Reprinted from THE WILDLIFE SOCIETY BULLETIN
Vol. 6, No. 1, Spring 1978
Made in United States of America

GREAT BLUE HERONS RESPOND TO NESTING HABITAT LOSS

We sighted great blue herons (*Ardea herodias*) nesting on channel markers along the Columbia River near Umatilla, Oregon, in May 1976 during a census designed to locate nesting ospreys (*Pandion haliaetus*) (Henny et al. 1974). A detailed census by boat on 30 July 1976 revealed six great blue heron nests on channel markers within the 35-km segment of the Columbia River between Umatilla and Boardman (Fig. 1). Why would herons nest on channel markers in this region, when all nesting locations in Oregon listed by Nehls (1972) were in trees adjacent to water, except one in tules (*Scirpus acutus*) in the center of a marsh?

A heronry with approximately 40 nesting pairs was present in a large stand of live cottonwoods (*Populus* spp.) along the Columbia River near Umatilla just before 1968. The John Day Dam, completed in 1968 near Umatilla, modified the flow and boundaries of the Columbia River. Both changes affected nesting heron habitat: the dam may have improved food supply by providing additional slow-moving water for herons to feed, but destroyed nesting habitat by eliminating nearly all of the trees. Most of the suitable trees were immediately adjacent to the river in this semiarid region and were inundated by the dam pool and cleared out by the U.S. Army Corps of Engineers. Nesting trees at the heronry were not removed. Nehls (1972:30) described the heronry in 1971 as containing 20 pairs in a large stand of dead cottonwoods. By May 1976, only two cottonwoods remained but they provided nesting habitat for eight pairs of herons (Fig. 2).

When the availability of nesting sites is acute, Gabrielson and Jewett (1940:130) report that great blue herons will nest "... on low bushes, on the rocks, or even on the ground . . . ." Observations of three pairs of great blue herons in the area in 1975, nesting in 1-m sagebrush (*Artemisia tridentata*) on a small rocky island in the Columbia River suggests a possible shortage of nesting sites. To emphasize the shortage further, the two nesting trees in the heronry, and actually the same nests, were used twice in 1976. Eight pairs of nesting double-crested cormorants (*Phalacrocorax auritus*) were seen on 30 July 1976 where herons had been nesting 2 months earlier.

The characteristics of suitable great blue heron nesting habitat are difficult to describe because of the species' wide breeding range.

Fig. 1. Three young herons raised on a channel marker (note the lack of trees along the shoreline).

Miller (1944) stated that an adequate food supply and a suitable woods are essentials. He believed that the kind of tree available for nesting was less significant than height and its distance from human activity and natural barriers. In other words, the isolation of a site could be the most important determinant in nesting site selection. The channel markers used as nest sites in the Columbia River were isolated (Table 1): herons did not nest on the land-based markers along the shoreline, or on the markers closest to shore (within 0.3 km) regardless of height. The channel markers nearest the middle of the river attracted nesting herons. Furthermore, only markers 4 to 7 m above the water level were used though shorter markers were available.

Channel markers are an adequate, though unusual, replacement for the destroyed trees and the nests did *not* hinder navigation by obstructing the lights. Palmer (1962), in the only other record for the species nesting on man-made structures, reported great blue herons nesting on duck blinds in Texas. However, other species of herons have nested on man-made platforms at the world-famous "Bird City" established in Louisiana in 1892 (McIlhenny 1934, Wiese 1976).

Land managers may be able to establish artificial nesting sites where great blue heron nesting habitat has been destroyed. Overwater sites should be at least 5 m high; higher along shorelines (Vermeer 1969). Sites should be established in isolated areas near an abundant food supply. Although plans are now underway to provide artificial nesting plat-

Table 1. Columbia River channel markers checked for great blue heron nests on 30 July 1976.

Channel marker location	Number checked	Number with nests
On shore	11	0
In river	20	6[a]

[a] Nests were located on channel markers with the following numbers: 74, 72, 61, 57A, 52, and 50.

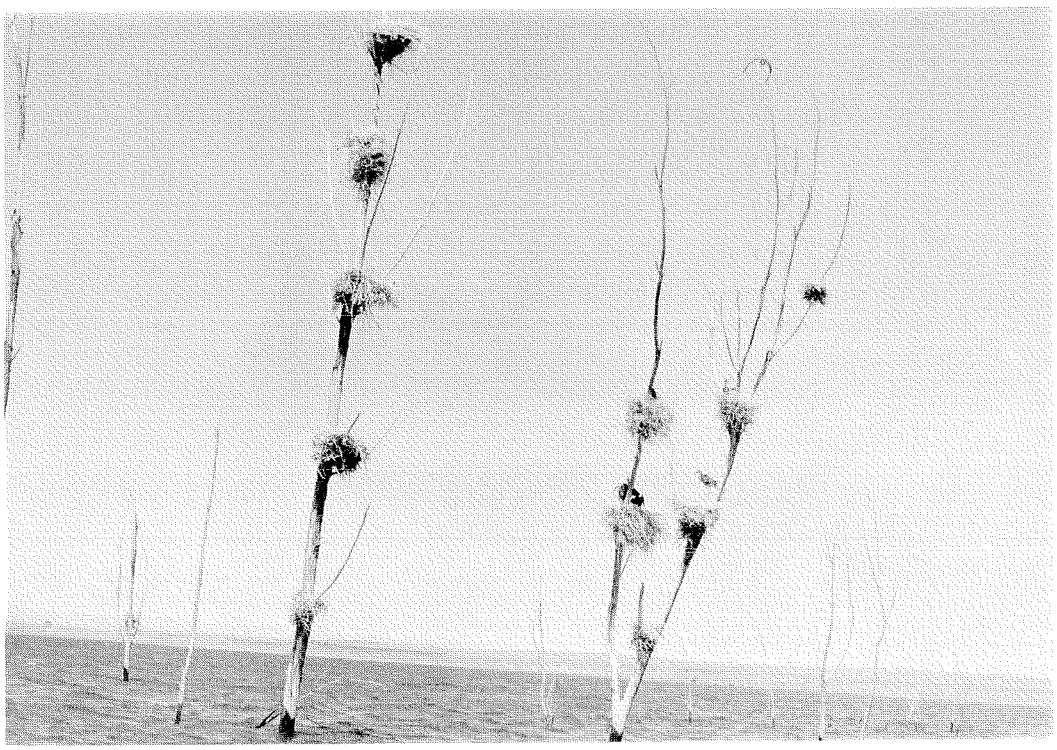

Fig. 2. Two nest trees remaining in 1976 from the large stand of cottonwoods.

forms at the original location of the heronry, maintenance of channel markers should be completed before the nesting season, so that pairs nesting on them will not be disturbed.

The response of wildlife to man-made changes in the environment should be a major concern to the wildlife manager. Species that adjust successfully to change will survive, while the remaining species decline or disappear from portions of their range. The great dams of North America have modified or caused the loss of considerable riparian habitat. The response of the herons to the pool created by the John Day Dam provides some clues for managers interested in protecting the species in similar situations.

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