and other fish by-products. Fish skin, bone, vertebrae, and sturgeon scales entered into the manufacture of various products for use and for trade. All of these practices are seen in the Plateau.

13. As among Plateau groups, lamprey eels (*Entosphenus tridentatus*), sturgeon (*Acipenser transmontanus*), whitefish (*Prosopium williamsoni*), trout (*Salmo* sp.), chub (*Gila* sp.), squawfish (*Ptychocheilus oregonensis*), suckers (*Catostomus platyrhynchus*), crayfish (*Astacus* sp.), and mussels (*Mytilidae* sp.) were used as a supplement to the supplies of anadromous fish that included chinook (*Oncorhynchus tshawytscha*), sockeye (*Oncorhynchus nerka*), chum (*Oncorhynchus keta*), coho (*Oncorhynchus kisutch*), and steelhead (*Salmo gairdeneri*).

Fishing Sites, Their Productivity, and Seasons of Use

For purposes of ethnographic description I have grouped the Shoshone-Bannock fishing sites into three broad types: 1) fishing sites at natural falls, cascades, or rapids; 2) those constructed as weirs, traps (shades or blinds), and fish walls; and 3) the simple fishing site commonly utilized without any such distinguishing features. The first two types are by far the most productive sites and are capable of daily harvests in the hundreds and even thousands of fish during certain peak days of anadromous fish runs. The third type is not usually employed during peak days of the anadromous runs and is used in an opportunistic manner for both anadromous and especially resident species. Nets, spears, leisters, basketry traps (Fig. 13), and other techniques were employed in various combinations with the first two types to enhance their effectiveness. It is these types of fishing sites that produced the heavy catches described for the Lemhi-Salmon, Hagerman-Shoshone Falls, and Weiser-Boise Valley fisheries. Such sites typically required the cooperative labor of large numbers of tribal members in order to adequately exploit the passage of large runs during the seasons and times of their availability. Fishing would extend for as much as sixteen hours on certain days. These large congregations at main fisheries in the Hagerman-Shoshone Falls and Weiser-Boise Valley areas included not only most of the subgroups of the Shoshone-Bannock confederation, but also members of various other tribes such as the Nez Perce, Cayuse-Umatilla-Walla Walla, Northern Paiute, Flathead-Kootenai, and even Plains tribes such as the Eastern (Wind River) Shoshone-Bannock (Stewart 1991) and Crow, who traveled to these fisheries on a seasonal basis.

While various productivity estimates have been advanced, generally they are based on very crude methods or on very general estimates offered by historical observers (Hewes 1947, 1973; Rostlund 1952; Schalk 1977). In order to gain a more precise estimate of the productivity of Columbia River fishermen, I have analyzed the daily catch figures for 170 dipnet fishermen at Celilo Falls for the period 11 September-28 September 1945 (Walker 1992). The catch receipts for this analysis were provided by Joe Pinkham in 1956 and are rare in both their detail and accuracy for the period. I believe they represent a fairly typical picture of the range in productivity for individual dipnet fishermen for 1945 at Celilo Falls on the Columbia River. They also provide a useful standard against which to validate historical estimates for Lemhi Shoshone-Bannock dipnetters. For example, the range in daily averages, per fisherman, for total fish taken by dipnet at Celilo is from less than 50 pounds to more than 1200 pounds, with a daily average of about 219 pounds per fisherman (for days actually fished). Assuming that the fish taken average ca. 15 pounds in weight, the number of fish taken by individual dipnetters ranged from 3 or 4 to over 80 fish. Such variation can be accounted for by the time spent actually fishing, by skill, by technique, by location of the dipnet site, and by the specific day fished. The Celilo records describe 320 person/days fished in this period for a total dipnet catch of 70,470 pounds of fish or ca. 4700 fish.

To support similar estimates for the Shoshone-Bannock, the following ethnohistorical accounts containing evidence of the large, traditional fish catches in central and southern Idaho are presented.

1. Large fish catches are reported for the neighboring Nez Perce in the 1830s by Henry Spalding (Drury 1936:167) who counted ". . . 202 fish (one day) weighing from 10 - 25 pounds at some fifty fishing locations (weirs) on a peak fishing day."

