

# SHORT COMMUNICATIONS

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## OBSERVATIONS OF A LARGE ROOST OF COMMON RAVENS

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Communal winter roosting is common in many corvids. Winter roosts of Common Ravens (*Corvus corax*) have been found in trees (Cushing 1941, Hutson 1945, Hurrell 1956, Harlow et al. 1975) and abandoned buildings (Temple 1974). Coombes (1948) described coastal cliffs as roost sites, but his observations were made in the fall, possibly on vagrants. While investigating the ecological relationships between waterfowl and ravens in southeastern Oregon (Stiehl 1978), I found an unusually large communal winter roost of Common Ravens. The roost was on the western edge of Malheur Lake, 40 km south of Burns, Oregon. I studied it during the winters of 1975–76 and 1976–77. Local residents indicate that the location has been used as a roost for at least 10 to 15 years, suggesting that it historically has been a wintering area for ravens. Lucid and Conner (1974) and Temple (1974) found that locations of communal winter roosts of Common Ravens were fixed for several years.

The irregularly shaped roost site covered several hundred square meters within an approximately 100-ha marsh, located 0.2 km northeast of a low ridge. The roost was within a dense growth of viscid bulrush (*Scirpus acutus*). The specific location of the roost varied from evening to evening, and appeared to depend on the position within the roosting area of the earliest arrivals, the presence of cattle or humans in the area near the roost, and on weather (e.g., wind direction and velocity, and precipitation), as during strong storms the site was closer to the low ridge. Birds roosted both on the dry and frozen marsh and on broken and bent bulrush stems. Adverse weather in the area often was accompanied by strong southeasterly winds; hence the location of the roost site on the lee of the low ridge. Also, the dense vegetation may have afforded the ravens some protection from adverse weather. Although there was a group of large black cottonwood trees (*Populus trichocarpa*) about 9 km southeast of the roost site, these, as were all large trees in the area, were close to inhabited houses and probably therefore unacceptable to ravens as roost sites. The lack of acceptable traditional roost sites and the protection afforded by the ridge possibly accounted for the unique character of the Malheur roost.

The Malheur Lake roost was active in 1975–76 and again in 1976–77 beginning in mid-October 1976. The birds disbanded by mid-March in 1976 and 1977. The number of birds using the roost reached a maximum in January. I counted over 400 individuals on six occasions between 7 December 1976 and 22 January 1977. A count of 836 ravens in the roost on 4 January 1977 appears to be the largest such assemblage reported in the literature. Cushing (1941) found a winter roost of 200 ravens, and Jay Sheppard (pers. comm.) observed a roost in southern California of 400 birds. After 22 January 1977, the number of birds observed at the roost decreased. The decrease corresponded with increased activity associated with nesting.

Several pre-roost areas were located within one km of the roost site. The pre-roosting areas either were dry, unvegetated alkali lake beds or areas of short vege-

tation such as spike rush (*Eleocharis* sp.), baltic rush (*Juncus balticus*), and desert saltgrass (*Distichlis stricta*).

In all cases, the pre-roosting areas were obvious openings within denser vegetation. While at the pre-roost sites ravens would feed, beg, and frequently fly with each other in apparent food chases. Pairs also soared out of the sites in unison flights (Hutson 1945), and then returned. The openness of the sites suggests that they served as conspicuous landmarks which, along with the unison flights, might advertise the roost location to other ravens in the area. Although ravens were obvious while at the pre-roost sites, once the birds flew to the roost they became inconspicuous. Flights from the pre-roost to the roost were low (10–15 m) and direct. When over the roost site, a bird would fold its wings and collapse into the dense vegetation. These flights began 15 to 20 min before sunset, usually with a few pairs or, occasionally, a more orderly "string" like the roosting flight of Common Crows (*Corvus brachyrhynchos*; Madson 1976). Flights then increased, becoming most common near sunset.

The location of the roost area in a homogeneous habitat would make it more difficult to find than more typical raven roosts such as large trees, groups of trees, or buildings. The pre-roosts thus appeared to function both as staging areas and as exposed areas where visual contact could encourage aggregation, so that compact communal roosts could form. The separation of pre-roost from the roost sites allowed advertisement yet enabled the birds to fly into the roost in dim light, thereby preserving their presumed anti-predator role suggested by Lack (1968) and Zahavi (1971).

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