

*Ectopistes migratorius* was an eastern and northern species within Recent geologic time; and the only previous fossil record of the species was from Tennessee. The Pleistocene occurrence at Rancho La Brea is thus the first record of the Passenger Pigeon in California.

Whether or not this pigeon occurred in great numbers in California during the Pleistocene can scarcely be determined from the remains found at Rancho La Brea. Though only three individual birds are, with certainty, represented by the six bones, the typical western bird, the Band-tailed Pigeon, with similar forest-loving habits, is limited to two specimens, each of a separate individual. On the other hand, the Mourning Dove with a predilection for openly wooded areas, such as we believe Rancho La Brea to have been during the Pleistocene, is more abundant, with at least seventeen individuals and twenty-nine specimens. In consideration of the environmental factors, therefore, we cannot judge the Pleistocene abundance of Passenger Pigeons in this western area by the number of birds found at Rancho La Brea.

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## OUTSPREAD WINGS AS A SUBSTITUTE FOR PERCHING

By JOHN W. SUGDEN

The observation of gulls and a flicker doing similar unusual acts under similar unusual circumstances suggests the influence of environment and the organisms' adaptive response to that environment. "The animal we know is the product of an age-long struggle to reconcile constitutional limitations with environmental exigencies" (Haviland, "Forest, Steppe and Tundra," 1926, p. 1). The physiological and morphological characters that have developed as a response to a given set of conditions, enable the organism to fit into its particular niche to its own advantage. This specialization increases the efficiency of the organism in that particular environment, but it also imposes a limit on its dispersal. If the particular conditions persist, the organism prospers and the competition it receives is from its own kind, or from those that are similarly constituted. During periods of unfavorable circumstances individuals may be able to meet the changed conditions by altering their activities, providing the structural characters are not so highly specialized as to make survival impossible. The mental capacity of birds, even with the disadvantage of a particular structural limitation, may allow them to react to an emergency imposed by an altered environment by the use of other structures in a modified manner.

Wings in birds have uses other than for flying. They may be used for balancing, or as an aid in running, both modifications of the flying function, or as a means of striking in an offensive or defensive reaction. In courtship they may be used for display or for drumming. Some birds, notably the hoatzin, use them for climbing, many use them to provide shade and shelter for their young, and some, as the pelican, beat the water to cause a commotion and thus drive the fish ahead. The following examples, in birds, tend to illustrate the use of wings to support the body in place of the feet which in these instances are too specialized to be used for perching.

A Red-shafted Flicker (*Colaptes cafer collaris*) was observed in the process of obtaining berries from a small bush during an especially severe and long-continued winter when its usual food supply was restricted. The bird, being unable to cling to

the small twigs in the usual manner, had supported itself with its outspread wings in the bush. After eating all the berries within reach, it fluttered until a new position was obtained and then continued its feeding. A Western Robin (*Turdus migratorius propinquus*), feeding in the same bush, of course, had no such problem to meet.

In the vicinity of Great Salt Lake, the California Gulls (*Larus californicus*) have developed many new feeding habits not shared by similar gulls at the seacoasts. Here they shun the region of the inhospitable lake shores and wander far inland searching for various foods. They frequent the garbage dumps, comb the city for refuse, and systematically visit the schools at noon to pick up scraps from the students' lunches. Individual birds have been seen zigzagging along a street, inspecting both sides. They have also learned to visit the orchards in the fruiting season, and in some localities have been so persistent in their ravages that they have aroused the enmity of the farmers. The usual method employed in obtaining fruit from the trees is to hover over the branches and seize the fruit with the bill, without any attempt at alighting. Some, however, in the cherry trees have been observed supporting themselves in the thick foliage by their outspread wings while eating all the cherries within reach. Usually small flocks of the gulls visit the trees in an orchard, and three or four have been seen squatting in the tops at one time; apparently this procedure is becoming more common. This method has advantage in that many more cherries can be obtained from one position and with considerably less effort. The cherry eating proclivities of the California Gull are increasing, as more individuals, watching their fellows, add this fruit to their diet. At their nesting sites on the islands of Great Salt Lake the ground is heavily strewn with the pits.

Both the flickers and the gulls have specially adapted feet, the former for clinging to the bark assisted by the supporting tail, and the latter for swimming, through means of the webbing. In either case, the birds can use their feet for standing or walking on flat surfaces, but not for perching on small limbs or twigs. In their attempt to supplement their regular diet with an unusual food, the orthodox method being inadequate, the wings have been called upon to function in place of the feet. The specialization of the foot structure has rendered it inadequate for general service, so, in these instances, the individuals have learned to use another structure in an altered manner to accomplish the same, or similar, result.

The use of the outspread wings, as a substitute for the perching function, is not a common procedure among birds, nor is it the usual habit of certain species. Only during periods of unusual conditions, such as a long severe winter or overcrowding with consequent competition for food, is the mettle of the individual tested. Under favorable conditions even the weakling can survive. Those that have the superior intelligence to overcome the handicap by resorting to an abnormal method of procuring food, and by thus doing to open up a new supply, increase their chances of survival. If this method becomes the usual routine, developing into habit by repetition, the basis for a change in structure might be laid.

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