

Vegetation Sampling for the Middle Rio Grande

Resampling the 1984 Hink and Ohmart Transects, Year II



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Vegetation Sampling for the Middle Rio Grande: Resampling the 1984 Hink and Ohmart Transects, Year II ¹

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Introduction

The Albuquerque District of the U.S. Army Corps of Engineers (Corps) is currently investigating flood-control measures along the Rio Grande from Albuquerque through Belen, New Mexico. The objective of the Middle Rio Grande Flood Control Project is to reduce the potential for property damage and loss of life resulting from high-magnitude flows in the Rio Grande. In the 1980s, the Corps contracted for biological surveys throughout the middle Rio Grande valley (Hink and Ohmart 1984³; hereafter "H&O"). Currently, Hawks Aloft, Inc. (hereafter "HAI"), is conducting bird surveys along original H&O transects. At the same time, vegetation sampling is required to determine existing vegetation conditions, analyze changes in vegetation characteristics over the past 20 years, and assess potential impacts of proposed flood-control measures. To this end, Natural Heritage New Mexico (NHNM) was engaged by the Corps to sample vegetation along the transects in the summers of 2005 and 2006 following the same protocols as the original survey. The objective of this vegetation sampling is to provide information on current riparian vegetation characteristics for analysis of ecosystem change, impact assessment, and to aid in ongoing management of the Bosque ecosystem. This report provides the sampling methods and data collection locations which accompany the 2005-06 dataset.

Methods

To enable comparisons with past data, the vegetation sampling follows the original methodology of H&O to every extent possible. Some modifications were made to enhance future repeatability of data collection while not compromising the analysis with the historical data. Regardless, all vegetation parameters addressed in the original H&O study were collected, with the exception of foliage density, which was measured by HAI.

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³ Hink, V.C., and R.D. Ohmart. 1984. Middle Rio Grande Biological Survey. Prepared for U.S. Army Corps of Engineers, Albuquerque, NM. (Contract No. DACW47-81-C-0015).

Transect Set Up

Starting in 2004, HAI reestablished 42 of the original H&O transects for avian surveys (not including the drain transects) using the original maps as guides. NHNM followed with vegetation sampling of 16 transects in 2005 and 26 in 2006 (Table 1 and Figure 1). Start and end points of the transects were based on GPS locations provided by HAI. At each site, 2500-foot vegetation transects were established in straight lines with only slight changes in angle at the 500-foot points as necessary to ensure closure on the end point (transect placement was first designed in a GIS using the coordinates provided by HAI). Lines typically fell adjacent to the HAI bird survey paths. In a few cases, where shrubs were very dense, the existing bird survey path was followed rather than cutting a new straight-line path through the vegetation (transects NW09 NW16). The vegetation lines were set using 100-meter tapes and range compasses and using compass angles created in the GIS. The downstream, southern end of each line was designated as the “0” end. Beginning with the 0 end, metal-tagged rebar pegs were placed every 250 feet extending two inches above ground (unless they were close to a trail, in which case they were flush with the ground with only the tag above). There are a total of 11 rebar per line. A GPS point was taken at every rebar with a hand-held Garmin receiver with an accuracy of ± 10 meters. An overview of the basic transect layout is shown in Figure 2. Four photographs were taken at each transect: one from each end down the line, and two from the center towards each end. Exact locations for the photographs were determined by visibility along the transect line, and recorded.

Tree-Count Quadrats

Along the main vegetation transect line, trees and shrubs were counted in 100 x 50-foot quadrats starting at “0” and alternating right, then left down transect until the end or the 2500 foot mark for a total of 25 quadrats (e.g. 0-100 right, 100-200 left, 200-300 right, etc.). Some transects were shorter than 2500 feet, and thus had fewer than 25 tree-count quadrats. One-sided transects, most along levees, were read consecutively on the survey side. Data from each tree quadrat was recorded separately. The tree quadrat lines were set using a 90-degree angle from the main line and 50-foot tapes.

All individual trees and shrubs over two feet tall were counted by species within diameter root crown (DRC) size classes of <2 inches, 2-6 inches, 6-12 inches, 12-18 inches, and >18 inches. Diameters greater than 18 inches were individually measured to the nearest inch. Boles that emerged separately from the ground (not touching) counted as separate individuals except for multi-stem shrub species such as saltcedar (*Tamarix ramosissima*), New Mexico olive (*Forestiera pubescens* var. *pubescens*), seepwillow (*Baccharis salicina*), coyote willow (*Salix exigua*), golden currant (*Ribes aureum*), southern jimmyweed (*Isocoma pluriflora*), rubber rabbitbush (*Chrysothamnus nauseosus*), and snakeweed (*Gutierrezia sarothrae*). Following the H&O methodology, shrubs had to be four feet apart to count as separate individuals, and in very dense stands each 4 x 4-foot square was considered to represent one individual. For saltcedar and New Mexico olive, individual stems greater than two inches DRC were still recorded. Height classes were 2-10 feet and >10 feet. Morphological condition categories included live, snag, resprout, and stump.

Table 1. Transects surveyed in 2005 and 2006, with NHNM PlotID, Hawks Aloft, Inc. transect name, date survey initiated, general location and UTM coordinates for center point.

NMNH PlotID	Hawks		Length feet	General Location	Easting**	Northing	One- sided
	Aloft Name	Date Read*					
<i>Transects surveyed in 2005</i>							
05CE016	GS14	23-Sep-05	2500	La Joya State Game Refuge	328977	3799033	
05CE015	GS15	21-Sep-05	2500	La Joya State Game Refuge	329142	3798289	
05CE014	GS16	19-Sep-05	2500	La Joya State Game Refuge	329338	3797550	
05CE001	KW01	10-Aug-05	2500	Montano Bridge - mature forest E of Bosque School	346541	3889532	
05CE002	KW02	15-Aug-05	2500	Montano Bridge - along levee E of Bosque School	346395	3889807	yes
05CE007	KW04	31-Aug-05	2000	Montano Bridge - burned area to N and S of bridge	347009	3890620	
05CE006	NE02	30-Aug-05	2500	Rio Grande Nature Center S	346207	3888209	
05CE003	NE03	16-Aug-05	2500	Rio Grande Nature Center N	346563	3889026	
05CE010	NE09	08-Sep-05	2250	Paseo del Norte Bridge NE	349965	3894748	yes
05CE004	NW13	19-Aug-05	2250	North Rio Rancho Open Space	356919	3907635	
05CE005	NW14	23-Aug-05	2500	North Rio Rancho Open Space	356741	3907692	
05CE008	SE14	06-Sep-05	2500	Bosque Farms E	343510	3856997	yes
05CE012	SE31	12-Sep-05	2500	Tingley Beach Bosque	347612	3883038	yes
05CE009	SE33	07-Sep-05	2500	Hispanic Cultural Center Bosque	348967	3880980	
05CE011	SE34	09-Sep-05	1500	Rio Bravo Bridge SE	347530	3876680	
05CE013	SW07	15-Sep-05	500	Los Lunas Bridge NW	343220	3853996	
<i>Transects surveyed in 2006</i>							
06CE029	GS17	02-Nov-06	2500	La Joya State Game Refuge	328702	3801584	yes
06CE016	NE08	17-Aug-06	2500	Paseo del Norte Bridge NE	350003	3894843	yes
06CE004	NW06	24-Jul-06	2500	Corrales Bosque S	351862	3897191	
06CE005	NW07	25-Jul-06	2500	Corrales Bosque S	352080	3897429	yes
06CE014	NW09	10-Aug-06	2100	Middle Corrales Bosque	355432	3900249	
06CE020	NW10	17-Oct-06	2500	Middle Corrales Bosque	354953	3899664	yes
06CE025	NW16	27-Oct-06	2000	Corrales Bosque S	351832	3896979	
06CE013	NW17	09-Aug-06	2500	Middle Corrales Bosque	355244	3901696	
06CE018	NW19	16-Oct-06	2500	Middle Corrales Bosque	355043	3901890	yes
06CE019	NW21	17-Oct-06	2500	Middle Corrales Bosque	354347	3898802	yes
06CE021	NW23	18-Oct-06	2000	North Rio Rancho Open Space	356937	3907848	
06CE026	SE03	30-Oct-06	2300	Rio Bravo Bridge E	347528	3877436	
06CE017	SE11	18-Aug-06	2500	Bosque Farms N	343320	3857762	
06CE015	SE12	11-Aug-06	2500	Bosque Farms N	343465	3857842	yes
06CE001	SE16	12-Jul-06	2500	Los Lunas Bridge NE	343359	3852965	
06CE028	SE18	01-Nov-06	2500	Jarales (Bosque) Bridge NE	337694	3825977	
06CE002	SE22	18-Jul-06	2500	Los Lunas Bridge SE	342857	3851612	yes
06CE007	SE30	28-Jul-06	2500	Bosque Farms	343307	3855908	
06CE008	SE32	02-Aug-06	1900	Tingley Beach Bar	347453	3883220	yes
06CE003	SW24	19-Jul-06	2500	Los Lunas Bridge NW	343114	3853213	
06CE009	SW26	03-Aug-06	2500	Belen Bridge SW	340771	3835126	yes
06CE011	SW27	04-Aug-06	2500	Belen Bridge SW	340495	3834778	yes
06CE006	SW33	27-Jul-06	2500	Between Los Lunas and Belen W	340647	3843866	
06CE012	SW34	07-Aug-06	2400	Belen Bridge NW	340190	3838363	
06CE010	SW35	03-Aug-06	2500	Belen Bridge SW	340778	3835285	yes
06CE027	SW36	31-Oct-06	2500	Belen Bridge NW	340249	3839135	

