

## **Private Lands Riparian Habitat Restoration Initiative**

**A project of the De-Go-La Resource Conservation and  
Development Project, Inc.**



**Sponsored by: Coastal Bend Bays and Estuaries Program, U.S. Fish and  
Wildlife Service, USDA-Natural Resources Conservation Service, San Patricio Soil  
and Water Conservation District, Copano Bay Soil and Water Conservation  
District, The Center for Coastal Studies**

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## **Introduction**

Riparian habitats along the Gulf Coast of Texas represent a very important resource in terms of water quality. They are also valuable habitat for terrestrial wildlife and especially migratory songbirds. A properly functioning riparian area can serve as a filter to remove sediment and contaminants from runoff before it enters the fragile estuarine habitats found in the Coastal Bend of Texas.

Because riparian habitats represent such a valuable natural resource, the De-Go-La Resource Conservation and Development Council applied for and received a grant from the Coastal Bend Bays and Estuaries Program (CBBEP) for \$46,000.00. This grant was awarded in October 2001 and was to be used specifically in contracting with private landowners for the development and implementation of riparian habitat restoration plans. The basic concept involved in these plans is to restore functionality of riparian areas and encourage private landowners to continue to properly manage them.

Partners in the initiative include the RC&D, Coastal Bend Bays and Estuaries Program, U.S. Fish and Wildlife Service, USDA-NRCS, Texas Parks and Wildlife Department, San Patricio Soil and Water Conservation District, Copano Bay Soil and Water Conservation District, and the Center for Coastal Studies - TAMU. Private landowners participated in the program by signing a contract to develop the plan, implement the restoration practices and maintain the riparian area for ten years. For this they received payments that were negotiated with the RC&D. The NRCS provided technical assistance to landowners in evaluating site potential, selecting needed practices, plan development and implementation. Soil and Water Conservation Districts provided administrative assistance to the RC&D in reviewing and approving plans developed.

Along with support for implementation from the initiative, landowners were encouraged to utilize other programs such as the USDA's Continuous Conservation Reserve Program to help maintain their riparian areas.

As a result of the initiative, approximately 100 acres of riparian habitat have been restored. Observations of before and after conditions indicate that the restoration of riparian habitats can and does have a positive influence on water quality and wildlife habitat. The following narratives and photographic records document the progress of each landowner developed plan under the initiative.

Glynn Barber Contract #T1163

This was the first site enrolled in the initiative. This area is along an intermittent stream that drains a large watershed. It is un-named, but the runoff from this stream travels less than a mile before it enters the flood plain and associated wetlands of Rincon Bayou. These wetlands serve as an important area directly contributing to the runoff and associated sediments feeding into the northern portion of Nueces Bay.

Prior to restoration, the site was being grazed by domestic livestock. Cattle used the area immediately adjacent to the stream as a resting and loafing area. Trailing by livestock had caused several small gullies leading into the stream resulting in sediment deposition and bank degradation. A woody over story made up of mixed brush species with few desirable wildlife plants extended some 150 feet on each side of the stream. Open areas were over-grazed and contained little herbaceous vegetation necessary to prevent soil erosion.

Upon enrolling in the initiative, Mr. Barber agreed to construct a fence to exclude cattle from the area approximately 80 feet to each side of the stream. The woody over-story was also to be thinned back to a density of less than 400 plants per acre with only undesirable species such as huisache being targeted for removal. Livestock were to be excluded from the area at all times after fence construction took place.

Mr. Barber carried out all vegetative type practices necessary to re-establish the riparian area. Within one year after excluding livestock and thinning the over story, there was little evidence of the trailing created by livestock. Most small gullies had re-vegetated and almost 90% ground cover existed in all open areas. With thinning of the over-story, more sunlight was able to reach the ground and a mixture of native forbs and grasses had begun to establish in the wooded areas along the stream corridor, benefiting wildlife. Stream banks not subjected to high velocity flows had begun to stabilize with no physical alteration. The only significant source of sediment noted to enter the stream at this point originated upstream on adjacent cropland that did not have any buffer practices installed. Because of this, Mr. Barber allowed establishment of a vegetated buffer strip across the stream itself up to his upstream property line.



Prior to Restoration, this area had no vegetation and was eroding severely.



Fence construction and exclusion of livestock allowed the riparian area (on left) to re-vegetate.

