Work Task E6:
Cottonwood Genetics Study

Partners:	Northern Arizona University (NAU) Cibola National Wildlife Refuge
Contact:	Gregg Garnett, LC-8455
Purpose:	Investigate the influence of genetic diversity in Fremont cottonwood on community diversity in the context of habitat restoration. One result of this study will be to determine the genetics of the existing stands of cottonwoods along the LCR. The inclusion of genetic considerations in restoration efforts is vital to provide locally adapted genotypes necessary for the foundations of wildlife native communities, and to avoid potentially detrimental effects of loss of genetic diversity.
Conservation Measures:	WIFL1-R, WRBA2-R, WYBA3-R, CRCR2-R, YHCR2-R, YBCU1-R, ELOW1-R, GIFL1-R, GIWO1-R, VEFL1-R, BEVI1-R, YWAR1-R and SUTA1-R
Long-term Goal(s):	Use the information gained from this study to insure that genetic diversity is represented in restorations sites and to identify and include tree genotypes with genetically superior traits, with respect to growth, reproduction, survival, and habitat quality they influence in a restoration sites. The experimental garden will supply stock of known genetic diversity and origin for future restoration efforts. The experimental garden, when mature, will also add to the site habitat structural mosaic and may serve as suitable habitat for yellow-billed cuckoo.
Location:	32 acres of active alfalfa fields within Unit #1 on Cibola National Wildlife Refuge.

FY2006 Estimate: $25,000 includes Reclamation staff, equipment, and contract services for the cooperative agreement.

FY2007 Estimate: $15,000 includes Reclamation staff, equipment, and contract services for the cooperative agreement.

FY2008 Estimate: $15,000 includes Reclamation staff, equipment, and contract services for the cooperative agreement. In FY2009, the project will be evaluated for continued funding under the LCR MSCP either as a research project or for habitat acreage credit.

Project Description: Information is lacking regarding the relative levels of genetic diversity within the remaining cottonwoods along the LCR, and the impact of this genetic diversity as it pertains to community structures and ultimately, wildlife diversity within restoration sites.

In an effort to increase knowledge and success in creating functional wildlife habitat, Reclamation's Lower Colorado Regional Office solicited the scientific community for proposals to investigate these relationships. NAU was awarded a cooperative agreement and contributed matching funds to undertake these investigations. Their project is twofold and includes: (1) the identification of genetic stocks of Fremont cottonwoods that possess traits including superior growth, reproduction, and survival in a typical restoration site, and (2) the identification of stocks of Fremont cottonwood trees that support diverse biological communities, including communities that sustain wildlife species.

The first part of the project includes genetic screening of tissues collected from stands of Fremont cottonwood trees across the southwestern U.S. The second involves creating an experimental garden to propagate representatives of the collected genetic stock and monitor the expressions of these different genotypes. A study plan is available.