

The Use of Color Infrared Imagery for the Study of Marsh Buggy Tracks

THE FRAGILE COASTAL MARSH ecosystem of Louisiana's delta plain is very sensitive to the environmental degradation of our high-energy society. The marshes are important as habitats or spawning areas for much of the edible sea life we use as food.

The compaction of marsh vegetation and soils by wheeled or tracked vehicles used for transportation through the marshes is viewed as a serious threat to the stability of the

coastal wetlands. Color infrared aerial photography is used here to locate and quantify the extent of the marsh buggy routes through a south Louisiana marsh.

The strong delineation of the land/water interface on color IR photographs makes identification of water filled tracks easier than from conventional color photos. Qualitative estimation of the growth stage of revegetated marsh buggy tracks is also possible with the color IR imagery. The younger plants are light pink in color and more mature vegetation is a dark red. Field data show revegetation is by the same species, predominantly *Spartina alterniflora*, a halophytic marsh grass.

The study area is centered on the Southwestern Louisiana Canal (see Figure 1). Areas adjacent to the Southwestern Louisiana Canal are highly dissected by buggy tracks. Linear measurements of the tracks showing on the imagery are related to the specific routes and not total cumulative usage. It is not possible to determine the number of times a route is retraced by individual marsh buggies. The total area sampled is 6.11 square miles, and over 1500 miles of track routes occur in this area. There is no evidence to suggest this is an atypical sample.

Plate 1 shows that severe compaction of the marsh vegetation and soils leads to the formation of long shallow lakes. In less severe instances where water may accumulate only seasonally, revegetation is likely but subsurface water flow may be hampered by the compacted soil.

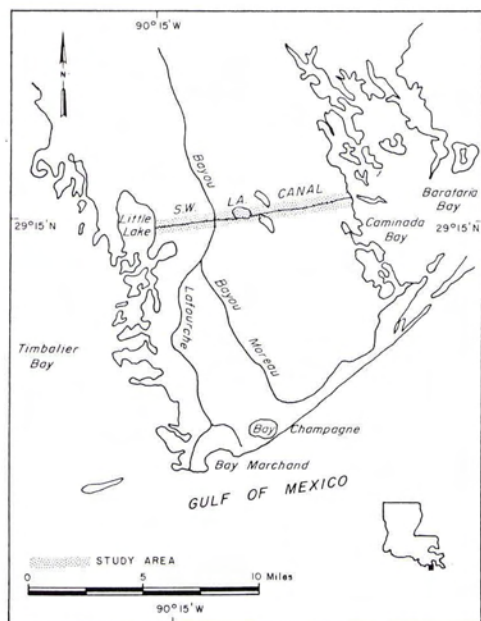
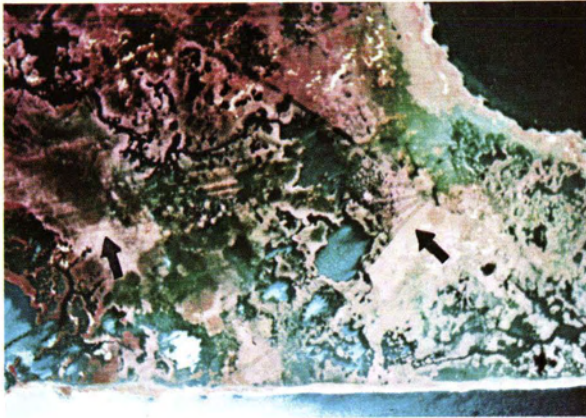
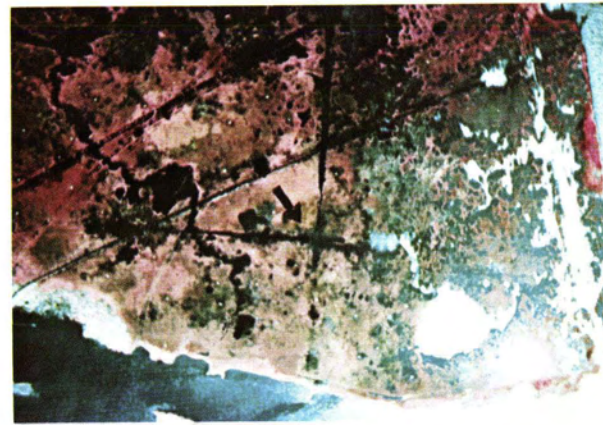


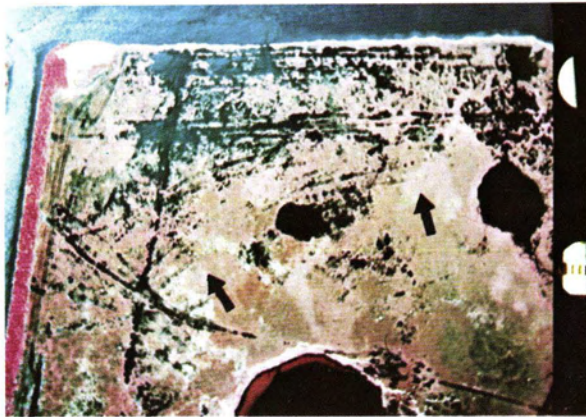
FIG. 1. Location map of the Southwestern Louisiana Canal.



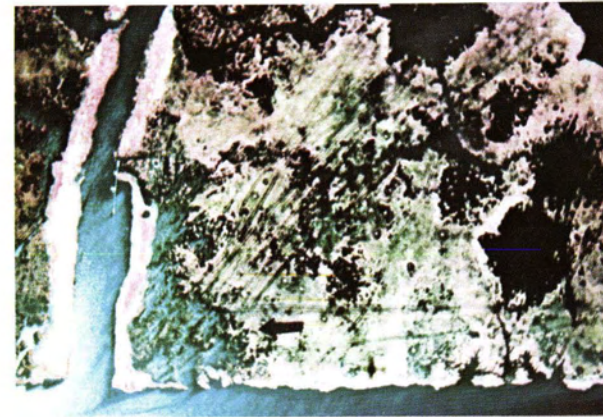
(a) Initial stage of marsh deterioration.



(b) Continued use increases compaction producing elongated lakes.



(c) Re-vegetation of abandoned tracks.



(d) Advanced stage of deterioration.