**Philip H. Laumeyer**
and
**O. Eugene Maughan**
U.S. Fish and Wildlife Service
River Basin Studies
Spokane, Washington

# Preliminary Inventory of Fishes in Hangman Creek

## Introduction

Changes in land-use patterns have altered the species composition and abundance of fishes in Hangman (Latah) Creek; unfortunately, species changes are largely undocumented.

During the early 1800's, Hangman Creek was a clear stream, frequented by anadromous salmonids (Marion, 1952), but apparently the stream had been degraded by the turn of the century. A 1900 newspaper article (Anonymous) described this stream as follows: "Current is not swift . . . , waters are generally roily . . . , not a good water course for fish . . . , there are very few trout in the creek, one usually catches the common sucker and whitefish."

The present study objective was to make a current preliminary inventory of habitat, species composition, and species abundance. This survey will help in predicting the effects of possible water developments and serve as a basis for documenting long-term changes in fish populations.

## Study Area

Hangman Creek, Idaho and Washington, drains an area of 520 square miles south and southeast of Spokane, Washington (Fig. 1). This stream is a major tributary of the Spokane River. Creek elevations range from 1710 to 3520 feet (USGS, 1955). Annual precipitation varies from an average of 17 inches at the mouth to an average of 25 inches at the headwaters. Daily mean temperatures range from a low of 31° F in winter to a high of 66° F in the summer (National Weather Service, 1972).

Below 2200-feet elevation, Hangman Creek is predominantly underlain with geologically Recent Alluvium. Miocene and Pliocene deposits of the Columbia River Group predominate between elevations 2200 feet and 2500 feet, and Pleistocene Era Palouse Formation predominates above 2500 feet (Griggs, 1966; Griggs, in press).

The headwaters area supports a coniferous forest; however, the greatest area of the drainage is intensively farmed or grazed, resulting in a heavy silt load during runoff periods (Stude, 1971). Extensive housing and water-development projects are being considered (Huber, 1971).

## Methods

Between August 17 and August 28, 1971, an AC/DC backpack shocker and a six-foot minnow seine were used to collect 760 fish specimens from eight locations in Hangman Creek. Collections were made between 1860- and 2640-feet elevation (Fig. 1). Specimens were fixed in 10 percent formalin and stored in ethyl alcohol. The depository

