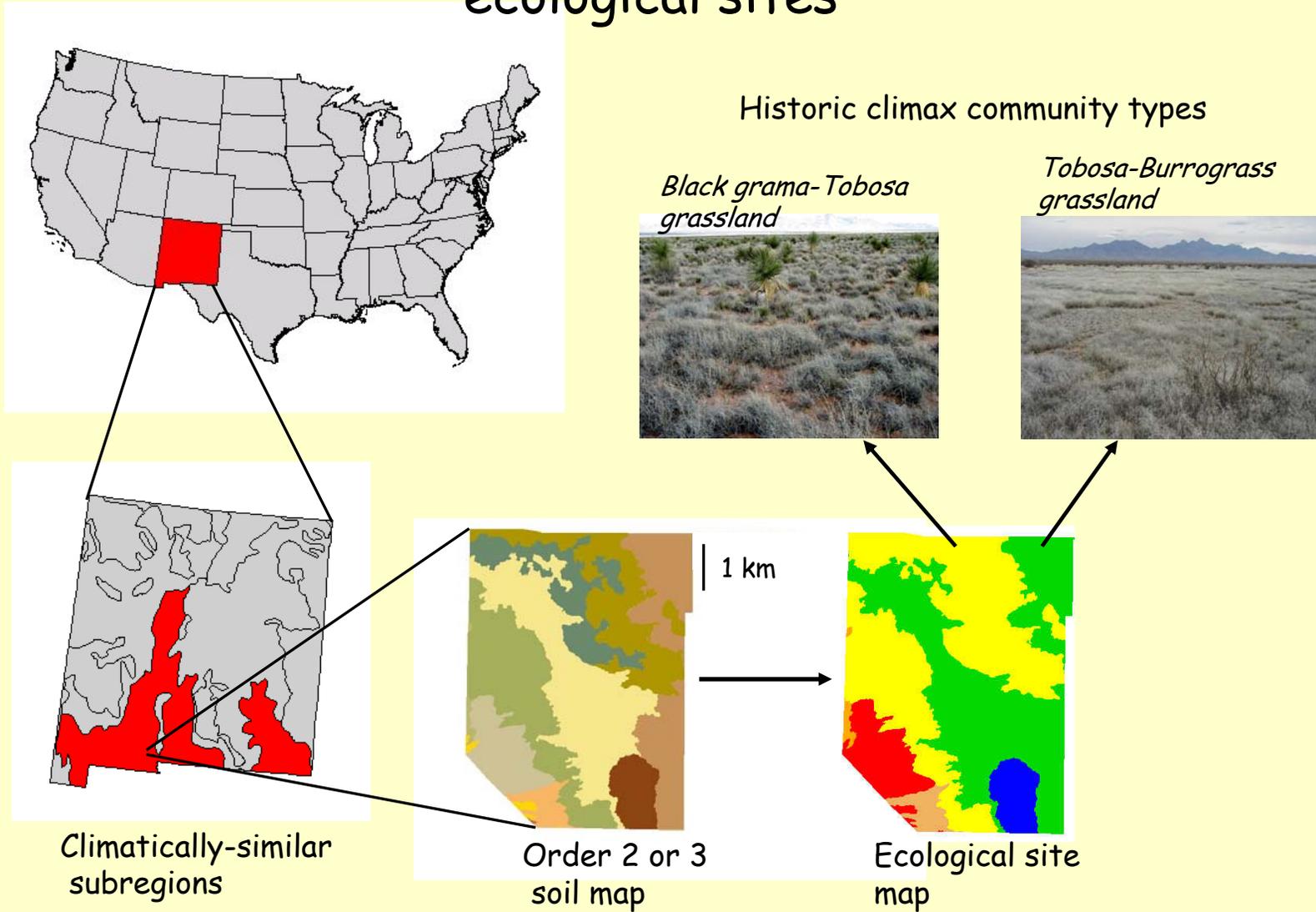
Blue grama co-dominant or dominant, turbinella oak, some juniper on shallow soils

Aridic Ustic, mesic (14-18") Pinon-juniper-oak savanna vegetation

Typic Ustic, mesic (16-18") Pinon-juniper woodland vegetation, cool season grasses

Typic Ustic, frigid (16+") Mixed conifer vegetation

Use climate (via LRU's) and soil maps to define ecological sites



Common features for ecological site distinctions within an LRU

<i>Type</i>	<i>Variable</i>	<i>Example contrast</i>
<i>Hydrology</i>		
	Water table depth (ft.)	Salt meadow vs Salt flats
	Flooding duration (days)	Bottomland vs. Draw
<i>Soil physical properties</i>		
	Soil texture of surface (class)	Clay loam vs. Clayey upland
	Fragment content (%)	Gravelly loam vs. Loamy
	Argillic horizon development (class)	Loamy sand vs. Sandy loam
	Soil depth to restrictive layer (in.)	Sandy vs. Shallow sandy
<i>Lithology/geology</i>		
	Bedrock type (class)	Limestone Hills vs. Igneous
Hills	Slope (%)	Limy upland vs. Limy slopes
<i>Chemistry</i>		
	Soil salinity/sodicity (mmhos)	Salt flats vs. Loamy
	Soil gypsum content/distribution in profile (%/in.)	Gyp Upland vs. Loamy
	Soil carbonate content/distribution in profile (%/in.)	Limy vs. Loamy

29 CRA's in NM

MLRA	CRA Symbol	CRA Name	Primary Distinguishing Characteristics
35	35.1	Colorado Plateau Mixed Grass Plains	This unit occurs within the Colorado Plateau Physiographic Province and is characterized by flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Volcanic fields occur in places. Elevations range from 5100 to 6000 feet. Precipitation averages 10 to 14 inches per year. The soil temperature regime is mesic. The soil moisture regime is ustic aridic. Vegetation includes Stipa, Indian ricegrass, galleta, blue grama, fourwing saltbush, and scattered juniper.
35	35.2	Colorado Plateau Shrub - Grasslands	This unit occurs within the Colorado Plateau Physiographic Province and is characterized by gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Volcanic fields occur in places. Elevations range from 3500 to 5500 feet. Precipitation averages 6 to 10 inches per year. The soil temperature regime is mesic and the soil moisture regime is typic aridic. Vegetation includes shadscale, fourwing saltbush, mormon tea, Indian ricegrass, galleta, and blue and black grama.