*Date Read - date transect survey was begun. Some transects required more than one day to survey

** UTM NAD 27, Zone 13

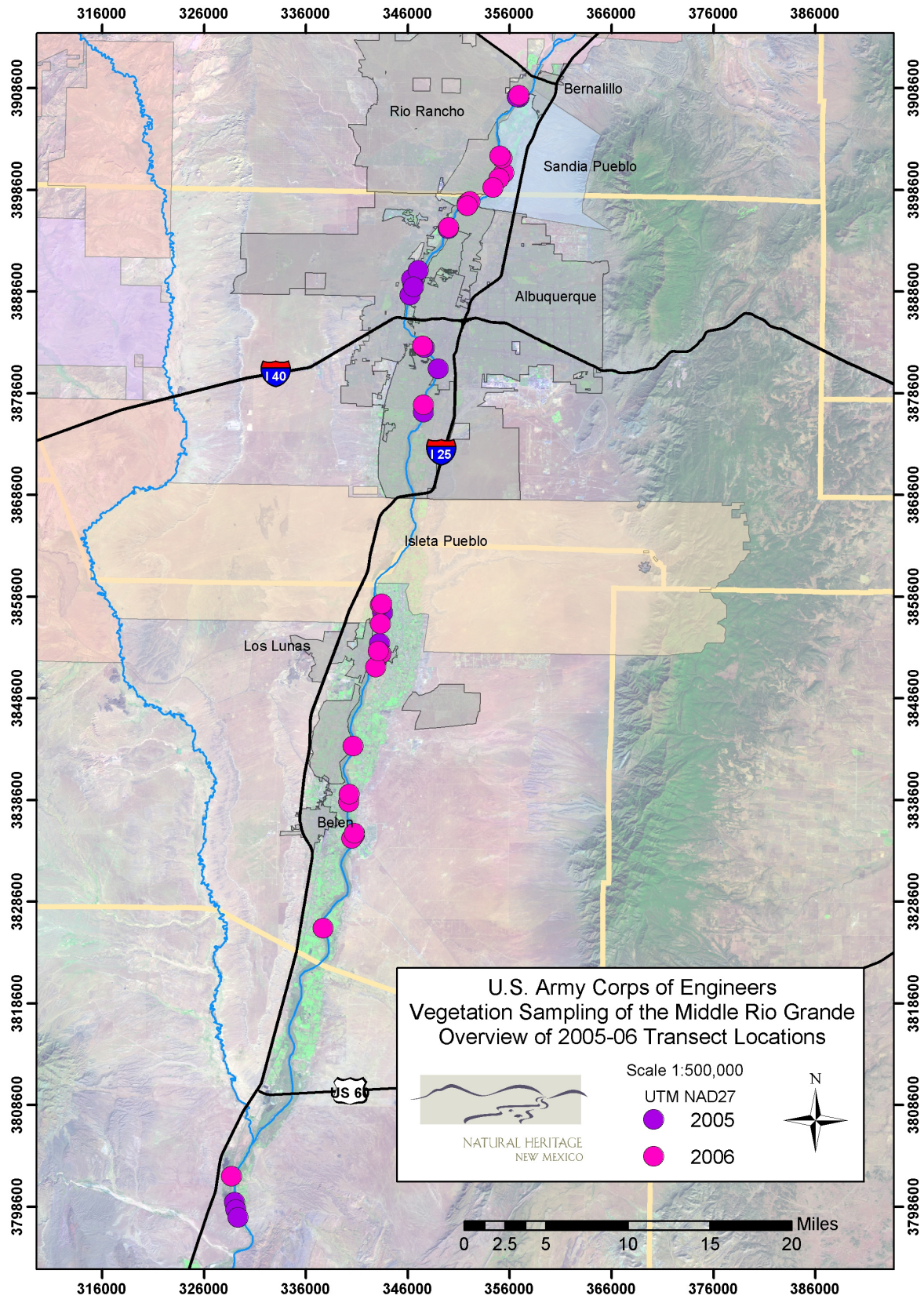


Figure 1. Overview map of transects surveyed in 2005-06.

