Avocetta N° 17: 139-140 (1993)

Black Swift (*Cypseloides niger*) nesting site characteristics: some new insights

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Abstract – Thirty years ago, a study of Black Swift nesting sites resulted in the establishment of a set of five nesting site characteristics for this species subsequently confirmed by other researchers. New findings suggest the modification of one of these and the addition of a new one. These findings are discussed.

Introduction

A 10-year study I conducted was to determine the geographical distribution of the Black Swift (Cypseloides niger) in the state of Colorado USA and the physical ecological factors influencing this distribution (Knorr 1961). This resulted in the discovery of 27 active breeding colonies consisting of 80 nests and a set of five nesting site characteristics common to all of them: water, high relief, inaccessibility, darkness, and unobstructed flyways immediately in front of the nests. Subsequent work by other researchers confirmed the presence of these characteristics with minor variations (Hunter and Baldwin 1962, Foerster and Collins 1990) and they have been present at other breeding sites discovered since then in the states of Utah and Arizona (Knorr 1962,1989). More recently, my analysis of a large Black Swift site in the state of California and two potential sites in the state of Idaho suggests the modification of one characteristic and the addition of a new one. The purpose of this paper is to set forth these findings and the reasons for the changes in the previously established nesting site characteristics. For clarity, the paper has been divided into two parts.

Part I - Methods

Of the almost 40 Black Swift nesting sites I have studied, nearly all have exhibited 'high relief'. That is to say, they have been situated in a commanding position above the surrounding terrain so that birds flying out from the nests on a horizontal course find themselves automatically at feeding altitude above the adjacent valley. However, the nesting site of a large group of Black Swifts (8-10 pairs) located at Burney Falls in McArthur Burney Falls State Park, Shasta County California has been studied recently and seems to differ to a certain extent from a strict application of the factor of high relief. The waterfall is at an elevation of 900 meters on Burney Creek and drops 40 meters into a gorge which leads to Lake Britton 1/2 kilometer away, a dammed portion of the Pit River. The surrounding terrain is flat table land into which Burney Creek has cut the waterfall and subsequent stream gorge. Consequently when one stands at the edge of the gorge, the falls appear to be in a depression rather than occupy-ing a position above the surrounding terrain except in the direction of stream flow. Several days of di-rect observation of this site on different occasions during the breeding seasons of 1988-1992 were conducted to understand the implications of this lack of the usual high relief found at Black Swift nesting sites.

Results

It is possible for the swifts to fly straight out horizontally from the nests and down the gorge to Lake Britton where most of the birds feed. However, this requires flying a winding course between the trees lining the gorge before achieving open air space over the lake, and only an estimated 10% of departing birds use this route. The remaining birds have adapted to the lack of a complete high relief nesting situation with a behaviour not seen before at any other Black Swift nesting site. They perform an orbiting climb in the air space in front of the waterfalls, which is a rough cylinder 60 meters in diameter, averaging an

Accepted 30 December 1993

estimated three complete circles before reaching sufficient altitude to clear the surrounding terrain and trees and to depart the area on feeding forays.

Discussion

Although all the other Black Swift nesting site characteristics are present at the Burney Falls site, the factor of high relief is only partially present. To accomodate this unique situation, we believe that the factor of high relief as a Black Swift nesting characteristic should be described as being 'almost invariably' present.

Part II - Methods

In searching for Black Swift nesting sites in the state of Idaho in 1990, two waterfalls carrying a heavy flow of water were found on the Henry Fork of the Falls River. Named Lower and Upper Mesa Falls, they are in extreme eastern Idaho near West Yellowstone and the border of Wyoming, and are 20 and 35 meters high respectively. All five Black Swift nesting site characteristics are present at both waterfalls and from past experience appeared very likely to be suitable Black Swift nesting sites.

Results

Although it was the height of the Black Swift nesting season, no birds appeared and none was observed in the vicinity. The conclusion was that Black Swifts were not nesting at these sites which were then studied in detail for reasons for the absence of the birds.

Discussion

Until recently, studies of the nesting of the Black Swift have been directed to where they nest (geographic distribution) and why they nest where they do (physical ecological factors). No attention had been paid to why they were not present at sites which otherwise provided the customary nesting site characteristics. At the Idaho sites, the native rock over which the waterfalls flowed and which surrounded the falls was basalt and andesite, a particularly hard and smooth rock whose surface provided no pockets, crannies, ledges, or shelves in the rock for the placement of nests. Foerster and Collins (op cit) in their study of the breeding distribution of the Black Swift in southern California included a list of 36 waterfalls where no Black Swifts nested although some of the sites appeared to provide the five classical nesting factors. Their conclusion that "...some clearly lacked a suitable ledge or shelf to support a nest..." agrees with what was found at the Idaho sites. I believe that this factor accounts for the absence of Black Swifts at the Idaho sites as well as at other likely waterfalls which support no breeding swift population. Accordingly, we believe that a sixth nesting site characteristic should be added to the five previously established: 'Presence of niches in rock for nests'.

Riassunto - Uno studio svolto trent'anni fa sui siti di nidificazione di *Cypseloides niger* aveva indicato 5 caratteristiche tipiche per l'insediamento di questa specie. Recenti ricerce suggeriscono la modificazione di una di esse e l'aggiunta di una inedita caratteristica.

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