

Land Office, Texas Colonial Waterbird Society, and other interested organizations and volunteers. TPWD activities have been funded by the Federal Aid in Wildlife Restoration Grant W-125-R and the Department has participated in the annual statewide colonial waterbird survey since 1968. Other activities include bird banding research, managing the data from cooperative surveys and maps of colony locations, conducting aerial and ground surveys of colonial waterbird sites, providing information to the public about colonial waterbirds in the form of pamphlets and signs at colonies and public boat ramps near colonies, and assisting in managing selected colonies along the coast. Today, TPWD participates by conducting aerial surveys of remote colony sites along the Gulf Coast during even numbered years between May 15 and June 1. Data generated are pooled into a common database that frequently is used by participants, consultants, and developers to avoid damaging colonial waterbird nesting sites. Data are also used to monitor coastal population trends of 25 species of colonial waterbirds whose populations are very good biological indicators of the health of the coastal wetlands and estuaries. This Texas cooperative survey is viewed as one of the best of its kind in the nation and is the longest running colonial waterbird survey in the United States.

A total of 19 active colonies and 37,897 nesting pairs were found along the lower reaches of rivers and coastal marshes between the Sabine River in the east and the Guadalupe River in the west during the very dry year 2000. This total represents about one-half of the pairs found during the more typical rainfall years of 1994 and 1998, and about 6000 more pairs than the dry 1996 breeding season. Most fish/crustacean-eating bird nesting populations showed major declines. Cattle egret (*Bubulcus ibis*) and black skimmer (*Rynchops niger*) were the only species showing increases in nesting pairs.

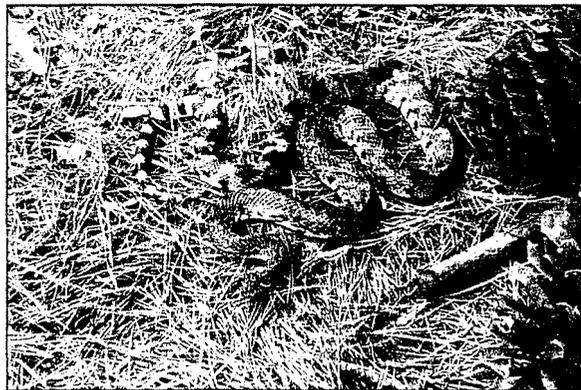
In addition to coastal surveys, colonial waterbirds nesting on 2 islands in Cedar Creek Islands Wildlife Management Area in Henderson County were monitored. A total of 363 individuals of 6 species were found on the Bird Island Unit and 2434 individuals of 7 species on the Telfair Island Unit. Neotropic cormorants (*Thalacrocorax brasilianus*) re-nested at the Bird Island Unit in the fall of 1999. Dr. Ray C. Telfair II banded and color-marked with orange/blue leg tags a total of 93 nestlings on October 2 (50) and October 16 (43). Mortality among the later-banded birds (27.9%) was much higher than that (2%) of the earlier-banded birds. Apparently, the later-nesting birds were subjected to avian predation [probably great-horned owls (*Bubo virginianus*), red-tailed hawks (*Buteo jamaicensis*), and/or bald eagles (*Haliaeetus leucocephalus*)].

The low numbers of small herons and egrets in comparison to previous years at these inland sites reflect the substantial loss of nest-site vegetation due to guano-trophy. Very little nest-site vegetation is left on Bird Island and only 40% is left on Telfair Island. Due to the deterioration of nest-site vegetation and the large number of herons and egrets that, as a result, nested on the ground, no attempt was made to band/color-mark nestlings during the spring/summer season of 2000.

During the late winter/early spring season (1999/2000), local volunteers (Timothy P. Folts and Tomye Folts-Zittner) planted 48 seedling Chinaberries (*Melia azedarach*) on Bird Island as an experiment to determine their survival and growth potential to replace the loss of Chinaberries that have died from guano-trophy.