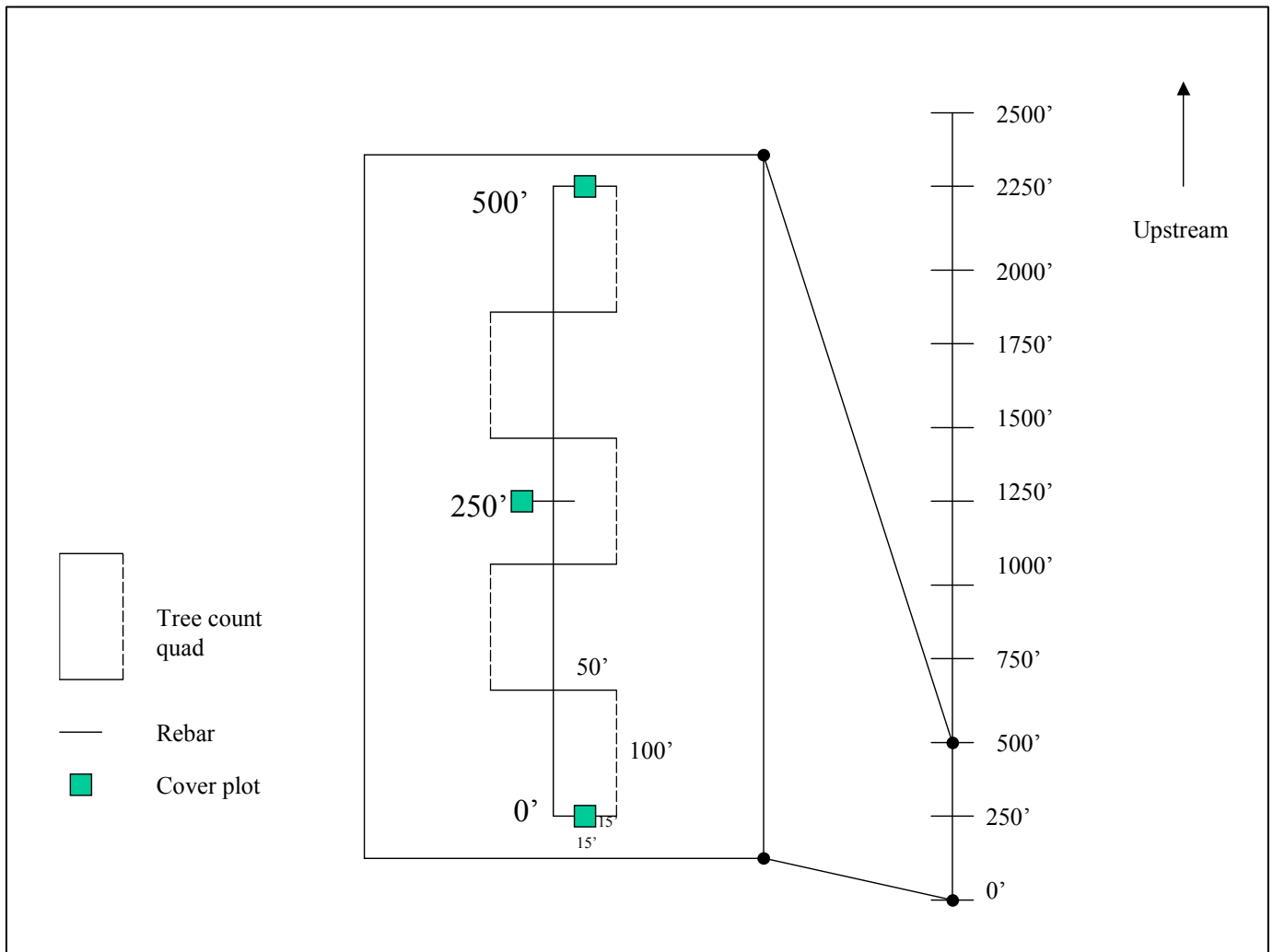


Figure 2. Overview of standard transect layout.

Vegetation-Cover Quadrats

The original H&O methodology called for the placement of a pair of vegetation cover plots 50 feet apart from each other at 500-foot intervals along the transect. Hence, the two plots tended to be highly spatially auto-correlated. To overcome this, we modified the design to place a single cover plot at every 250-foot rebar along the transect from the 0-foot rebar to the 2250-foot rebar. This allowed for a more random and representative sample of the entire transect, while the total number of plots remained the same at 10 per transect. Plots were placed alternating right and then left down the line, so that the number of plots to either side of the line also remained the same, excepting one-sided lines where all plots were placed to the same side. The vegetation cover plots were 15 x 15 feet square, with their center placed 25 feet from the main vegetation transect line. The plot locations were measured out from the main line with a tape, and pin flags were used to delineate the corners of the plot.

Canopy cover was measured by species in three layers: 0-2 feet, 2-15 feet and >15 feet. Total species canopy cover was given for the layer in which that species was most prominent. For example, with a tall annual forb such as the common sunflower (*Helianthus annuus*), where the majority of sunflower cover for a given plot was over two feet, all sunflower cover for that plot was given in the 2-15-foot category. Cover for woody species over 15 feet was measured in two ways. The first was from the original H&O methodology, using a spherical densiometer, and taking measurements in four cardinal directions from the center of each plot. However, the spherical densiometer only provides an overall cover for a plot, and not an estimate by species. Thus, an ocular estimate of cover for each species over 15 feet was also estimated in each direction for each plot. The spherical densiometer also estimates cover on a distance greater than the bounds of a 15 x 15-foot plot, so the two measurements of cover are often not congruent.

To evaluate overall diversity, besides recording all species and their cover values within the vegetation cover plots, a species list for the entire vegetation transect line was compiled to account for the presence of rarer species. Across all transects surveyed in 2005-06 a total of 213 species were observed: 15 tree species, 28 shrubs, 62 graminoids and 108 forbs (Appendix A). Voucher specimens will be deposited at the University of New Mexico Herbarium.

Database

Natural Heritage New Mexico created and populated a Microsoft Access database for all of the data collected. The database has a total of 15 tables, seven of which were created just for the USACE Rio Grande Bosque monitoring data, with an additional eight supporting tables from the NHNM Ecology database (Figure 3, Appendix B). A copy of the database, including the 2005 and 2006 data, is provided on the CD included with this report. On the CD there is also a set of Microsoft Excel spreadsheet files created from the database, and containing the same data. The CD also includes a readme.txt file with instructions for use of the CD, a complete set of the photos from 2005 and 2006, and a digital copy of this report.

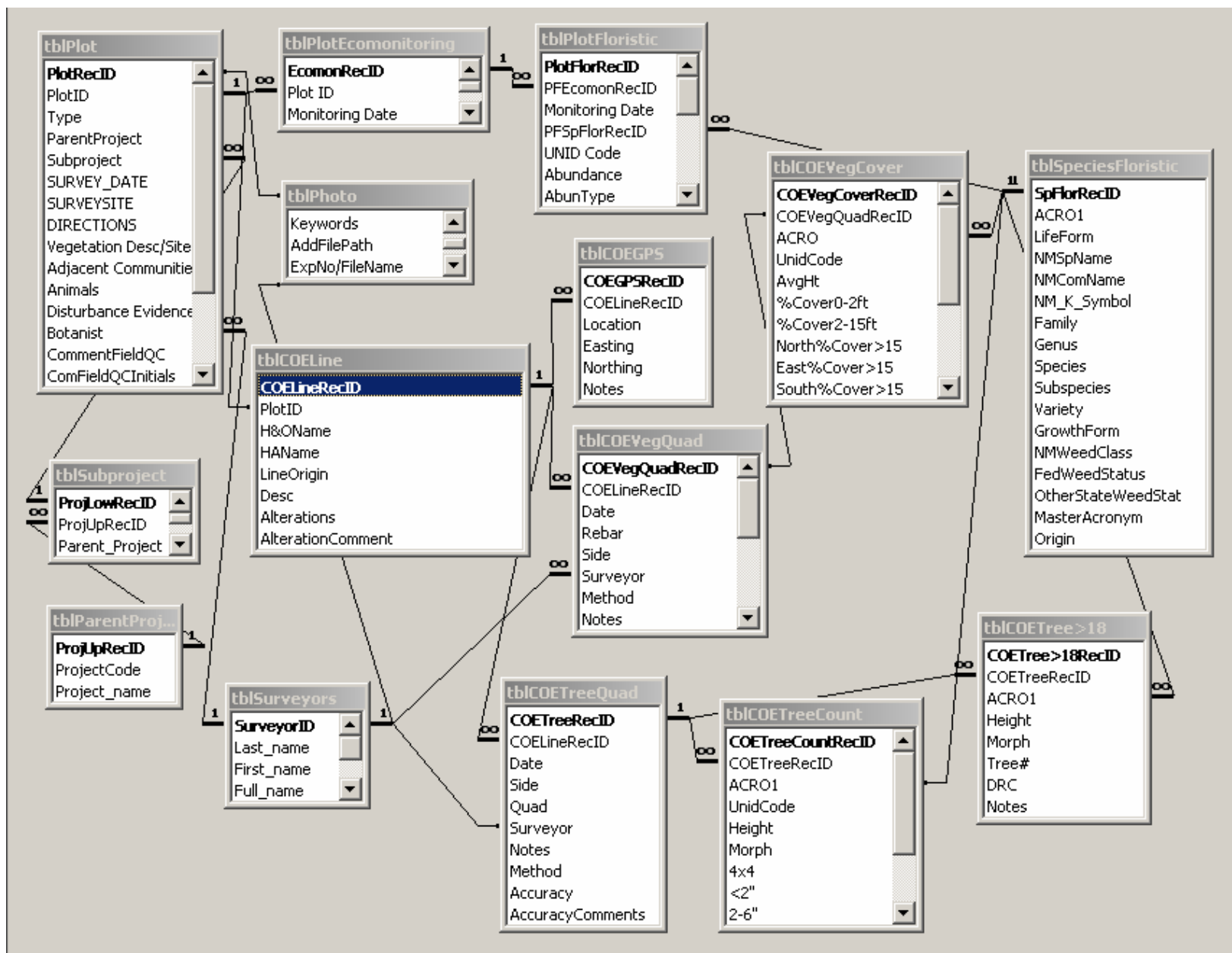


Figure 3. USACE Middle Rio Grande vegetation sampling database tables and their relationships to each other.