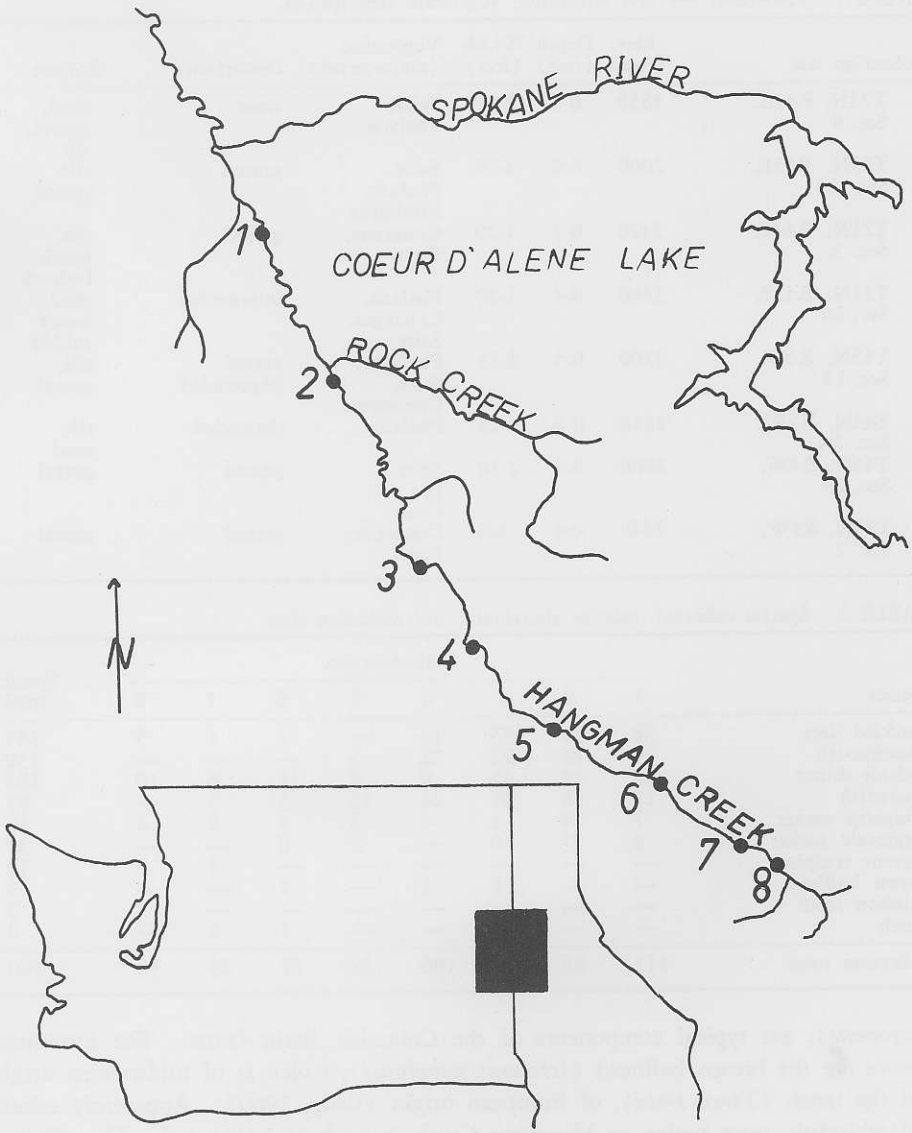


Figure 1. Location of collection sites, Hangman Creek, Washington and Idaho.

for specimens is Conner Museum, Washington State University, Pullman, Washington. Collection locations and associated streamside vegetation are described in Table 1.

**Results and Discussion**

The current fish fauna is characterized by eight native and two introduced species (Table 2). The native species, speckled dace (*Rhinichtys osculus*), chiselmouth (*Acrocheilus alutaceus*), redside shiner (*Richardsonius balteautus*), torrent sculpin (*Cottus rhotheus*), bridgelip sucker (*Catostomus columbianus*), largescale sucker (*Catostomus macrocheilus*), rainbow trout (*Salmo gairdneri*), and northern squawfish (*Ptychocheilus*

TABLE 1. Collection site and streamside vegetation descriptions.

| Collection site | Elev. (feet) | Depth (feet) | Width (feet) | Vegetation (major genera) | Disturbance | Bottom |
|---|---|---|---|---|---|---|
| 1. T24N, R43E, Sec. 8 | 1830 | 0-4 | 1-30 | Salix, Phalaris | none | sand, gravel, silt |
| 2. T23N, R43E, Sec. 14 | 2000 | 0-6 | 1-20 | Salix, Phalaris, Sambucus | grazed | silt, gravel |
| 3. T21N, R44E, Sec. 3 | 2420 | 0-7 | 1-20 | Crataegus, Pinus | grazed | silt, basalt bedrock |
| 4. T21N, R45E, Sec. 30 | 2480 | 0-4 | 1-20 | Phalaris, Crataegus, Salix | impounded | mud, basalt rubble |
| 5. T45N, R45E, Sec. 13 | 2500 | 0-5 | 8-15 | Phalaris, Salix, Crataegus | grazed impounded | silt, gravel |
| 6. T44N, R5W, Sec. 24 | 2550 | 0-4 | 6-15 | Phalaris | channeled | silt mud |
| 7. T44N, R4W, Sec. 28 | 2600 | 0-4 | 2-10 | Salix, Poa, Pinus | grazed | gravel |
| 8. T43N, R4W, Sec. 2 | 2640 | 0.4 | 1-6 | Crataegus, Pinus | grazed | gravel |

TABLE 2. Species collected, relative abundance, and collection sites.

