MIGRATORY BIRDS AND CONTAMINANTS

# BALD EAGLES

## along the Lower Columbia River Estuary

### Status of Bald Eagles Along the Columbia River

From the Bonneville Dam to its mouth, the lower Columbia River supports over 70 nesting pairs of bald eagles and provides wintering habitat for more than 100 bald eagles during migration. Bald eagle numbers in this area, as well as throughout the United States, have rebounded since the 1970s. Pesticide contamination, illegal shooting of eagles, and habitat loss drastically reduced bald eagle numbers throughout the United States, and resulted in protection of the bird under the Bald Eagle Protection Act of 1940 and the Endangered Species Act of 1973. The banning of persistent pesticides such as DDT in the early 1970s has helped the bald eagle to recover in many parts of the United States, and the national symbol may be delisted from the Endangered Species List in 2000. The lower Columbia River population is currently experiencing a rapid increase in eagle pairs, although the breeding success of these eagles is still much lower than in other areas of Oregon and Washington.

Eagles along the Columbia depend upon the river for food as well as habitat for nesting, roosting, and wintering. Eagles that nest along the river are considered residents because they do not migrate. In contrast, the wintering population of eagles remains along the river for a short period of time. Wintering eagles fly in from as far off as Montana, typically arriving in November, and remain around the river until February or early March.

### Nesting Activities

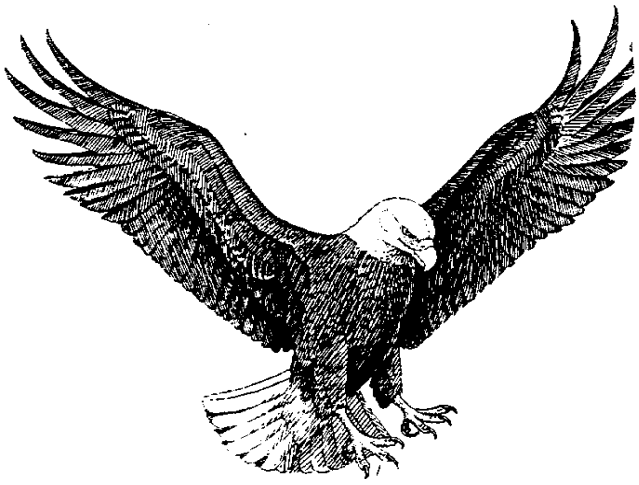
Bald eagles build large nests in trees along the shoreline and on small islands in the river, especially near tidal flats. The greatest concentration of nest sites occurs in the lower estuary downstream from Cathlamet, Washington. In recent years, many new eagle pairs have established nests upstream towards Bonneville Dam.

Columbia River eagles prepare for the breeding season in January by initiating courtship and nest building activities. In late February or March, both parents begin incubation (sitting on eggs). Each nest contains one to three eggs. Eggs hatch in May or early June and nestlings are fed by both parents through August. During the early stages of breeding activity or incubation, eagles are very sensitive to disturbance, and approaching humans or boats may cause abandonment of the nest and loss of young.

### Habitat and Feeding Behavior of Eagles Along the River

Along the shoreline, bald eagles typically select very old Douglas-fir or sitka spruce for nest sites. On islands, nest sites are found in large cottonwoods or spruce. The eagles usually build their bulky nests in the tallest trees in the canopy.

From perch trees along the river, eagles hunt primarily for fish. They especially like tidal flats and other shallow water areas where, during low tide, potential food items become stranded. Although they generally forage within one-half mile of the nest site, eagles may journey over eight square miles to find food during the breeding season. Largescale sucker, American shad, carp, and peamouth chub seem to be the most commonly consumed fish, with salmon, small sturgeon, and other fish making up less than 25 percent of the diet. Waterfowl and seabirds increase in importance as a food source in winter when eagles are not nesting. Mammals, such as rabbits and muskrats, typically make up less than 10 percent of the diet. In recent years, many prey items taken by eagles have been found to contain contaminants that could potentially harm their ability to reproduce successfully.



## PRODUCTIVITY OF COLUMBIA RIVER EAGLES AND CONTAMINANTS

Bald eagle reproduction and productivity (number of young produced per nesting pair) in the Pacific Northwest have greatly increased since DDT and other organochlorine compounds were banned in the 1970s. Bald eagle productivity in certain areas, however, remains low primarily due to the lingering impacts of organochlorines. These compounds, which include DDT, DDE (a breakdown product of DDT), PCBs, and dioxins and furans, have the capacity to cause changes in parental behavior during incubation and can result in death of unhatched eagle chicks. The compound DDE causes eggshell thinning, which then leaves eggs vulnerable to breaking during incubation. Although some of these compounds are now banned, others such as dioxins and furans are released into the river as byproducts from industrial processes and burning.

Organochlorine compounds in water and sediment can accumulate (build-up) in the fatty tissues of organisms living in the river. Fish and birds which eat these organisms gradually increase, or bioaccumulate, organochlorines in their tissues. Because removal of organochlorines from the body is a very slow process, bald eagles and other predators bioaccumulate the compounds over time as they eat prey from the river. The bioaccumulation process often results in problems for predators at the top of the food chain. Meanwhile, animals lower in the food chain, such as clams and fish, are not directly affected by the compounds. Along the Lower Coumbia River, bald eagles are exposed to levels of organochlorines high enough to impair their breeding success.

Eagles nesting along some sections of the lower Columbia River produce about half as many young per nest as eagles nesting elsewhere in Oregon and Washington. The bald eagles nesting between Astoria and Puget Island (near Cathlamet) experience the lowest breeding success anywhere in Oregon. Since 1990, many new eagle pairs have established nest sites along the river and are breeding much more successfully than eagle pairs at the older nest sites. Recent evidence suggests that eagles at the older nest sites are more affected by contaminants than pairs at newly-established sites. For example, concentrations of some dioxin and furan contaminants in eagle eggs were found to increase as one travels downriver, where most older nest sites are located.

Since the mid-1980's, bald eagles at older nest sites have experienced a decline in DDE and PCBs. Practices such as establishing buffer zones along waterways in agricultural and industrial areas can help further reduce runoff and prevent these compounds from entering into the Columbia River. In the early 1990s, the pulp and paper industry, a primary source of dioxins and furans along the river, changed their pulping process to substantially reduce releases of dioxins into the river. Whether or not corresponding declines of dioxins in fish and wildlife along the river will occur as a result of the process change remains to be seen. The U.S. Fish and Wildlife Service, in cooperation with Oregon Cooperative Wildlife Research Unit at Oregon State University and the Lower Columbia River Estuary Program, plan to continue monitoring these eagles to see if the conditions of the Columbia River are improving for all species.