Appendix A: Species list for 2005-2006 Middle Rio Grande Bosque Vegetation Sampling.

Species Name	Common Name	NHNM ACRO	Kartez Symbol	Origin
Trees				
<i>Acer negundo</i>	box elder	ACENEG	ACNE2	Native
<i>Ailanthus altissima</i>	tree of heaven	AILALT	AIAL	Introduced
<i>Catalpa speciosa</i>	northern catalpa	CATSPE	CASP8	Native
<i>Celtis laevigata</i> var. <i>reticulata</i>	netleaf hackberry	CELLAER	CELAR	Native
<i>Elaeagnus angustifolia</i>	Russian olive	ELAANG	ELAN	Introduced
<i>Fraxinus</i> spp.	ash	FRAXIN	FRAXI	
<i>Gleditsia triacanthos</i>	honeylocust	GLETRI	GLTR	Native
Juglandaceae	walnut family	JUGLAN		
<i>Juniperus monosperma</i>	oneseed juniper	JUNMON	JUMO	Native
<i>Morus alba</i>	white mulberry	MORALB	MOAL	Introduced
<i>Populus deltoides</i> ssp. <i>wislizeni</i>	Rio Grande cottonwood	POPDELW	PODEW	Native
<i>Robinia pseudoacacia</i>	black locust	ROBPSE	ROPS	Native
<i>Salix amygdaloides</i>	peachleaf willow	SALAMY	SAAM2	Native
<i>Salix gooddingii</i>	Goodding's willow	SALGOO	SAGO	Native
<i>Ulmus pumila</i>	Siberian elm	ULMPUM	ULPU	Introduced
Shrubs				
<i>Amorpha fruticosa</i>	desert indigobush	AMOFRU	AMFR	Native
<i>Artemisia filifolia</i>	sand sagebrush	ARTFIL	ARFI2	Native
<i>Atriplex canescens</i>	fourwing saltbush	ATRCAN	ATCA2	Native
<i>Baccharis salicina</i>	false willow	BACSAL	BASA	Native
<i>Campsis radicans</i>	trumpet creeper	CAMRAD	CARA2	Introduced
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush	CHRNAU	CHNA2	Native
<i>Clematis ligusticifolia</i>	western white clematis	CLELIG	CLLI2	Native
<i>Forestiera pubescens</i> var. <i>pubescens</i>	New Mexico olive	FORPUBP	FOPUP	Native
<i>Isocoma pluriflora</i>	southern jimmyweed	ISOPLU	ISPL	Native
<i>Lonicera japonica</i>	Japanese honeysuckle	LONJAP	LOJA	Introduced
<i>Lycium torreyi</i>	squawthorn	LYCTOR	LYTO	Native
<i>Opuntia imbricata</i>	tree cholla	OPUIMB	OPIM	Native
<i>Parthenocissus vitacea</i>	Virginia creeper	PARVIT	PAVI5	Native
<i>Prosopis glandulosa</i>	honey mesquite	PROGLA	PRGL2	Native
<i>Prosopis pubescens</i>	screwbean mesquite	PROPUB	PRPU	Native
<i>Psoralea scoparius</i>	broom dalea	PSOSCO	PSSC6	Native
<i>Rhus trilobata</i>	skunkbush sumac	RHUTRI	RHTR	Native
<i>Ribes aureum</i>	golden currant	RIBAU	RIAU	Native
<i>Rosa woodsii</i>	Woods' rose	ROSWOO	ROWO	Native
<i>Salix exigua</i>	coyote willow	SALEXI	SAEX	Native
<i>Shepherdia argentea</i>	silver buffaloberry	SHEARG	SHAR	Native
<i>Tamarix ramosissima</i>	saltcedar	TAMRAM	TARA	Introduced
<i>Vitis arizonica</i>	canyon grape	VITARI	VIAR2	Native
<i>Yucca baccata</i>	banana yucca	YUCBAC	YUBA	Native
Sub-Shrubs				
<i>Desmanthus illinoensis</i>	prairie bundleflower	DESILL	DEIL	Native
<i>Gutierrezia sarothrae</i>	broom snakeweed	GUTSAR	GUSA2	Native
<i>Mahonia repens</i>	Oregongrape	MAHREP	MARE11	Native
<i>Opuntia phaeacantha</i>	tulip pricklypear	OPUPHA	OPPH	Native

Species Name	Common Name	NHNM ACRO	Kartez Symbol	Origin
Graminioids				
Achnatherum hymenoides	Indian ricegrass	ACHHYM	ACHY	Native
Agrostis gigantea	redtop	AGRGIG	AGGI2	Introduced
Agrostis spp.	bentgrass	AGROST	AGROS2	
Aristida purpurea	purple threeawn	ARIPUR	ARPU9	Native
Aristida purpurea var. longiseta	red threeawn	ARIPURL	ARPUL	Native
Bothriochloa laguroides ssp. torreyana	silver beardgrass	BOTLAGT	BOLAT	Native
Bouteloua barbata	sixweeks grama	BOUBAR	BOBA2	Native
Bouteloua gracilis	blue grama	BOUGRA	BOGR2	Native
Bromus catharticus	rescuegrass	BROCAT	BRCA6	Introduced
Bromus inermis	smooth brome	BROINE	BRIN2	Introduced
Bromus japonicus	Japanese brome	BROJAP	BRJA	Introduced
Bromus spp.	brome	BROMUS	BROMU	
Bromus tectorum	cheatgrass	BROTEC	BRTE	Introduced
Carex emoryi	Emory's sedge	CAREMO	CAEM2	Native
Carex praegracilis	clustered field sedge	CARPRA	CAPR5	Native
Carex spp.	sedge	CAREX	CAREX	Native
Carex spp. - sm. Upland	sm. upland sedge <25 cm	CAREXUS		Native
Carex spp. - tall upland	tall upland sedge >25 cm	CAREXUT		Native
Cenchrus longispinus	longspine sandbur	CENLON	CELO3	Native
Cenchrus spinifex	sandbur	CENSPI	CESP4	Native
Chloris verticillata	tumble windmill grass	CHLVER	CHVE2	Native
Cynodon dactylon	bermudagrass	CYNDAC	CYDA	Introduced
Cyperus esculentus	chufa flatsedge	CYPESC	CYES	Native
Cyperus odoratus	fragrant flatsedge	CYPODO	CYOD	Native
Cyperus spp.	flatsedge	CYPERU	CYPER	
Cyperus squarrosus	bearded flatsedge	CYPSQU	CYSQ	Native
Dasyochloa pulchella	fluffgrass	DASPUL	DAPU7	Native
Distichlis spicata	inland saltgrass	DISSPI	DISP	Native
Echinochloa crus-galli	barnyardgrass	ECHCRU	ECCR	Introduced
Eleocharis palustris	common spikerush	ELEPAL	ELPA3	Native
Eleocharis spp.	spikerush	ELEOCH	ELEOC	
Elymus canadensis	Canada wildrye	ELYCAN	ELCA4	Native
Elymus elymoides	bottlebrush squirreltail	ELYELY	ELEL5	Native
Elymus x pseudorepens	false quackgrass	ELYPSE	ELPS	Native
Elytrigia elongata	tall wheatgrass	ELYELO	ELEL6	Introduced
Elytrigia intermedia	intermediate wheatgrass	ELYINT	ELIN7	Introduced
Eragrostis pectinacea	tufted lovegrass	ERAPEC	ERPE	Native
Festuca arundinaceae	tall fescue or K-31	FESARU	FEAR3	Introduced
Hesperostipa neomexicana	New Mexico needlegrass	HESNEO	HENE5	Native
Hordeum jubatum	foxtail barley	HORJUB	HOJU	Native
Hordeum murinum ssp. glaucum	smooth barley	HORMURG	HOMUG	Introduced
Juncus arcticus var. balticus	Baltic rush	JUNARCB	JUARB5	Native
Juncus spp.	Rush	JUNCUS	JUNCU	Native
Juncus torreyi	Torrey's rush	JUNTOR	JUTO	Native
Leptochloa spp.	sprangletop	LEPTOC	LEPTO	
Muhlenbergia asperifolia	alkali muhly	MUHASP	MUAS	Native

