

## Carolina Bays

Many people today hear the term *Carolina Bay* and associate it with a body of water. However, the term *bay* actually comes from the bay trees that are often associated with this habitat type. Earlier in history, people like John Lawson, a young explorer in early 1700's, and Michael Tuomey, a SC geologist in the mid-1800's, formed written accounts of these areas, but the extent of the uniqueness had gone unnoticed.

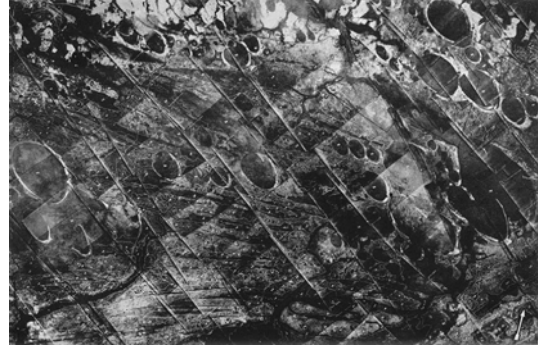


Figure 1. One of the first Carolina Bay viewings from Fairchild Surveys Inc.

In 1930, the city of Myrtle Beach contracted Fairchild Surveys Inc. to take the first aerial photos of this area. While looking at the photos, they noticed many strange oval-shaped depressions with NW – SE orientation throughout the Myrtle Beach area. A few years later, Roosevelt passed the Agricultural Adjustment Act of 1933, which required all U.S. local administrators to send aerial photos of their areas. When the Department of Agriculture started examining the photos of the east coast, they realized that these oriented depressions were not just in the Myrtle Beach area but panned out along much of the Atlantic coast. Professionals were then called in and estimated that there were nearly half a million Carolina Bays along the eastern U.S.

Since early settlement, Carolina Bays have been under constant destruction. Most of the bays were stripped of timber resources and drained for agriculture, development, and road construction. Researchers believe that more than 97% of Carolina Bays have been destroyed or severely altered. The SWA 1187 is fortunate enough to have several intact Carolina Bays and should thrive to preserve these rare ecosystems.



Figure 2. The SWA 1187's largest Carolina Bay

## **What is a Carolina Bay?**

Carolina Bays are typically hard to define because the geological formation origin remains unknown. They are classified as shallow depressions in the sandy soil of the coastal plain, isolated wetlands that are mostly fed by rain or shallow groundwater, and set apart by there many unique characteristics. Some of these characteristics include:

- Elliptical in shape with the smaller bays being more round and bays farther from the coast being more egg-shaped
- Generally oriented NW-SE but make a clockwise rotation as you move south
- Often asymmetrical with the NE side being more curved
- Range from FL to DE with the greatest concentration in the Carolinas and GA
- Some form echelon formations, overlap, or exist within other bays
- Size varies from few acres to around 9000 acres
- Moisture ranges from dry or wet all year to wet in winter and spring and dry in summer
- All have some degree of a sandy rim to the SE, though some rims are wide and well developed and some are nearly devoid.

### **Formation theories**

Although no one actually knows the origin of this strange phenomenon, through time many people have made speculations and argued theories. Some ideas were not very realistic and were not as accepted. Some of these suggest that bays formed from dinosaur footprints, prehistoric buffalo wallows, fish activity, and volcanic activity. While most of these ideas can be thrown out, three theories that are much harder to argue against are the meteor shower theory, Wythe Cook's theory, and the artesian spring theory.

### **Meteor shower theory**

Frank Melton and William Schriever postulated that a meteorite shower with strikes from the NW at a 35 – 55° angle may explain the bay phenomenon. They also note that the flat southeastern coastal plain is the best area for these strikes to be preserved for so long. However, the shallow depth of Carolina Bays does not correspond with the deep depressions formed by known meteor hits.

### Wythe Cook's theory

Wythe Cook believed that Carolina Bays started out as long narrow lagoons in which wave action scooped out these elliptical depressions. He postulated that the windward side grew outward in the northwest direction and the return current carried sand that was deposited around the southeastern rims. He also noted that this may have contributed to some bays forming in echelon formation.

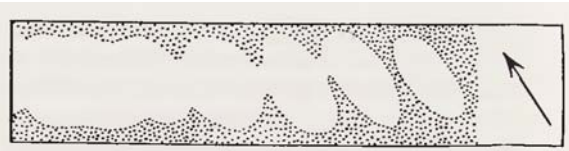


Figure 3. Wythe Cook's Bay formation - From: Henry Savage's *The Mysterious Carolina Bays*

### Artesian spring theory

Douglas Johnson, a geomorphologist, proposed that Carolina Bays were formed from artesian springs. He claimed that underground water traveled from the piedmont regions towards the coastal plain, getting trapped under impervious layers, and creating high pressures. The high-pressure water was forced up through cracks in the impervious layers and boiling sand along the circular rims. As water is forced through the impervious layers, the cracks became larger, giving bays their elliptical shape. He goes on to state that some artesian springs had less water flow and impervious layers more resistant to crack-widening forces and would explain the smaller bays being more circular.

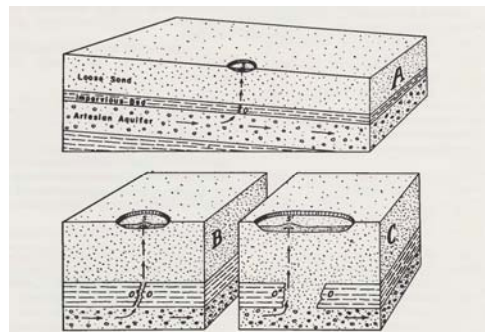


Figure 4. Douglas Johnson's artesian spring theory  
From: Henry Savage's *The Mysterious Carolina Bays*

### Depressional Pocosins Associated With Carolina Bays

The soils in these areas are normally described as having peaty sand or thick organic accumulation. Due to the depressional nature of these areas, they experience intermittent flooding and may receive drainage water from the upland rims. A sparse canopy of bay forest species may occur and a rare occasional pondcypress. They form dense shrub layers of vegetation typical to all other pocosin types and may also include myrtle dahoon (*Ilex myrtifolia*), highbush blueberry (*Vaccinium corymbosum*), Carolina sheepkill (*Kalmia angustifolia var. carolina*), and with zenobia and leatherleaf (*Cassandra calyculata*) more prevalent near the wetter areas. Since Carolina Bays are normally associated with a drier upland rim such as a longleaf pine ecosystem, they normally have a higher fire frequency, which accounts for the high woody plant diversity within such a small area.



Figure 5. Carolina Bay pocosin