2. Similar large catches were reported by Robert Stuart (1935:83), a member of the 1812 Astoria party, who described the fishery on the Boise River system, occupied by the Boise Valley Shoshone-Bannock, as:

> . . . the most renowned Fishing place in this Country [southern and central Idaho] It is consequently the resort of the majority of Snakes [Shoshone-Bannock), where immense numbers of Salmon are taken [Stuart 1935].
>
> . . . Mr. Miller says that he stopped here on his way down -- it was in the afternoon, by far the best spearing time, when to his utter astonishment the Indians in a few hours killed some thousands of fish . . . [Stuart 1935:110].

3. The first recorded historical observation of Lemhi Shoshone-Bannock fishing in this region comes from Lewis and Clark (Thwaites 1905:[3]6-7) who encountered a fishing party when they first entered what is now called the Lemhi Valley in August of 1805:

> This morning early Cap. C resumed his march; at the distance of five miles he arrived at some brush lodges of the Shoshones [Lemhi Shoshone-Bannock] inhabited by about seven families. here he halted and was very friendly received by these people, who gave himself and party as much boiled salmon as they could eat; they also gave him several dryed salmon and a considerable quantity of dryed choke-cherries. after smoking with them he visited their fish wear [weir] which was about 200 yds distant. he found the wear extended across four channels of the river which was here divided by three small islands. [Fig. 6] three of these channels were narrow and were stopped by means of trees fallen across, supported by which stakes of willow were driven down sufficiently near each other to prevent the salmon from passing. about the center of each a cylindric basket of eighteen or 20 feet in length terminating in a conic shape at it's lower extremity, formed of willows, was opposed to a small aperture in the wear with its mouth up stream to receive the fish. the main channel of the water was conducted to this basket, which was so narrow at it's lower extremity that the fish when once in could not turn itself about, and were taken out by untying the small ends of the longitudinal willows, which form the hull of the basket. the wear in the main channel was somewhat differently contrived. there were two distinct wears [weirs] formed of poles and willow sticks quite across the river, at no great distance from each other. each of these were furnished with two baskets; the one wear to take them ascending and the other in descending [sic]. in constructing these wears, poles were first tyed together in parcels of three near the smaller extremity; these were set on end, and spread in a triangular form at the base, in such manner, that two of the three poles ranged in the direction of the intended work, and the third down the stream. two ranges of horizontal poles were next lashed with willow bark and wythes to the ranging

> poles, and on these willow sticks were placed perpendicularly, reaching from the bottom of the river to about 3 or four feet above it's surface; and placed so near each other, as not to permit the passage of the fish, and even so thick in some parts, as with the help of gravel and stone to give a direction to the water which they fished. the baskets were the same in form of the others.

These observations by Lewis and Clark on the Lemhi River have been verified by Lemhi Shoshone-Bannock and other tribal informants. The original site, however, has been changed by flooding and stream realignment.

4. During 1832 Captain Bonneville spent the winter a few miles north of the site of the weir visited by Lewis and Clark in 1805 near Carmen Creek, north of present Salmon, Idaho. From this stay he also came to understand the central economic and subsistence importance of anadromous fish to the Lemhi Shoshone-Bannock. He drew a useful parallel (Irving 1977:50) between the reliance of Plains tribes on bison and the reliance of the Lemhi Shoshone-Bannock on salmon. The Lemhi Shoshone-Bannock, like certain of their Plateau neighbors such as the Nez Perce, were able to draw on both the bison and the salmon, especially after the adoption of the horse.

5. Observations of large fish catches were made by Nathaniel J. Wyeth (Young 1899:168-169) in southern Idaho as he led an exploring expedition along the Snake River in 1833. On 9 September he recorded the following:

> In [the] morning went to see the Indians catch salmon which is done by entangling them in their passage up the creek among dams [weirs] which they erect and spearing them they catch an immense quantity the operation commences in the morning at a signal given by their Chief . . . The main river here is full of salmon.

6. On 12 September Wyeth (Young 1899:169) again recorded his observation:

> The river is full of salmon and a plenty of them are to be had of the Indians which we meet every few miles fishing on the banks of the stream.