Species Name	Common Name	NHNM ACRO	Kartez Symbol	Origin
Graminiods cont.				
Panicum capillare	witchgrass	PANCAP	PACA6	Native
Panicum hallii	Hall's panicgrass	PANHAL	PAHA	Native
Panicum obtusum	vine mesquite	PANOBT	PAOB	Native
Panicum virgatum	switchgrass	PANVIR	PAVI2	Native
Pascopyrum smithii	western wheatgrass	PASSMI	PASM	Native
Phragmites australis	common reed	PHRAUS	PHAU7	Native
Pleuraphis jamesii	galleta	PLEJAM	PLJA	Native
Poa arida	plains bluegrass	POAARI	POAR3	Native
Poa fendleriana	muttongrass	POAFEN	POFE	Native
Poa pratensis	Kentucky bluegrass	POAPRA	POPR	Native
Polypogon monspeliensis	annual rabbitsfoot grass	POLMON	POMO5	Introduced
Saccharum ravennae	ravennagrass	SACRAV	SARA3	Introduced
Schoenoplectus pungens	common threesquare	SCHPUN	SCPU10	Native
Setaria pumila	yellow bristlegrass	SETPUM	SEPU8	Introduced
Setaria viridis	green bristlegrass	SETVIR	SEVI4	Introduced
Sorghastrum nutans	Indiangrass	SORNUT	SONU2	Native
Sorghum halepense	johnsongrass	SORHAL	SOHA	Introduced
Sporobolus airoides	alkali sacaton	SPOAIR	SPAI	Native
Sporobolus compositus var. compositus	tall dropseed	SPOCOMC	SPCOC2	Native
Sporobolus contractus	spike dropseed	SPOCON	SPCO4	Native
Sporobolus cryptandrus	sand dropseed	SPOCRY	SPCR	Native
Sporobolus flexuosus	mesa dropseed	SPOFLE	SPFL2	Native
Sporobolus giganteus	giant dropseed	SPOGIG	SPGI	Native
Vulpia octoflora	sixweeks fescue	VULOCT	VUOC	Native
Forbs				
Acroptilon repens	Russian knapweed	ACRREP	ACRE3	Introduced
Amaranthus palmeri	carelessweed	AMAPAL	AMPA	Native
Ambrosia acanthicarpa	flatspine burr ragweed	AMBACA	AMAC2	Native
Ambrosia psilostachya	Cuman ragweed	AMBPSI	AMPS	Native
Anemopsis californica	yerba mansa	ANECAL	ANCA10	Native
Aphanostephus ramosissimus	plains dozedaisy	APHRAM	APRA	Native
Apocynum cannabinum	Indianhemp	APOCAN	APCA	Native
Artemisia campestris	field sagewort	ARTCAM	ARCA12	Native
Artemisia dracunculus	tarragon	ARTDRA	ARDR4	Native
Artemisia ludoviciana	Louisiana sagewort	ARTLUD	ARLU	Native
Asclepias subverticillata	whorled milkweed	ASCSUB	ASSU2	Native
Asparagus officinalis	garden asparagus	ASPOFF	ASOF	Introduced
Asteraceae		ASTERA		
Astragalus spp.	milkvetch	ASTRAG	ASTRA	Native
Atriplex argentea	silverscale saltbush	ATRARG	ATAR2	Native
Bassia hyssopifolia	fivehorn smotherweed	BASHYS	BAHY	Introduced
Bidens cernua	nodding beggarstick	BIDCER	BICE	Introduced
Bidens frondosa	devil's beggartick	BIDFRO	BIFR	Native
Bidens spp.	beggartick	BIDENS	BIDEN	
Calibrachoa parviflora	seaside petunia	CALPAR	CAPA47	Native

Species Name	Common Name	NHNM ACRO	Kartez Symbol	Origin
Forbs cont.				
<i>Chamaesyce parryi</i>	Parry's sandmat	CHAPAR	CHPA28	Native
<i>Chamaesyce serpyllifolia</i>	thymeleaf sandmat	CHASER2	CHSE6	Native
<i>Chenopodium fremontii</i>	Fremont's goosefoot	CHEFRE	CHFR3	Native
<i>Chenopodium incanum</i>	mealy goosefoot	CHEINC	CHIN2	Native
<i>Chenopodium leptophyllum</i>	narrowleaf goosefoot	CHELEP	CHLE4	Native
<i>Chenopodium pratericola</i>	desert goosefoot	CHEPRA	CHPR5	Native
<i>Chenopodium</i> spp.	goosefoot	CHENOP	CHENO	
<i>Chloracantha spinosa</i>	spiny chloracantha	CHLSPI	CHSP11	Native
<i>Cirsium</i> spp.	thistle	CIRSIU	CIRSI	Native
<i>Cirsium vulgare</i>	bull thistle	CIRVUL	CIVU	Introduced
<i>Convolvulus arvensis</i>	field bindweed	CONARV	COAR4	Introduced
<i>Conyza canadensis</i>	Canadian horseweed	CONCAN	COCA5	Native
<i>Cressa truxillensis</i>	spreading alkaliweed	CRETRU	CRTR5	Native
<i>Croton texensis</i>	Texas croton	CROTEX	CRTE4	Native
<i>Cryptantha</i> spp.	catseye	CRYPTA	CRYPT	
<i>Cucurbita foetidissima</i>	buffalo gourd	CUCFOE	CUFO	Native
<i>Cycloloma atriplicifolium</i>	winged pigweed	CYCATR	CYAT	Native
<i>Dalea lanata</i> var. <i>lanata</i>	woolly prairieclover	DALLANL	DALAL	Native
<i>Dalea leporina</i>	foxtail prairieclover	DALLEP	DALE3	Native
<i>Datura</i> spp.	thornapple	DATURA	DATUR	
<i>Descurainia</i> spp.	tansymustard	DESCUR	DESCU	
<i>Dimorphocarpa wislizeni</i>	spectacle pod	DIMWIS	DIWI2	Native
<i>Equisetum laevigatum</i>	smooth horsetail	EQULAE	EQLA	Native
<i>Erigeron divergens</i>	spreading fleabane	ERIDIV	ERDI4	Native
<i>Erigeron flagellaris</i>	trailing fleabane	ERIFLA	ERFL	Native
<i>Euphorbia davidii</i>	David's spurge	EUPDAV	EUDA5	Introduced
<i>Euthamia occidentalis</i>	western goldenrod	EUTOCC	EUOC4	Native
<i>Gaillardia pulchella</i>	firewheel	GAIPUL	GAPU	Native
<i>Gaura coccinea</i>	scarlet beeblossom	GAUCOC	GACO5	Native
<i>Gaura parviflora</i>	velvetweed	GAUPAR	GAPA6	Native
<i>Glycyrrhiza lepidota</i>	American licorice	GLYLEP	GLLE3	Native
<i>Grindelia nuda</i> var. <i>aphanactis</i>	curlytop gumweed	GRINUDA	GRNUA	Native
<i>Helianthus annuus</i>	common sunflower	HELANN	HEAN3	Native
<i>Helianthus ciliaris</i>	Texas blueweed	HELCIL	HECI	Native
<i>Helianthus petiolaris</i>	prairie sunflower	HELPET	HEPE	Native
<i>Heliotropium convolvulaceum</i>	phlox heliotrope	HELCON	HECO5	Native
<i>Heterotheca villosa</i>	hairy goldenaster	HETVIL	HEVI4	Native
<i>Ipomoea costellata</i>	crestrub morningglory	IPOCOS	IPCO2	Native
<i>Ipomopsis longiflora</i>	flaxflowered gilia	IOLON	IPLO2	Native
<i>Kallstroemia parviflora</i>	warty caltrop	KALPAR	KAPA	Native
<i>Kochia scoparia</i>	common kochia	KOCSCO	KOSC	Introduced
<i>Lactuca serriola</i>	prickly lettuce	LACSER	LASE	Introduced
<i>Lactuca tatarica</i> var. <i>pulchella</i>	blue lettuce	LACTATP	LATAP	Native
<i>Lappula</i> spp.	stickseed	LAPPUL	LAPPU	Native
<i>Lepidium latifolium</i>	perennial pepperweed	LEPLAT	LELA2	Introduced
<i>Limonium limbatum</i>	Transpecos sealavender	LIMLIM	LILI4	Native