## Glynn Barber Contract #T3360

This site is located adjacent to and immediately south of Glynn Barber Contract #T1163. It was enrolled on June 6, 2003. It shares the same site location characteristics of Contract #T1163. It is located along an un-named, intermittent stream that drains a large watershed. The runoff from this stream travels less than a mile before it enters the flood plain and associated wetlands of Rincon Bayou. These wetlands serve as an important area directly contributing to the runoff and associated sediments feeding into the northern portion of Nueces Bay.

Prior to restoration, the site was being grazed by domestic livestock. Cattle used the area immediately adjacent to the stream as a resting and loafing area. Trailing by livestock had caused several small gullies leading into the stream resulting in sediment deposition and bank degradation. This area possessed a much denser canopy (in excess of 80%) than Contract #T1163. The woody over story made up of mixed brush species with few desirable wildlife plants extended well beyond the normal zone of influence on the stream which eliminated any edge effect that would be beneficial to wildlife including migratory songbirds and upland game. The few open areas were over-grazed and contained little herbaceous vegetation necessary to prevent soil erosion.

Upon enrolling in the initiative, Mr. Barber agreed to construct a fence to exclude cattle from the area approximately 80 feet to each side of the stream. The woody over-story was also to be thinned back to a density of less than 400 plants per acre with only undesirable species such as huisache being targeted for removal. Livestock were to be excluded from the area at all times after fence construction took place.

Mr. Barber carried out all vegetative type practices necessary to re-establish the riparian area. Within one year after excluding livestock and thinning the over story, there was little evidence of the trailing created by livestock. Most small gullies had re-vegetated and almost 100% ground cover existed in all open areas. With thinning of the over-story, more sunlight was able to reach the ground and a mixture of native forbs and grasses had begun to establish in the wooded areas along the stream corridor, benefiting wildlife. The protected edge areas along the wooded stream provided feeding areas for wildlife. Stream banks not subjected to high velocity flows had begun to stabilize with no physical alteration. In some areas steep eroded banks had assumed a natural angle of repose and were vegetated

The only significant source of sediment noted to enter the stream at this point originated upstream on adjacent cropland that did not have any buffer practices installed. The establishment of a vegetated buffer strip across the stream itself on the site located to the north aided in reducing sediment entering this site. Several side drains entering this site were vegetated and acted to filter out sediment from these outside sources.





Prior to establishment of the riparian buffer, stream banks were subject to erosion by high velocity flows.



Reducing canopy cover and excluding livestock allowed herbaceous vegetation to establish on the site.



Livestock grazing on the site had been severe and resulted in areas devoid of herbaceous vegetation contributing to sediment and runoff.



Damage to vegetation on stream banks by livestock was eliminated and vegetation was allowed to stabilize eroded areas.



Prior to vegetative work to reduce the canopy, sunlight was unable to reach the ground resulting in little herbaceous cover.



Open areas were created adjacent to stream (on right) resulting in vegetative diversity and improved edge effect for wildlife.

## J. D. Mayo Contract #T22

This site is located on a major tributary to Chiltipin Creek approximately 6 miles east of Sinton. It was enrolled on June 3, 2004. It covers a ¼ mile stream segment of the stream. The major land use in this area and adjacent to the site is cropland. Runoff from this stream flows into Chiltipin and then into The Aransas River just before it goes into Copano Bay, which is a major sport fishing area.

Prior to restoration, the site was not being grazed by domestic livestock. However, huisache brush had developed a very thick overstory and reduced the amount of herbaceous vegetation as well as diversity of the plant community. As a result, side inlets were erosive and sediment from the adjacent cropland was entering the stream in large quantities. The woody plant community was low value to wildlife.

Upon enrolling in the initiative, Mr. Mayo agreed to reduce the amount of huisache on the site and encourage the development of more desirable woody plants such as hackberry, honey mesquite, anaqua, green ash, and gum bumelia. Since there was not opportunity for cattle grazing on this site, it was unnecessary to construct a fence for exclusion. Mr. Mayo, does not own both sides of the stream, so both sides could not be treated. The area was mechanically treated to remove the huisache where canopy cover did not allow for effective individual plant treatment with herbicides. A diversion terrace along the area was reinforced to prevent overtopping and to direct overland flows to stable outlets. Mr. Mayo also directed tenant farmers to not allow equipment to travel on the site during tillage or harvest operations.