DETERMINATION OF THE STATUS OF THE LOUISIANA PINE SNAKE

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The Louisiana pine snake (*Pituophis ruthreni*) is one of the rarest vertebrate species in the United States. Its limited distribution in eastern Texas and western Louisiana is closely associated with the distribution of longleaf pine (*Pinus palustris*). Within this region the species is found in upland habitats with abundant herbaceous vegetation on well-drained sandy soils. This habitat restriction is apparently a result of the close association of Louisiana pine snakes with Baird's pocket gophers (*Geomys breviceps*). Louisiana pine snakes prey extensively on pocket gophers and are dependent on pocket gopher burrow systems for nearly all of their underground activity.

Most longleaf pine savannahs have been converted to other land uses, and most of the remaining savannah habitat has been severely degraded due to lack of adequate fire. Consequently, the Louisiana pine snake is now confined to a few limited areas where suitable habitat still exists.

Since 1993 we have been conducting research on Louisiana pine snakes to gain a better understanding of their biology and status. Telemetry studies have provided extensive data on habitat use, home range characteristics, and general natural history of this previously little known species. We are now in the second year of a multiyear effort, funded in part with Section 6 funding provided by Texas Parks and Wildlife Department for work carried out in Texas, to survey additional localities to provide a more complete picture of the current status and distribution of the Louisiana pine snake.

Large, semi-permanent funnel anti drift fence traps are currently installed in 24 localities in Texas and Louisiana, and are operated during the active period from March through October. Extensive long-term trapping is required because trap success in areas known to be occupied by Louisiana pine snakes is very low, one capture for each 400-1000 trap days. We are currently accumulating approximately twenty thousand trap days per year in each state.

Results to date, resulting in 40+ additional records, have documented the continued existence of Louisiana pine snakes in 6 counties in Texas and 4 parishes in Louisiana. Examination of all known historical localities also suggests that very little of the original habitat remains in suitable condition for Louisiana pine snakes. Consequently, we are continuing our efforts to locate additional populations of this very rare species and to better understand its biology and habitat requirements.

DEMOGRAPHY AND ECOLOGY OF THE WESTERN DIAMONDBACK RATTLESNAKE IN SOUTH TEXAS

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Western diamondback rattlesnakes (*Crotalus atrox*) are the most common venomous snakes found throughout much of Texas. South Texas is well known for its high density of diamondback rattlesnakes and exceptionally large specimens. In this region, diamondback rattlesnakes can be encountered during all months of the year. However, the ecology of this species in the South Texas ecosystem is not well documented. The objective of this

study is to document activity patterns and demography of diamondback rattlesnakes.

The study site is the Chaparral Wildlife Management Area in Dimmit and LaSalle counties, Texas. Diamondback rattlesnakes were captured when encountered while road cruising during 1996-2000. Upon capture, snakes were measured (snout-vent and total length), sexed, and marked by the subcutaneous insertion of a passive integrated transponder (PIT) tag. Snakes were then released.



JOE MOODY

A total of 354 diamondback rattlesnakes were captured, with 22 individuals being recaptured during the 1996-2000 study period. Males [mean=39 inches (100 cm), total length] were significantly larger than females [mean=32 inches (81 cm), total length]. The largest individual captured measured 59 inches (150 cm) in total length. The observed sex ratio (F:M) of 1:2.7 was skewed towards males. Snakes were encountered during all months of the year. Snakes were most active during mid-spring with 47% of total captures occurring during the months of April and May. Diurnal activity appeared to decrease throughout summer with a slight increase in activity in early fall before decreasing in winter.

The high activity period associated with spring was most likely a result of snakes becoming more active with the onset of warmer temperatures, followed by extensive searches for prey items, and males seeking females. The uneven sex ratio may also be the result of greater activity of males in search of mates. Decreased diurnal activity during the summer months indicates increased nocturnal activity by rattlesnakes to take advantage of optimum temperatures. Too few rattlesnakes were recaptured to estimate population size. However, recapture data indicates that rattlesnakes in South Texas may have relatively small home ranges as most recapture events occurred within 100 yards (92 m) of the original capture site. The greatest movement by an individual snake was 0.93 miles (1.5 km).

Fear of snakes generally leads to their death when human-rattlesnake encounters occur. Most human activity on South Texas rangelands occurs during hunting seasons