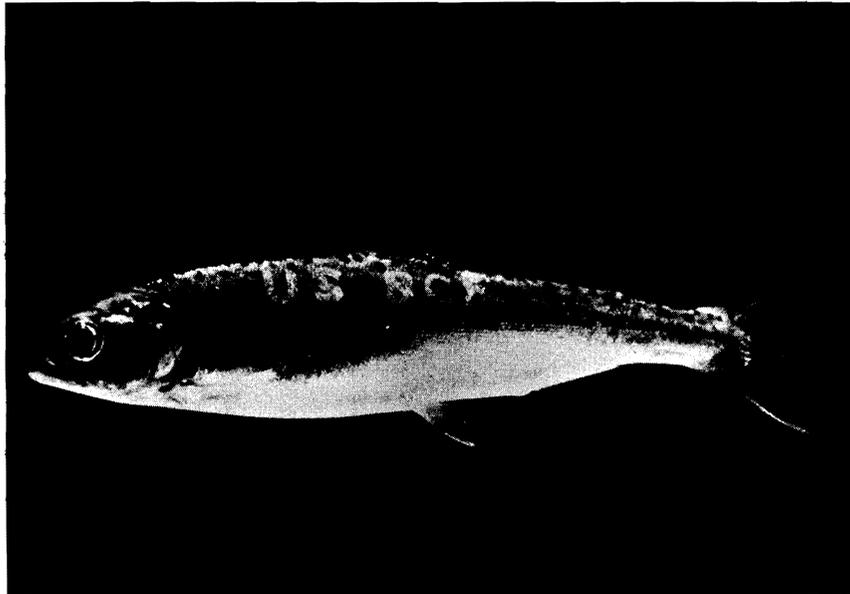


# **RESEARCH ON SALMON AT ICE HARBOR DAM**



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## RESEARCH ON SALMON AT ICE HARBOR DAM

In the past 10 years, several new dams have been and are being placed on the Columbia and Snake Rivers. Along with the benefits in the way of electric power, flood control, and water for irrigation, each dam has presented a problem to the migrant fish. The safe passage of both juvenile and adult salmon around the dams is often difficult to achieve.

The U.S. Army Corps of Engineers and the Bureau of Commercial Fisheries (BCF) have been conducting research to find

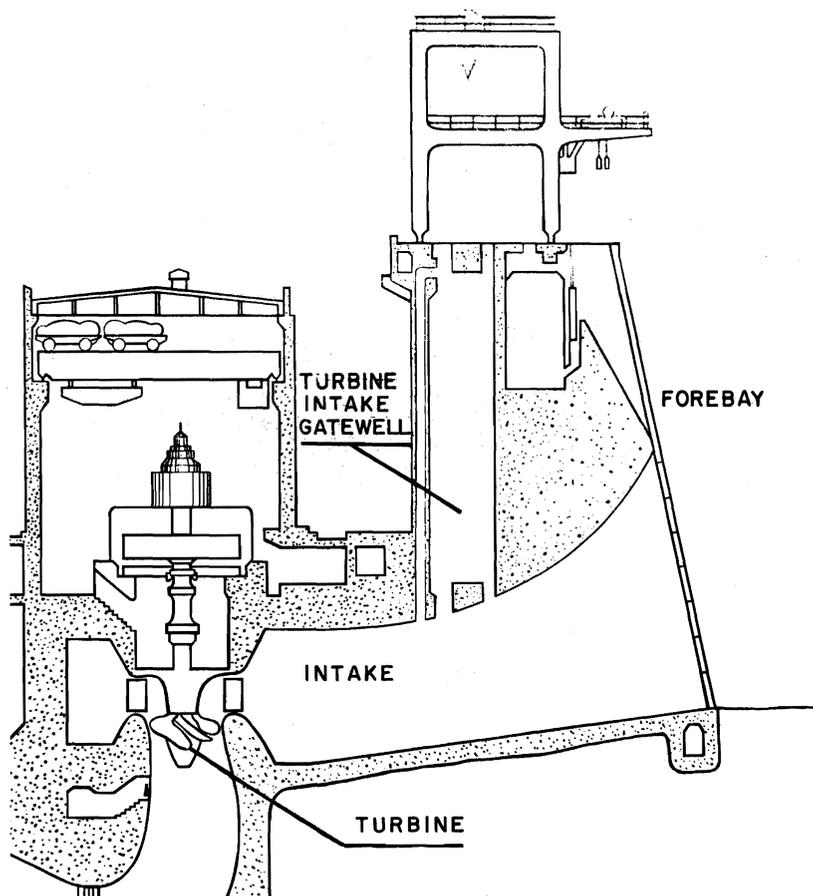


Figure 1.—Location of the turbine intake gatewells in a typical Columbia River dam.