Species Name	Common Name	NHM ACRO	Kartez Symbol	Origin
Forbs cont.				
<i>Machaeranthera canescens</i>	hoary aster	MACCAN	MACA2	Native
<i>Machaeranthera pinnatifida</i>	lacy tansyaster	MACPIN	MAPI	Native
<i>Machaeranthera tanacetifolia</i>	tanseyleaf aster	MACTAN	MATA2	Native
<i>Medicago sativa</i>	alfalfa	MEDSAT	MESA	Introduced
<i>Melilotus officinalis</i>	yellow sweetclover	MELOFF	MEOF	Introduced
<i>Mentzelia multiflora</i>	manyflowered mentzelia	MENMUL	MEMU3	Native
<i>Nama hispidum</i>	bristly nama	NAMHIS	NAHI	Native
<i>Nepeta cataria</i>	catnip	NEPCAT	NECA2	Introduced
<i>Oenothera elata</i> ssp. <i>hirsutissima</i>	Hooker's eveningprimrose	OENELAH	OEELH	Native
<i>Oenothera pallida</i>	pale eveningprimrose	OENPAL	OEPA	Native
<i>Pectis angustifolia</i> var. <i>angustifolia</i>	narrowleaf pectis	PECANGA	PEANA	Native
<i>Phacelia integrifolia</i>	gypsum scorpionweed	PHAINT	PHIN	Native
<i>Phacelia</i> spp.	phacelia	PHACEL	PHACE	Native
<i>Physalis</i> spp.	groundcherry	PHYSAL	PHYSA	
<i>Physalis virginiana</i>	Virginia groundcherry	PHYVIR	PHVI5	Native
<i>Plantago major</i>	common plantain	PLAMAJ	PLMA2	Introduced
<i>Plantago patagonica</i>	woolly plantain	PLAPAT	PLPA2	Native
<i>Polanisia dodecandra</i> ssp. <i>trachysperma</i>	sandyseed clammyweed	POLDODT	PODOT	Native
<i>Polygonum lapathifolium</i>	curlytop knotweed	POLLAP	POLA4	Native
<i>Polygonum</i> spp.	knotweed	POLYGO	POLYG4	
<i>Portulaca oleracea</i>	common purslane	POROLE	POOL	Native
<i>Pseudognaphalium stramineum</i>	cottonbatting cudweed	PSESTR	PSST7	Native
<i>Psoralidium lanceolatum</i>	lemon scurfpea	PSOLAN	PSLA3	Native
<i>Ratibida tagetes</i>	green prairie coneflower	RATTAG	RATA	Native
<i>Rumex crispus</i>	curly dock	RUMCRI	RUCR	Introduced
<i>Salsola tragus</i>	prickly Russian thistle	SALTRA	SATR12	Introduced
<i>Senecio riddellii</i>	Riddell's ragwort	SENRID	SERI2	Native
<i>Sisymbrium irio</i>	London rocket	SISIRI	SIIR	Introduced
<i>Sisymbrium</i> spp.	hedgemustard	SISYMB	SISYM	
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	SOLELA	SOEL	Native
<i>Solanum nigrum</i>	black nightshade	SOLNIG	SONI	Introduced
<i>Solanum rostratum</i>	buffalobur nightshade	SOLROS	SORO	Native
<i>Solanum triflorum</i>	cutleaf nightshade	SOLTRI	SOTR	Native
<i>Solidago canadensis</i>	Canada goldenrod	SOLCAN	SOCA6	Native
<i>Sonchus asper</i>	spiny sowthistle	SONASP	SOAS	Introduced
<i>Sphaeralcea angustifolia</i>	copper globemallow	SPHANG	SPAN3	Native
<i>Sphaeralcea incana</i>	gray globemallow	SPHINC	SPIN2	Native
<i>Sphaeralcea</i> spp.	globemallow	SPHAER	SPHAE	Native
<i>Sphaerophysa salsula</i>	alkali swainsonpea	SPHSAL	SPSA3	Introduced
<i>Stephanomeria pauciflora</i>	brownplume wirelettuce	STEPAU	STPA4	Native
<i>Suaeda nigra</i>	bush seepweed	SUANIG	SUNI	Native
<i>Symphyotrichum ericoides</i>	heath aster	SYMERI	SYER	Native
<i>Symphyotrichum ericoides</i> var. <i>ericoides</i>	heath aster	SYMERIE	SYERE	Native
<i>Taraxacum officinale</i>	common dandelion	TAROFF	TAOF	Introduced
<i>Townsendia annua</i>	annual townsend daisy	TOWANN	TOAN	Native
<i>Tragopogon</i> spp.	salsify	TRAGOP	TRAGO	Introduced

Species Name	Common Name	NHNM ACRO	Kartez Symbol	Origin
Forbs cont.				
Tribulus terrestris	puncturevine	TRITER	TRTE	Introduced
Typha spp.	cattail	TYPHA	TYPHA	
Verbascum thapsus	common mullein	VERTHA	VETH	Introduced
Verbena bracteata	bigbract verbena	VERBRA	VEBR	Native
Veronica anagallis-aquatica	water speedwell	VERANA	VEAN2	Native
Xanthium spinosum	spiny cocklebur	XANSPI	XASP2	Introduced
Xanthium strumarium	rough cocklebur	XANSTR	XAST	Native

Appendix B: Database table descriptions with field names and descriptions.

tblCOELine

This table stores data related to each transect: location, condition, description. Links to tblCOEGPS and tblPhoto to store UTM's for each rebar and data on photos taken at each transect. Links to tblCOETreeQuad for tree data and tblCOEVegQuad for vegetation cover data. Also links to tblPlot in NMNH Ecology database.

Name	Type	Size	Description
COELineRecID	Long Integer	4	Unique field to serve as primary key for tblCOELine.
PlotID	Long Integer	4	Plot id associated with each transect. Displaying Plot ID, but storing PlotRecID from tblPlot.
H&Oname	Text	50	Hink and Ohmart name for the line.
HAName	Text	50	Hawks Aloft name for the line.
LineOrigin	Text	50	Is this an original Hink and Ohmart line, was it moved by Hawks Aloft or is it a new Hawks Aloft line?
Desc	Memo	Open	General description of the transect.
Alterations	Text	50	Select whether the area the transect falls within has had; no alterations, alterations performed by man, alterations by fire, or alterations by both man and fire.
AlterationComment	Memo	Open	Comments relevant to the type of alterations or disturbance to the site.

tblCOEGPS

This table stores UTM's (Nad27, Zone 13) for each rebar on each transect.

Name	Type	Size	Description
COEGPSRecID	Long Integer	4	Unique field to serve as the primary key for tblCOEGPS.
COELineRecID	Long Integer	4	Primary key from tblCOELine.
Location	Text	50	Location of the rebar in feet along the transect.
Easting	Long Integer	4	Easting of the gps location of the rebar on the transect (Nad 27, Zone 13).
Northing	Long Integer	4	Northing of the gps location of the rebar on the transect (Nad 27, Zone 13).
Notes	Memo	Open	Any notes relevant to the gps location of the rebar.

tblCOETreeQuad

This table stores data relevant to each quad surveyed for trees: location, date, surveyor, method used. Links to tblCOETreeCount and tblCOETree>18, which store the stem counts and cover estimates for each species, and the diameter root crown of trees over 18" respectively.