7. Craig and Hacker (1940:140) quote Washington Irving in describing Captain Bonneville as follows:

> The early traders report that Indians at Salmon Falls on the Snake River took several thousand salmon in one afternoon by means of spears [for additional details see *Idaho Yesterdays* (1974:14-23)].

8. Mr. George Gibbs (1877:194) reported:

> In some of the forks of the Columbia they [salmon] penetrate to the main chain of the Rocky Mountains; but in the others as the Snake, they are stopped by impassable barriers.

9. In the 12 October 1871 issue of *The Weekly Montanian*, Granville Stuart (1871) wrote that the Shoshone were reliant on mountain sheep and salmon:

> . . . of which latter there is an abundance in Salmon River [and that] the Sheep Eater band of Snakes and the Bannacks [Lemhi Shoshone-Bannock], who formerly ranged from the head almost to the mouth of the Snake River, are now, nearly all on a reservation at Lemhi near the forks of the Salmon River, and on another one near old Fort Hall on Snake River.

10. Several valuable historical notes have also been presented in Madsen (1979). For example, he cites a report in the Commissioner of Indian Affairs Annual Report submitted on 25 September 1872 by J. C. Rainsford (1872:437) to J. A. Viall, that contains the following description of Lemhi Shoshone-Bannock activities on the Lemhi River and Reservation:

> Sir: I have the honor to submit the following report of this agency:
>
> > In accordance with your instructions I paid diligent attention to the working of the farm and the employment of as many of these Indians there as possible. There were planted sixty-three acres as follows: wheat, 16 acres oats, 14 acres; barley, 6 acres; peas, 6 acres; potatoes, 20 acres; and 1 acre of vegetables. Everything looked well and promised an abundant yield until the beginning of June, when a visitation of grasshoppers destroyed a great portion of it. The vegetables were totally destroyed, and the grain to the extent of two-thirds the crop; the potatoes were injured by little and have yielded abundantly; over seven thousand pounds from the above amount of land.
> >
> > The salmon, though very abundant in the Columbia River during the past season, has been very scarce at the fishing places of these tribes, both on Salmon River and Lemhi Fork. This is, in my opinion, owing to the immense quantities caught, and the obstructions erected by the several fisheries on the Columbia River. *The failure is of vast importance to these people* [emphasis added] as they have been in the habit of curing and storing large quantities for winter use. The entire amount caught by them this season does not exceed 10,000 pounds; while in past years the amount has been from 30,000 to 60,000 pounds.

11. The importance of salmon to the Shoshone-Bannock of the Salmon River region is further illustrated by an event that took place in the town of present Salmon, Idaho, at the mouth of the Lemhi River in 1878. In the 19 August 1878 letter directed to the Commissioner of Indian Affairs, Washington, the Lemhi Shoshone-Bannock Indian Agent, John A. Wright (1880:160) wrote:

> I have the honor to inform you that since I have been here I have discovered that the settlers have built a large fish-trap across the Lemhi River at its mouth thus preventing any fish from ascending the Lemhi or its tributaries and effectually cutting off the supply of salmon to which the Indians on the reservation have been accustomed for years past. I am informed this act on the part of the settlers is a violation of law and, if my duties as Agent require any action, will thank you for instruction upon the subject.

12. In another letter dated 26 September 1878 to Joseph W. Houston, U. S. District Attorney, Boise City, Idaho, Agent Wright (1880:160) stated:

> I am directed by the Indian Bureau to inform you that the settlers at the mouth of the Lemhi River near Salmon City, have erected a very effective fish-trap across the mouth of said river thereby interfering with the fishing privileges of the Indians under my care. The Lemhi and several of its tributaries flow through this reservation [Lemhi Shoshone-Bannock Reservation] and many of the Salmon and Salmon-Trout which would otherwise run up the river are stopped at its mouth by this fish-trap. It will be necessary to apply some legal remedy and I am at your service for any information that may be deemed requisite by you

13. In the 6 November 1878 letter directed to the Commissioner of Indian Affairs, Agent Wright (1880:160) reported a continuation of the fish trap at the mouth of the Lemhi River that had been operated since 1862 by Mr. Thomas McGarvey; it was described as being so effective that it was a rare thing for any fish to be caught anywhere on the Lemhi River and its tributaries. Wright stated that:

> The Indians were so much exasperated at the loss of their fish in the summer of 1877 during the Nez Perce war [1877], that they threatened to tear out the trap, and fearing that McGarvey would shoot some of the Indians, and this cause a massacre of whites, should their threat be carried into execution, the settlers raised by contribution the sum of four hundred (400) dollars and paid the same to McGarvey that the trap might be opened and the fish permitted to ascend the river. The same difficulty arose during the summer of 1878 when the Indians threatened war on account of the scarcity of the necessities of life.

