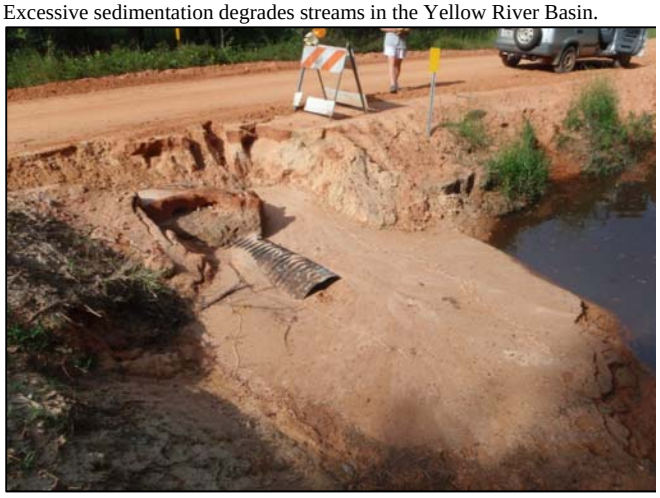
Inventory and Prioritization of Impaired Sites in the Yellow River Watershed

Project # 09-432

Background:

The Yellow River is a biologically diverse blackwater river which flows through Alabama and Florida into Pensacola Bay and the Gulf of Mexico. Historically a relatively undisturbed system, it is increasingly impacted by human population growth and development. Excessive sedimentation from bank instability and unpaved road crossings are increasingly degrading and imperiling river habitat and biological communities in the system. The Yellow River Basin has been identified as a conservation priority by the Eglin Air Force Base, U.S. Fish and Wildlife Service, the states of Alabama and Florida, and The Nature Conservancy. Effective conservation within this watershed will recover imperiled species and reduce maintenance and regulatory burdens while maintaining green corridors within military installations.

Excessive sedimentation degrades streams in the Yellow River Basin.



Objective:

The goal of this project was to identify areas contributing to habitat degradation and impairment in the Yellow River Basin as an initial step in conserving and restoring natural function and biodiversity throughout the system. The objectives of this project were to (1) inventory and assess habitat degradation within the river corridor and at unpaved road crossings throughout the basin; (2) summarize impacts and restoration potential at each impaired location; (3) develop a prioritized basin restoration plan for implementing conservation and restoration efforts; and (4) restore one of the sites identified as a high-priority restoration location during the assessment.

Summary of Approach:

We identified potential impacts to the corridor of the Yellow River and its tributaries traversable by boat and ranked potentially impaired river corridor sites using a combination of formalized quantitative and qualitative measurements for assessing the ecological condition of stream corridors modified by the USFWS for drainages in the Gulf Coastal Plain ecoregion. We identified potential impacts of all known publically accessible unpaved roads where they crossed a given river or stream throughout the Yellow River Basin by travelling to each unpaved road crossing and calculating potential impacts using the Sediment Risk Index, a standardized method of characterizing sedimentation and other impacts of unpaved road crossings to aquatic resources in the Gulf Coastal Plain ecoregion. We also restored a high-priority site identified during the project using standard river restoration techniques based on natural channel design principles.

Benefit:

Rivers and their corridors serve as habitat and migratory pathways for aquatic and terrestrial species as well as military mission corridors and connections for military installations with each other or their partners via greenways. The watersheds within this landscape such as the Yellow River will be essential green corridors among military installations such as Eglin AFB, partner lands, and training areas. Restoration and conservation of these riverine systems will aide in the recovery of listed species, prevent future listings and reduce regulatory burden, reduce military maintenance costs, improve military training and recreation areas, and allow mission flexibility through cooperative conservation.

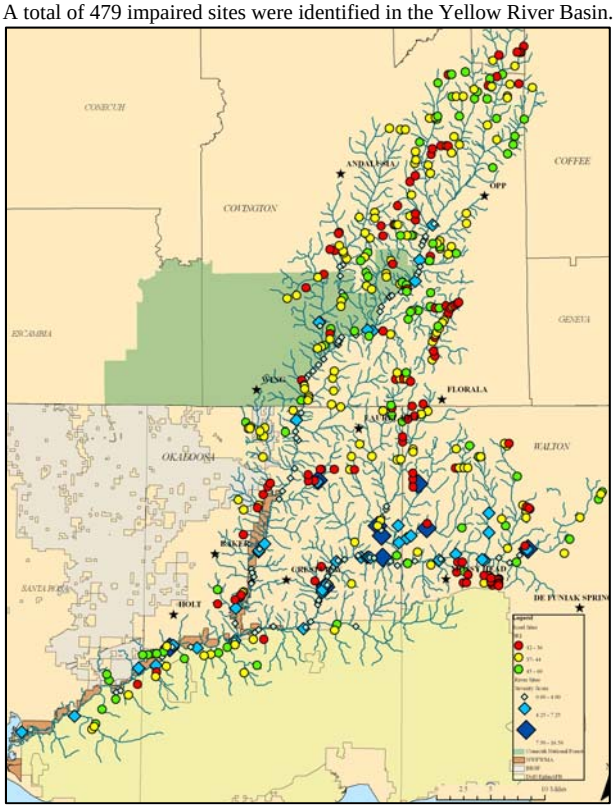
Accomplishments:

We assessed over 209 miles of the Yellow River and its tributaries and identified 140 river corridor sites with “Low-”, “Moderate-”, and “High-” ranked impairments. We also identified 339 unpaved road crossing sites with “Low-”, “Moderate-”, and “High-” ranked impairments throughout the basin.

Excessive sedimentation from unpaved roads and streambank erosion was by far the most common impairment in the basin. Nearly 1/3 of all unpaved road crossings assessed were considered highly impaired, with excessive sedimentation and undersized culverts resulting in demonstrable stream degradation and fish passage

barriers. In contrast, only 6% of river sites with streambank erosion assessed were highly impaired, though some sites had extensive mass wasting that likely contributes hundreds of tons of sediment to the Yellow River each year.

A total of 479 impaired sites were identified in the Yellow River Basin.



We prioritized sites based on these patterns of impairment location, severity, and potential to affect priority ecological resources and designations. We designated seven 'Focal Areas" which are considered primary places for resource conservation, restoration, and management, and provided detailed summaries of types and sources of impairments, how they potentially affect ecological resources, and a plan for prioritizing accomplishing restoration in each area. We also provided specific recommendations for restoring the highest-priority unpaved road restoration area, which comprises lands and roads owned and managed primarily by Eglin Air Force Base.

We restored a high-priority area known as "Dripping Rock". Located on the Yellow River near the Alabama/Florida border, the Dripping Rock area is characterized by a denuded and breached riverbank and an unpaved road resulting in an estimated 60 tons of excess sediment per year to the river. In addition, this area is directly adjacent to the only known stretch of spawning habitat for the federally threatened Gulf sturgeon in the river basin. We restored the site by grading, stabilizing & revegetating the breached bank to floodplain level, and by closing, grading, filling, and seeding the unpaved for long-term sediment stabilization. The primary benefits of restoring the Dripping Rock site is reduction of excessive sediments and which improves spawning substrate of Gulf sturgeon within designated critical habitat. Because Eglin AFB owns land adjacent to its critical habitat, actions that aid in the recovery of federally protected species like the Gulf sturgeon furthers the military's natural resource stewardship mission while reducing its long-term regulatory burden.

Dripping Rock before (A) and after (B) restoration.

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