Name	Type	Size	Description
COETreeRecID	Long Integer	4	Unique field to serve as the primary key for tblCOETreeQuad
COELineRecID	Long Integer	4	Primary key from tblCOELine.
Date	Date	8	Date of survey.
Side	Text	50	Side of the transect on which the trees were counted.
Quad	Text	50	Location of quad along transect.
Surveyor	Long Integer	4	Displaying the full name of each surveyor, but storing the primary key from tblSurveyors, SurveyorID.
Notes	Memo	Open	Any comments or notes relevant to the tree count quads.
Method	Text	50	Count Methods were changed early in the survey, prior to transect NE03; select "Prior to NE03" if the transect was read before the change at NE03; select "After NE03" if after.
Accuracy	True/False	1	Mark yes or check if the accuracy of this count is reliable. Do not check if there are issues related to the count.
AccuracyComments	Memo	Open	Notes relevant to the issues with the accuracy of the count.

tblCOETreeCount

This table links to tblTreeQuad; stores the stem count and cover (described as number of 4x4 squares) of each species surveyed within each tree quad. COETreeCountRecID, Long Integer, 4, Unique field to serve as the primary key for tblCOETreeCount.

Name	Type	Size	Description
COETreeRecID	Long Integer	4	Primary key from tblCOETreeQuad.
ACRO1	Long Integer	4	Displaying the acronym of the species counted, but storing the SpFlorRecID tblSpeciesFLoristic.
UnidCode	Text	50	Code assigned to collected, unidentified species.
Height	Text	50	Select whether the shrubs/trees counted were in the 2-10ft. height category or the >10ft. height category.
Morph	Text	50	Morphology of the trees/shrubs counted.
4x4	Long Integer	4	Number of 4x4 squares occupied by the canopy of the species surveyed.
<2"	Long Integer	4	Number of stems greater than 2" in diameter.

2-6"	Long Integer	4	Number of stems between 2" and 6" in diameter.
6-12"	Long Integer	4	Number of stems between 6" and 12" in diameter.
12-18"	Long Integer	4	Number of stems between 12" and 18" in diameter.
>18"	Long Integer	4	Number of stems greater than 18" in diameter.
Notes	Memo	Open	Any notes relevant to each species counted.

tblCOETree>18

This table is linked to tblCOETreeQuad and stores diameter root crown for each tree over 18" in diameter.

Name	Type	Size	Description
COETree>18RecID	Long Integer	4	Unique field to serve as the primary key for tblCOETree>18.
COETreeRecID	Long Integer	4	Primary key from tblCOETreeQuad.
ACRO1	Long Integer	4	Displaying the acronym for each species surveyed, but storing SpFlorRecID from tblSpeciesFLoristic.
Height	Text	50	Select whether the shrubs/tree measured was in the 2-10ft. height category or the >10ft. height category.
Morph	Text	50	Morphology of the trees/shrub measured.
Tree#	Long Integer	4	Arbitrary number to separate individuals of the same species and tree quad with measurements greater than 18".
DRC	Double	8	Diameter root crown of individual trees greater than 18"; measurement taken in inches.
Notes	Memo	Open	Any comments relevant to the individual tree measured.

tblCOEVegQuad

This table stores data relevant to each vegetation quad sampled: date, surveyor, method used. Links to tblCOEVegCover, which stores cover estimates for each species.

Name	Type	Size	Description
COEVegQuadRecID	Long Integer	4	Unique field to serve as the primary key for tblCOEVegQuad.
COELineRecID	Long Integer	4	Primary key from tblCOELine.
Date	Date	8	Date of the survey.
Rebar	Text	50	Rebar at which the vegetation quad was located
Side	Text	50	Side of the transect on which the vegetation quad was located.
Surveyor	Long Integer	4	Surveyor that took the data at vegetation quad.
Method	Text	50	Vegetation Cover methods were changed early in the survey; select "Original H&O" if the transect was read before the changes, or select "Modified Heritage" if after.
Notes	Memo	Open	Notes pertaining to the specific quad.
NorthSDCount	Long Integer	4	Dot counts from the spherical densiometer to the north .
EastSDCount	Long Integer	4	Dot counts from the spherical densiometer to the east
WestSDCount	Long Integer	4	Dot counts from the spherical densiometer to the west
SouthSDCount	Long Integer	4	Dot counts from the spherical densiometer to the south
SDCountComments	Memo	Open	Comments relevant to the spherical densiometer dot counts.
NorthSD%	Long Integer	4	Percentage calculated from the spherical densiometer dot counts.
EastSD%	Long Integer	4	Percentage calculated from the spherical densiometer dot counts.
SouthSD%	Long Integer	4	Percentage calculated from the spherical densiometer dot counts.
WestSD%	Long Integer	4	Percentage calculated from the spherical densiometer dot counts.

tblCOEVegCover

This table stores cover estimates for each species surveyed within each vegetation quad. Links to tblCOEVegQuad and tblSpeciesFloristic.

Name	Type	Size	Description
COEVegCoverRecID	Long Integer	4	Unique field to serve as the primary key for tblCOEVegCover.
COEVegQuadRecID	Long Integer	4	Primary key from tblCOEVegQuad.
ACRO	Long Integer	4	Displaying the acronym for each species surveyed, but storingSpFlorRecID from tblSpeciesFLoristic.
UnidCode	Text	50	Unidentified code number from field data
AvgHt	Double	8	Average height for the species in feet.
%Cover0-2ft	Double	8	Percent cover under 2ft tall.
%Cover2-15ft	Double	8	Percent cover from 2-15ft tall.
North%Cover>15	Double	8	Percent cover of species over 15ft tall within the north.
East%Cover>15	Double	8	Percent cover of species over 15ft tall within the east.
South%Cover>15	Double	8	Percent cover of species over 15ft tall within the south.
West%Cover>15	Double	8	Percent cover of species over 15ft tall within the west.
NorthSDCount	Long Integer	4	Dot counts from the spherical densiometer to the north
EastSDCount	Long Integer	4	Dot counts from the spherical densiometer to the east
WestSDCount	Long Integer	4	Dot counts from the spherical densiometer to the west
SouthSDCount	Long Integer	4	Dot counts from the spherical densiometer to the south
SDCountType	Text	50	Select whether this spherical densiometer count was for the entire quad - "Total count", or if it was for the species in this record - "Count for this species".
Notes	Memo	Open	Any comments relevant to the individual species within this quad.

tblSpeciesFloristic

This table contains information for each of species found, and is a basic table from the NMNH Ecology database.

Name	Type	Size	Description
SpFlorRecID	Long Integer	4	Primary key for the species floristic table.
ACRO1	Text	8	NHNM 7 letter code
LifeForm	Double	8	1=tree 2=shrub 3=grass 4=forb 5=lichen/algae/fungi 6=other
NMSpName	Text	60	NHNM Accepted full name, genus and species, variety or subspecies, and, if plant is a tree, growth form.
NMComName	Text	35	Common name as assigned by NHNM botanist
NM_K_Symbol	Text	50	Kartez symbol for current New Mexico name.
Family	Text	50	
Genus	Text	50	
Species	Text	50	
Subspecies	Text	50	
Variety	Text	50	
GrowthForm	Text	50	text field describing the stages of tree growth: seedling, yng regen, adv regen, mature.
NMWeedClass	Text	2	NM Weed status class - A, B or C from state weed status link to tblNMWeedClass
FedWeedStatus	True/False	1	Is this plant federal listed as a noxious weed? See tblFedWeeds
OtherStateWeedStat	True/False	1	Does this plant have noxious weed status in a state other than NM? see tblOtherStateWeeds
MasterAcronym	Text	8	NHNM grouping acronyms
Origin	Text	15	Native or Introduced

tblPlot

This table contains all the basic data for a plot, and is the base table for records in the NMNH Ecology database.

