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*Fish Passage Research*
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The Fish Passage Research Program is devoted to studying the Pacific salmon during its fresh-water life cycle, particularly the effect of the changing environment in the Columbia and Snake Rivers. Originally these salmon migrated up free-flowing streams to spawn. Now they encounter a series of low-head dams and impoundments, increasing water temperatures, pollutants, loss of spawning beds through inundation, impassable dams such as Grand Coulee, and lack of water caused by increasing irrigation demands. When the juveniles migrate to sea, they no longer are afforded the protection of high, rapidly-flowing turbid water from spring runoff. Instead, these waters are now controlled by the series of dams, which not only create areas of clear slack water for easier predation, but also result in an increased mortality rate of the young fish passing over the spillway or through the turbines. The condition now exists in the Columbia River and is planned for the Snake River.

The aim of this laboratory is to apply knowledge gained from studying changes in migration behavior in those rivers, such as the Columbia, where the environment has been altered, to future river developments. The present research is in cooperation with fishery agencies of Washington, Oregon, Idaho, and California.

Briefly, the program has the following objectives:

1. Effect of impoundments created by dams on fish migration (recruitment, survival, escapement, limnological effects, permanent residence in the impoundment, size, condition and age of fish);

2. collection of downstream migrants from streams and rivers (guiding fish away from areas of high mortality);

3. passage of migrant fish at dams (improving fish passage facilities, new techniques, energy studies, physical limitations of fish, and reducing injury and mortality in spillways and turbines);

4. adaptability of salmon to new environments created by dams (racial behavior and physiology, homing instinct, reaction to temperature and oxygen changes).

Facilities include the headquarters office located at the U. S. Naval Air Station, Seattle, Washington; Fisheries-Engineering Research Laboratory at Bonneville Dam (description in U. S. Fish and Wildlife circular 98); Fish Behavior Laboratory—2725 Montlake Blvd., Seattle (description in Special Scientific Report—Fisheries No. 271); Reservoir Studies, Washington Hotel, Weiser, Idaho; and numerous field stations. Facilities for visiting investigators can be made available at each of the field laboratories and they are, of course, welcome at the Seattle office.

Address the Director, Bureau of Commercial Fisheries Biological Laboratory, U. S. Naval Air Station, Building 67, Seattle 15, Washington.