Mr. Mayo carried out all vegetative type practices necessary to re-establish the riparian area. Within one year of thinning huisache brush, more permanent herbaceous vegetation had established on the site. Diversity in the plant community had increased with more desirable species such as silver bluestem, bushy bluestem, hackberry, anaqua, and least snoutbean becoming more prevalent. The small gullies and scour areas adjacent to the stream had re-vegetated and approximately 80-90% ground cover existed in all open areas. The presence of more tall grasses on the site benefited ground nesting birds by providing more suitable cover. Restricting vehicle and equipment traffic from the area also promoted maintenance of effective cover on the soil surface.

While the amount of sediment entering the stream from this site was reduced, the most notable effect of restoration was to create a higher quality of habitat for wildlife and an effective buffer between the stream and the adjacent cropland. Runoff from this cropland was directed to vegetated, stable outlets that acted to filter out sediment and pesticides.





Prior to restoration work, this site was dominated by a very thick overstory of huiache brush



Runoff from adjacent cropland was directed into stable outlets to aid in filtering out sediment and pesticides.



Bare ground and undesirable annual vegetation under the huiache failed to provide erosion control and diversity in wildlife habitat.



With removal of huiache, desirable species for wildlife such as least snoutbean reappeared on the site.



Where feasible, individual plant treatment with herbicide was used to kill huiache in place reducing soil disturbance by equipment.



Tall grasses important to ground nesting birds were able to reestablish on the site following removal of undesirable woody canopy.

## J. D. Mayo Contract #T23

This site is located on Chiltipin Creek approximately 6 miles east of Sinton. It was enrolled on June 3, 2004. It covers a ¼ mile stream segment of Chiltipin Creek. The major land use in this area is cropland. Runoff from this segment flows down Chiltipin and then into The Aransas River just before it goes into Copano Bay, which is a major sport fishing area.

Prior to restoration, the site was being grazed by domestic livestock. Cattle used the area immediately adjacent to the stream as a resting and loafing area. Most of the area within 200 feet of each side of the stream was infested with huisache brush with some elm, hackberry, gum bumelia, and green ash. There was very little in the way of herbaceous vegetation due to the thick canopy cover and deteriorated native plant community. Trailing by livestock had caused several small gullies leading into the stream resulting in sediment deposition and bank degradation. The open areas near the stream were over-grazed and contained little herbaceous vegetation necessary to prevent soil erosion.

Upon enrolling in the initiative, Mr. Mayo agreed to construct a fence to exclude cattle from the area approximately 100 feet to the south side of the stream. Mr. Mayo, does not own the north side of the creek, so it could not be treated/. With the exception of an approximately 35 foot strip on the south side, the fenced area was mechanically treated to remove the huisache. Livestock were excluded from the area. To benefit whitetail deer in the area, Mr. Mayo planted several rows of Luceina. The purpose of this was to provide a source of high quality, high protein browse.

Mr. Mayo carried out all vegetative type practices necessary to re-establish the riparian area. Within one year after excluding livestock and removing huisache brush, all evidence of livestock trailing had disappeared. The small gullies had re-vegetated and almost 100% ground cover existed in all open areas. With removal of the huisache, more sunlight was able to reach the ground and soil moisture was made available to herbaceous vegetation. Native forbs and grasses had begun to establish in the open areas along the wooded stream corridor, benefiting wildlife. The protected edge areas along the wooded stream provided feeding areas for wildlife. Due to the large drainage area entering this stream segment, unstable channel banks did not stabilize as well as on other sites.

While there was still a significant amount of sediment in the stream, very little if any was observed to be entering along the treated segment. It was noted that most of the drainage area for the stream consisted of cropland which would account for a high sediment load. Several side drains located on this site were vegetated and acted to filter out sediment from the immediate area.



J.D. Mayo Contract # T23



A thick community of huisache dominated the site prior to enrollment. This limited sunlight and water availability for herbaceous vegetation



A barbed wire fence was constructed to exclude livestock from the riparian area (on right).



There was good variability in native woody overstory adjacent to the stream with elm, ash, and hackberry.



Rows of Luceina (foreground) were planted at selected points in the site to provide high quality browse for deer.



Undesirable huisache brush was mechanically removed to leave a wooded corridor (background) along the stream.



Protected woody stream corridors provide shade for cooling water, wildlife habitat, and filtering effect for sediment reduction and water quality.

## Garry McClenaghan Contract #T3466 West and East

This site is located on the north bank of the Nueces River immediately after it crosses FM 666 in western San Patricio County. It covers approximately 9000 feet of the stream bank and is under two separate agreements. The major land use in this area and adjacent to the site is rangeland. Runoff from this site goes directly into the Nueces River and travels downstream to Nueces Bay.