Name	Type	Size	Description
PlotRecID	Long Integer	4	Unique number to identify each record and serve as the primary key.
PlotID	Text	7	Plots are named with a standard of last two digits of year, team leader's or projects initials, and 3 digits in numerical order as plots are established, e.g. 03AB001, 03AB002, etc.
Type	Text	3	RP Revele Plot, QP Quick Plot, VP Video Plot, MP Map Point
ParentProject	Long Integer	4	Storing Record ID from Project table and showing project code.
Subproject	Long Integer	4	Storing Record ID from subproject table and showing subproject code.
SURVEY_DATE	Date	8	Date the survey took place.
SURVEYSITE	Text	255	Sites delineated for the purpose of the field work only, usually assigned by project manager.
DIRECTIONS	Memo	Open	Directions that can be useful in finding the plot again.
Vegetation Desc/Site Features	Memo	Open	Description of the vegetation and any significant site features.
Adjacent Communities	Memo	Open	Any communities surrounding the occurrence surveyed.
Animals	Memo	Open	Any evidence or sighting of animals.
Disturbance Evidence	Memo	Open	Any evidence of disturbance. e.g. tire tracks, cropping/grazing, garbage, fire scars, etc.
Botanist	Long Integer	4	The surveyor that served as the botanist for the plot.
CommentFieldQC	True/False	1	Were the comment fields qcd for appropriate language?
ComFieldQCInitials	Text	3	Initials of the person responsible for qcng the comment fields.
CommFieldQCDate	Date	8	Date the comment fields were qcd.
DataQC	True/False	1	Were the following fields qcd: Plot type, Project/Subproject, Date, Surveyor, Botanist, UTMs, Community Acronyms, Ground Cover, Life Form Cover.
DataQCInitials	Text	3	Initials of the person responsible for qcng the above data fields.
DataQCDate	Date	8	Date the data fields were qcd.
OrigPlotID	Text	25	If the plot came from a source outside of NHNM or an alternate ID was created for data entry, enter the original plot id here.

tblPhoto

This table stores data concerning the photos taken at a plot or for a project. Stores information such as focal length, exposure number, and the location the print/slide is archived.

Name	Type	Size	Description
PhotoRecID	Long Integer	4	Unique number to identify each record and serve as the primary key.
Source	Text	50	Was the photo from a plot; not from a plot, but from Heritage; or from an outside source?
PhotoPlotRecID	Long Integer	4	Plot ID for the plot at which the photo taken.
Project	Long Integer	4	Storing Record ID from Project table and showing project code.
Subproject	Long Integer	4	Storing Record ID from subproject table and showing subproject code.

Location	Text	42	General location at which the photos were taken. e.g., Bandelier National Monument, Holloman AFB, etc.
Date	Date	8	Date the photo was taken.
PhotoLogRollNo	Text	50	The name used to identify the roll of film on the photo log.
Keywords	Memo	Open	Keywords to help identify the subject matter of the photo. e.g. Short grass prairie, mixed conifer forest, Blue spruce fringe forest, Texas Horned Lizard, etc.
AddFilePath	Text	50	Additional directory info for digital photos beyond general subproject photo location.
ExpNo/FileName	Text	50	The number of the individual exposure taken or, in the case of digital photos, the file name for the individual photo.
Photographer	Text	50	Name of the person who shot the photo.
Azm	Long Integer	4	Azimuth or direction the photo was taken.
FocalLength	Long Integer	4	Focal length of the photo.
Desc1	Text	42	Description of the subject matter of the photo. e.g., across slope from plot center.
Desc2	Text	42	If description is longer than 42 characters (label program limitation), put overflow here.
Sensitive	True/False	1	Does this photo contain a sensitive element or community?
Comments	Memo	Open	Any comments relevant to this individual exposure.
Film/Dig	Text	50	Was photo originally shot on film or digital camera?

tblPlotEcomonitoring

This table connects tblPlot to tblPlotFloristic. It allows data from more than one visit to a plot location to be recorded.

Name	Type	Size	Description
EcomonRecID	Long Integer	4	Unique number to identify each record and serve as primary key.
Plot ID	Text	7	Plot ID from tblPlot
Monitoring Date	Date	8	Date Plot was visited/revisited.
MonitoringComments	Memo	Open	Comments relevant to this visit to the plot.
PlotFlorQC	True/False	1	Was plot floristic qcd?
PlotFIQCInitials	Text	3	Initials of the person responsible for qcinq plot floristic.
PlotFIQCDate	Date	8	Date floristic was qcd.

tblPlotFloristic

Stores data and id for each plant recorded at the plot, e.g. abundance value, collection info, and notes taken at plot.

Name	Type	Size	Description
PlotFlorRecID	Long Integer	4	Primary key for plot floristic.
PFEcomonRecID	Long Integer	4	Record id from ecomonitoring table.
Monitoring Date	Date	8	Date of the survey.
PFSpFlorRecID	Long Integer	4	Storing the record id from species floristic, but looking up ACROI.
UNID Code	Text	50	Unidentified code number from field data
Abundance	Double	8	Should contain *only* Percentage cover values - either directly from the field or converted scalars - unconverted scalar values belong in the field AbunScalar
AbunType	Text	50	Explains missing values and gives info on how abundance was measured in the field (see look up tblPlotFlorAbunType for information on codes)
KDKscalar	Text	5	Unconverted Modified Domin-Krajina scalar abundance values read up from tblModDomKrajinaScalar
Height in Meters	Double	8	Average height measured in meters.
Number of Vouchers	Text	5	How many specimens were collected? If plant was not collected, but is a unid from another plot, enter NO.
Specimen Number	Text	10	Specimen number from the data sheet. (F1, G4, T2, etc.)
UNMCatalogNumber	Text	10	Numbering system used by UNM herbarium.
Field label	Text	50	What was written on the label in the field.
Quality	Text	2	Quality of the vouchered specimen.
Det by	Text	50	Who was responsible for identifying the vouchered specimen?
Distribution	Text	50	What herbaria received the specimen?
Comments	Text	250	Any comments relevant to this particular plant, including references to other plots where the plant was collected.
Phenology	Text	50	Flowering, fruiting or dead annual

tblSurveyors

This table contains information on the surveyors at Natural Heritage New Mexico.

Name	Type	Size	Description
SurveyorID	Long Integer	4	Primary key for Surveyor table
Last_name	Text	50	Surveyors last name
First_name	Text	50	Surveyors first name plus middle initials if relevant
Full_name	Text	50	Surveyors full name first, initials, last
Initials	Text	50	Surveyors initials
Plot_Initials	Text	50	Surveyors initials as used in PlotIDs
Surveyor_type	Text	50	How was this person connected to NMNHP?

tblParentProject

This table contains information describing each Parent Project.

Name	Type	Size	Description
ProjUpRecID	Long Integer	4	Primary key for the ProjectUpper table.
ProjectCode	Text	50	Code used to identify the project.
Project_name	Text	50	Full project name.

tblSubproject

This table contains information describing each Subproject.

Name	Type	Size	Description
ProjLowRecID	Long Integer	4	Primary key for the ProjectLower table.
ProjUpRecID	Long Integer	4	Primary key from the ProjectUpper table.
Parent_Project	Text	50	The main project that this subproject falls under.
SubprojectCode	Text	50	Project code for the subproject.
Subproject_name	Text	50	Full name of the project.
Description	Memo	0	Description of what the subproject entails.
Start Date	Date	8	Date work started.
End Date	Date	8	Date subproject was completed.
Supervisor	Long Integer	4	Person responsible for organizing the subproject.
PI	Long Integer	4	Person responsible for overseeing the parent project.
Photos	True/False	1	Are there photos associated with this subproject?
DigPhoto_Loc	Text	250	Directory path to master photo directory for subproject.