

The Effects of Dryness on Biota
and Ponds at Padre Island National Seashore

~~The above normal day-time temperatures and extreme~~ dryness during the summer months ~~of 1980~~ has resulted in the drying up of most of the ~~fresh-water ponds~~. It has been noted from Dr. Henry Berryhill (Marine Geologist, U.S.G.S.) that this is the first time that many of these ponds have gone dry since the Seashore was deluged with heavy rains from Hurricane Belluah (1967).

The ~~dryness~~ has had an effect upon the Seashore's fauna and flora. Before many of the ponds went dry, information was attained on the fauna and and its use of certain ponds. The coyote, the Seashore's biggest predator, increased its activity around the few remaining water holes. The animal's activity was noted by increased sightings, scats and tracks. His ever-presence was due to two main causes. One, the coyote's need for fresh water and the coolness it provided from the daily heat. Two, many other animals came to depend upon the few remaining water holes and it became an easier situation for the coyote to find prey. The red-ear turtles began moving to the few ponds that had water. Numerous carcasses were found along the Park's roads adding evidence to the fact that their ponds had dried up and they were searching for new ponds. Other animals used the ponds and were observed either by sightings or signs: california jackrabbits, raccoons rodents and the tracks of one white-tailed deer.

The bird life increased in abundance and diversity around the few ponds that had water. The wading birds concentrated primarily in the shallow, flat type ponds. As these ponds dried, the small fish which inhabited them became concentrated and were easy foraging for many types of birds. The common fish in these ponds are: Fundulus similis, Fundulus grandis and Cyprinodon variegatus. When a water hole dried up, the small marine life was scavenged off and there was a marked decrease in bird activity as well as diversity. The large expanse of shallow ponds on the south side of the road leading to Bird Island Basin were surveyed for birds. A bird census was conducted at various time periods throughout the summer. Also, within this area there is a pond of considerable depth (3 meters[±]) and it was noted separately during census. This pond was called the " Deep Hole". It was found that the abundance of birds as well as their diversity was lower than the shallow pond areas. The following bird census was conducted on the ponds south of the road leading into the Bird Island Basin:

Depth stakes were set out at four ponds on August 7. They were marked at six inch intervals on white PCP pipe. One of the ponds still had water standing, the rest were dry. The Deep Hole had water and the stake was placed near the water line. One day later, from August 8 thru the 10, heavy rains from Hurricane Allen deluged Padre Island. Also, high flood surge tides cut across the Seashore in numerous areas. The depth stakes on selective ponds were read on August 12. The amount of water that filled these ponds was:

1. Pond east of Gulf Ranger Station (concrete colvert in middle) water covered the depth marker, over 4.5 feet. It is possible that rain together with a flood surge tide accounts for this amount of water.
2. Pond west of road from Malaquite Beach and the Observation Tower-- 1.5 feet of water.
3. Shallow Ponds (SP) south of road leading into Bird Island Basin area -- 1 foot of water.
4. Deep Hole (DH) south of road leading into Bird Island Basin area-- 3.5 feet of water.

In the fall of 1967 Hurrican Beula deposited as much as 30 inches of rainfall on Padre Island in a period of 36 hours. This tremendous volume of water covered large portions of the island for several months and left as remnants a number of fresh water ponds in depressions in the sand dunes of Padre Island(Berryhill, lecture, April 1980). Above average rainfall for the 14 years following Beula's arrival has maintained many of these ponds in a condition that has encouraged the growth and reproduction of many species of aquatic animals.

Reference
A study in 1978 measured the salinity of ^{one /two} ~~the~~ ponds in the course of determining the amount of pollution caused by the inadequate sanitary facilities at the Gulf Ranger Station. Little effort was made to document the evolution of the ponds in this study or the species of life associated with the pond system. Some sporadic efforts by park staff have documented the existence of a few species of animals in the pond system, but no orderly study of the species composition of various pond systems has been attempted. There has been one additional factor introduced into the pond system: the park staff at some point in the past has introduced game fish into the ponds that don't seem to dry up in droughts.

Since the ponds are at this time in the evolution of Padre Island a major factor influencing not only populations of aquatic creatures and plants, but also the populations and distribution of many terrestrial plants and animals on Padre Island, It is imperative that ^{we gain} a better understanding of the pond system.