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Commentary

Ecological importance and development of the coastal plains

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DESCRIPTION

Coastal plains are terrain masses that build up next to the water and can be flat or ridged, with crests that are typically a few metres above sea level. They can also contain gravel, although commonly they are formed of sand. Sediments that have been handled by waves can be found in a variety of wave, tidal, and climatic settings, wherever inherited environmental circumstances have permitted the shoreward development of such sediments. When sediment is readily available and the shoreline is prograding, or moving out to sea, large coastal plains frequently occur. It is possible to monitor changes in the factors determining the procedures, patterns, and rates of beach plain progradation by looking at the morphology and depositional history of these deposits. So, with proper analysis, deposits from beach-plain regions might prove to be effective instruments for detecting past environmental changes. This is especially true for plains composed of beach ridges, which are frequently used as proxies to highlight changes in a range of environmental factors, including sea level, temperature, sediment supply, and wave force and direction. These plains also act as geographical markers for previous coastline placements. Beach-plain soils are often of poor quality because the parent sediments, which are primarily quartz sand or gravel generated from various rock types, are not easily weathered. Coastal plains act as biotopes for a range of plant and animal species because the magnificent life-supporting aquifers that these sands typically generate there (Anthony, 1995).

The flat topography of the Coastal plains has attracted people to settle there, and in many areas it has facilitated the expansion of commercial and subsistence agriculture as well as industry. As lagoons and marshes are usually connected to them, Coastal plains offer higher-lying area for living in wetland ecosystems. As they can also comprise linear beach ridges that stretch over significant distances, Coastal plains are an excellent topography for the development of pathways in coastal wetland regions (Mason, 1993). Beach ridges usually represent progradation, or advancement, of the shoreline when there is a large amount of sediment present. Coastal plains are typically Holocene to current in age, however on some beaches, such as those in southeast Alabama and northwest Florida in the United States, Brazil, and south-eastern Australia; Pleistocene beach plain specimens may coexist alongside Holocene plains. While they are less frequent than sand plains on beaches, gravel plains can accumulate significantly in mid- to high-latitude coasts (Orford, 1996).

They arise in regions where there is a surplus of loose heterogeneous sediments, notably glacial material, which is derived from rivers with steep catchments and is rich in gravel, cobbles, or boulders. Gravel is sometimes referred to as "shingle" in these seashore plains. Sedimentation on the coastal plain is brought forth by waves. Therefore, Coastal plains may be found on wave-dominated coasts under all tidal range conditions, from low to high.

Concern for these plains also stems from potential environmental modifications that could alter the sediment supply (Thom, 1984). It is possible to monitor changes in the variables governing the processes, patterns, and rates of Coastal plains progradation by examining variations in the morphology, internal structures, and depositional history of these formations. The following factors are among them: sea level, the presence of sediment, wave energy, wave direction, wave height, and wave height (Taylor, 1996).

Beach-plain morphological differences may serve as helpful indicators of past environmental changes, but they must be thoroughly researched to avoid being misinterpreted as such (Whitham, 1955). The ridge-and-swale pattern is made up of couplets that each represent a former beach and the region that has been left behind by coastal erosion next to it (King Cam, 1972).

Beach ridges make up the most typical and often described kind of beach-plain morphology. Rill wash and rain processes may eventually destroy the ridge-and-swale design in humid regions. *Via* connected drainage networks and channel meandering, Coastal plains may be vulnerable to the reworking and recycling of their material into estuaries, lagoons, and rivers. The formation of soil and heterogeneity in coastal plains depends on ridge-and-swale morphology as well as morphological variances (Thompson, 1992). These changes may be a result of post-formational erosion and dissection brought on by channels or runoff drains, or they may be related to height and beach ridge set variations during the formation process.

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