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Introduction

There is considerable controversy over agricultural water use and conservation of endangered species. In its present form, the Endangered Species Act does not limit protection to desirable or charismatic species. As a result, agricultural producers can have their water taken to prevent the loss of an endangered species. This has led to increased tension between environmentalists and farmers in the middle Rio Grande area of New Mexico.

Our research seeks "win-win" strategies that will sustain agricultural uses of water while at the same time enabling conservation of native fishes.

Premise

Use water for irrigation and use return flows to grow native fishes in naturalized habitats associated with irrigation drains and wasteways (return flow canals).

Project Components

We are involved in two related approaches utilizing irrigation drains and agricultural return flows of water:

1. Irrigation wasteways as small-scale refugial habitats
2. Large-scale river floodplain "sanctuaries" maintained by irrigation return flows

1. Irrigation Wasteways as Refugial Habitats

- 2004: Sampling of irrigation wasteways within the Belen division of the Middle Rio Grande Conservancy District (MRGCD) began.
- Endangered Rio Grande silvery minnow found to occupy these wasteways when the Rio Grande is dry.
- Data indicate that wasteways into the MRG can function as refugia during periods of river channel dewatering and as important rearing habitat for species conservation.
- 3 of the 9 wasteways studied were selected for future development of permanently wetted fish habitats.



Photo 1. Sampling of irrigation drains and wasteways



Photo 2. Peralta Wasteway

Table 1. Numbers and catch per unit effort (CPUE) of fish collected in the 3 irrigation wasteways selected for habitat enhancement to create refugial habitat for Rio Grande silvery minnow during periods of river channel drying

Species	Lower Peralta #1		Peralta		Los Chavez	
	No.	CPUE	No.	CPUE	No.	CPUE
Rio Grande silvery minnow	31	0.04111	13	0.01890	20	0.02950
Largemouth bass			1	0.00145		
River carpsucker			3	0.00436		
Mosquitofish	3	0.00398				
Common carp	1	0.00133			3	0.00442
Channel catfish			1	0.00145		
Red shiner	4	0.00531			2	0.00295
Fathead minnow	2	0.00265				

Project Benefits

- Improve irrigation efficiency by growing both crops **and** native fishes
- Reduce conflicts between agriculture and endangered species
- Improve image of conservancy district
- Win-win strategy for agriculture and the environment

2. Large scale Silvery Minnow sanctuary

- Championed by Senator Pete Dominici.
- Planning and design in progress.
- Will draw water from the Albuquerque Riverside Drain.
- Engineered habitat will lie within the Rio Grande floodplain.
- Working with MRGCGD & Senator Dominici's staff to identify issues with minnow biology relevant to sanctuary design.



Photo 3. Corrales Wasteway