Prior to restoration, the site was being grazed by domestic livestock. However, huisache brush and other undesirable woody species had developed a very thick overstory and reduced the amount of herbaceous vegetation as well as diversity of the plant community. The river bank on this site was nearly vertical in many places and subject to sloughing as well as damage from trailing by livestock. The woody plant community was low value to wildlife.

Upon enrolling in the initiative, Mr. McClenaghan agreed to reduce the amount of undesirable woody canopy on the site and while maintain an adequate buffer zone of woody vegetation at least 35 feet back from the edge of the river bank. Since Mr. McClenaghan wished to manage the pasture adjacent to the site strictly for wildlife and planned to remove all livestock from the area, a fence for grazing exclusion was not needed. Mechanical treatment was applied to remove the huisache in areas adjacent to the 35 foot woody buffer. Where canopy cover allowed, individual plant treatment with herbicides was applied. Weed control was applied in areas where heavy infestations of sump weed prevented perennial vegetation from growing.

Mr. McClenaghan carried out all vegetative type practices necessary to re-establish the riparian area. Within one year of removing huisache brush and applying weed control measures, more permanent herbaceous vegetation had established on the site. Diversity in the plant community had increased with more desirable species such as silver bluestem, Filley panicum, hackberry, anaqua, and common ragweed becoming more prevalent. Livestock trails adjacent to the river had re-vegetated and approximately 80-90% ground cover existed in open areas. The presence of more tall grasses on the site benefited ground nesting birds by providing more suitable cover. There was evidence of many species using the site including songbirds, wild turkey, deer and javalena. There was also a noticeable reduction in sloughing of banks along the segment treated.

While the amount of erosion along this stream segment was reduced, the most notable effect of restoration was to create a higher quality of habitat for wildlife and an effective buffer between the stream and the adjacent pastureland.





Prior to restoration work, many sections of the river bank were nearly vertical and subject to sloughing



In some areas follow-up control with herbicides was needed to control re-growth brush and weeds.



In many areas, undesirable woody species formed a dense canopy restricting sunlight from reaching the ground.



Perennial vegetation of grasses and forbs provided diversity of habitat for wildlife species including, songbird, turkey, and deer.



A wooded buffer area 35 feet wide was left along the river bank (left) and canopy was removed to allow herbaceous vegetation to grow.



Higher quality habitat was achieved in addition to controlling stream bank erosion.



## Dennis Kastner Contract #T714

This site is located on a shallow intermittent stream approximately 7 miles west of Sinton Texas. It covers approximately 3300 feet of the stream including both banks. The major land use in this area cropland and adjacent to the site is rangeland. Runoff from this site goes through a series of tributaries into Chiltipin Creek and then into the north portion of Copano Bay.

Prior to restoration, the site was being heavily grazed by domestic livestock. Huisache brush and other undesirable woody species had developed a very thick overstory and reduced the amount of herbaceous vegetation as well as diversity of the plant community. Cattle trailing on the site was severe and many bare eroding areas were in existence. The site provided very little beneficial habitat for wildlife.

Upon enrolling in the initiative, Mr. Kastner agreed to exclude livestock from the area by fencing and providing an alternative water source for livestock in the area. He also agreed to reduce the amount of undesirable woody canopy on the site by mechanical means. The key to restoring this site appeared to be excluding livestock from the area to prevent over-grazing and trailing.

Mr. Kastner carried out all vegetative type practices necessary to re-establish the riparian area. Huisache on the area was dozed and stacked. A fence was constructed to exclude livestock from the area. A pipeline supplying water for livestock was planned and installed across the site thereby eliminating the need for livestock to access the site. Within a few months of excluding livestock, vegetation on the site began to re-claim the bare areas. Scouring along the banks and within the channel of the stream had begun to heal. Overall benefits to wildlife began to return, especially for ground nesting birds such as bobwhite quail. Limited amounts of mesquite were left in the area to provide nesting, roosting, and resting areas for migratory birds including dove and songbirds



Trailing and over-grazing in the area created scour erosion on the banks and channel of the stream.



Overgrazing by livestock and infestation of undesirable wood vegetation lowered the value of habitat.



Livestock trampling and trailing in the area created bare soil subject to erosion.



A fence was constructed to allow exclusion of livestock from the site (left).



The site was the only source of livestock water available and this caused overuse.



Following exclusion of livestock and removal of brush, previously bare areas were re-vegetated.