ways of safely passing young fish through or around dams. At each dam there are gatewells (or open slots for gates) upstream of the turbine intake, where juvenile salmon and steelhead trout accumulate (fig. 1). Recent research has shown that an opening can be cut in the gatewell, allowing these fish to escape downstream without passing through the turbines. There are other devices capable of diverting as much as 80% of all fish entering the turbines. A full scale diversion screen will be tested this spring here at Ice Harbor Dam.

An additional possibility now becomes obvious. Why not place diversion screens in one of the upstream dams and transport the fish past several dams and reservoirs? Our studies to date indicate that this is feasible. Preliminary data show that the survival of juvenile salmon passing from Ice Harbor to The Dalles Dam can be increased 100% by collecting the fish at Ice Harbor and transporting them to a release site below John Day Dam (fig. 2).

The big unanswered question is: "Will fish transported as juveniles around these dams and reservoirs be able to find their way back to their parent stream?" The research now being conducted at Ice Harbor Dam is designed to determine just that. The

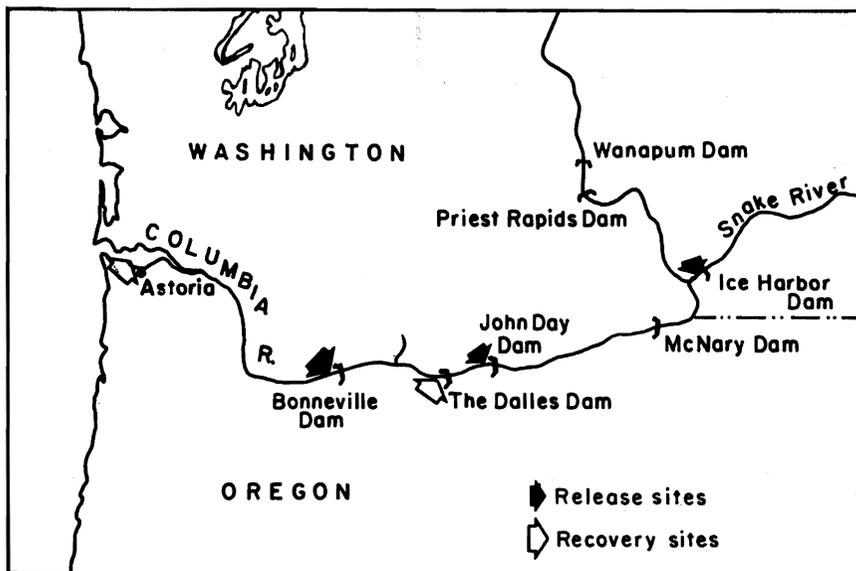


Figure 2.—Map of the Columbia River showing the release sites, dams, and recovery sites.

device in the south fishway is designed to automatically detect and separate adult salmon tagged with magnetized wire tags and a thermal brand (cover photo). These fish were tagged as juveniles and released at three locations: the forebay of Ice Harbor and downstream from John Day and Bonneville Dams (fig. 3).

Information received from tagged adult salmon returning to Ice Harbor Dam will enable fishery biologists to determine how transporting has affected the salmon's homing ability. If the information is favorable, a system of bypassing and transporting could be developed which would not only increase the yield of salmon to the commercial and sport fishermen, but also increase the number of fish returning to spawn.



*Figure 3.—A 5,000-gallon tank truck used by the BCF to transport juvenile salmon down the Columbia River. The truck carries about 4,000 lbs. of fish (400,000 fish, 2½ inches long).*

*Cover photo.—Juvenile salmon with a thermal brand. This method of marking salmon was perfected by BCF biologists and is now in wide use throughout the Pacific Northwest.*