| Species | Collection site 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Species total |
|---|---|---|---|---|---|---|---|---|---|
| Speckled dace | 38 | 33 | 245 | 16 | — | 7 | 1 | 5 | 345 |
| Chiselmouth | 36 | 18 | 22 | 52 | 2 | — | — | — | 130 |
| Redside shiner | 13 | 12 | 41 | 9 | 4 | 11 | 6 | 10 | 106 |
| Squawfish | 10 | 8 | 31 | 24 | 16 | 5 | 3 | — | 97 |
| Bridgelip sucker | 7 | 4 | 1 | 4 | 3 | 1 | 9 | 4 | 33 |
| Largescale sucker | 8 | 7 | 6 | — | 3 | 6 | — | — | 30 |
| Torrent sculpin | — | — | — | — | — | — | 3 | 9 | 12 |
| Brown bullhead | — | — | 1 | 1 | — | 1 | — | — | 3 |
| Rainbow trout | — | — | — | — | — | — | — | 2 | 2 |
| Tench | — | — | — | — | — | 1 | 1 | — | 2 |
| Collection total | 112 | 82 | 347 | 106 | 28 | 32 | 23 | 30 | 760 |

*oregonesis*), are typical components of the Columbia Basin fauna. The introduced species are the brown bullhead (*Ictalurus nebulosus*), which is of midwestern origin, and the tench (*Tinca tinca*), of European origin (Eddy, 1969). Apparently salmon and whitefish, once native to Hangman Creek, have been extirpated. The elimination of these species probably resulted from degradation of water quality and blockage of migration routes by dams. Incidental to the fish, freshwater clams (*Anodonta californiensis*), a spotted frog (*Rana pretiosa*), and a crayfish (*Pacifasticus klamathensis*) were collected at sites one, three, and eight, respectively. Previous to this report, two species of *Anadonta* had been reported from Hangman Creek (Henderson, 1929).

The fauna is relatively uniform throughout the drainage except for the region above intensive farming (2600 feet). Torrent sculpin and rainbow trout were found only above areas of intensive farming in what MacPhee (1966) refers to as the Sculpin-Trout Biotope. Spotted dace, bridgelip sucker, and northern squawfish taken above and in the farming zone are species with wide ecologic amplitude (Maughan, 1972). The other species collected are typical of low-lying streams.

**Acknowledgments**

The authors wish to thank the landholders along Hangman Creek for their cooperation. John Kerbow and Ronald Starkey of River Basin Studies assisted with the collecting. Washington State University, Department of Zoology, provided the fish shocker. Bruce Lang and R. D. Andrews of Eastern Washington State College verified species identification and reviewed the manuscript. Sue Hayashi typed the manuscript.

**Literature Cited**

Anonymous. 1900. Spokesman-Review, April 15, p. 16, col. 1. Spokane, Washington.

Eddy, S. 1969. The Fresh Water Fishes. 2nd ed. Wm. C. Brown Company Publishers. 286 pp.

Griggs, A. B. 1966. Reconnaissance Geologic Map of the West Half of the Spokane Quadrangle, Washington and Idaho. Miscellaneous Geologic Investigations, Map I-464. U.S. Geological Survey.

———. In press. Geologic Map of the Southeast Quarter of the Spokane 1° by 2° Quadrangle, Idaho. U.S. Geological Survey.

Henderson, J. 1929. Non-marine mollusca of Oregon and Washington. The University of Colorado Studies 17(2): 47-197.

Huber, V. R. 1971. The past and future meet at Hangman Creek. The Spokesman-Review Sunday Magazine, December 5. Spokane, Washington.

MacPhee, C. 1966. Influence of differential angling mortality and stream gradient on fish abundance in a trout-sculpin biotope. Trans. American Fish Soc. 95(4): 381-388.

Marion, E. 1952. Hangman Creek is as vivid in story as in name. Spokesman-Review. September 28. Spokane, Washington.

Maughan, O. E. 1972. Distribution and Geographic Variation of Sculpins in the Clearwater Basin. Ph.D. thesis, Washington State University, Pullman, Washington.

National Weather Service. 1972. Personal communication.

Stude, C. T. 1971. An Analysis of Water Quality in the Spokane River. M.S. thesis, Civil Engineering. University of Washington, Seattle, Washington.

*Received March 30, 1972.*
*Accepted for publication August 29, 1972.*