There follows a long description of the 60-foot-wide fish trap that was constructed of heavy logs and willow work that apparently provided a very good living for Thomas McGarvey. He is described in this account as catching fish in great abundance during certain seasons of the year after which they were dried, salted, and sold by the wagon load to the settlers. The salmon he caught were described as weighing between six and twenty pounds, with the salmon trout (steelhead) weighing five to ten pounds and the whitefish from two to six pounds.

14. In July 1879 letters to the Commissioner of Indian Affairs, Wright (1880:160) stated:

> I have the honor to inform you that in consequence of the fish-trap at Salmon City being washed away by a large freshet in the Lemhi River, the Indians are now catching an abundant supply of salmon fish and there is *no necessity for the issue of beef with the fish resource being plentiful* [emphasis added].

It is worth noting here that the annual catch of 60,000 pounds of fish taken by the Lemhi Shoshone-Bannock was solely from the Lemhi River and its tributaries. The much larger Salmon River system was among the most productive salmon spawning areas of the interior Northwest. It is now one of the few remaining spawning areas for wild stocks. As is known, however, this average annual catch diminished after 1850 but had also been subject to considerable annual variation before 1850 due to natural variations in conditions affecting fish spawning, growth, and survival. By 1870 the impact of commercial fishing in the lower and middle Columbia was beginning to be felt throughout the central Columbia River system (Hewes 1973). It must also be remembered that the decline in the Lemhi River fish runs referred to by the Agents of the Bureau of Indian Affairs may have also resulted from the environmental devastation of central Idaho by mining that began in earnest after 1860. Despite such reductions in the anadromous fish populations of the

> . . . of which latter there is an abundance in Salmon River [and that] the Sheep Eater band of Snakes and the Bannacks [Lemhi Shoshone-Bannock], who formerly ranged from the head almost to the mouth of the Snake River, are now, nearly all on a reservation at Lemhi near the forks of the Salmon River, and on another one near old Fort Hall on Snake River.

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Salmon River region and the Lemhi Shoshone-Bannock removal to Fort Hall in 1907, there is abundant evidence of continuing reliance of the Lemhi Shoshone-Bannock on salmon. At this time (1993) ceremonies are regularly performed by the Shoshone-Bannock to guarantee the annual return of the salmon and steelhead. They continue to fish throughout this large region, despite the endangered status of the salmon. Extensive habitat rehabilitation and hatchery programs are underway that are reestablishing runs decimated earlier by mining, logging, forest fires, irrigation, and overgrazing.

Stream Evaluation

Table 1 identifies rivers and streams in central and southern Idaho that were traditionally fished with varying degrees of success by the Lemhi Shoshone-Bannock and various neighboring groups. In some respects, the Salmon River and adjacent fisheries were traditionally superior to tribal fisheries of the Columbia Plateau (Fulton 1968:9-10, 15). Likewise, the big and small game-carrying capacity of this well-watered region also exceeds that of many areas of the Plateau to the north and of the Great Basin to the south or Plains to the east. Table 1 illustrates the diversity of fishing streams and aquatic habitats available in central and southern Idaho between the Snake River on the south and the Salmon River on the north.

Although there are many valuable fishing streams listed in Table 1, the principal Lemhi Shoshone-Bannock fisheries are found on the following streams (printed in boldface in Table 1): various points on the main stem of the Salmon River, the Lemhi River and its tributaries, Boulder Creek, Germania Creek, Herd Creek, Five Mile Creek, Fourth of July Creek, Horse Creek, Indian Creek, Iron Creek, Kitchen Creek, Trout Creek and its tributaries, the Little Salmon River and its tributaries, the Middle Fork Salmon River and its tributaries, Moose Creek, the Pahsimeroi River, Panther Creek, and the South Fork of the Salmon River, including especially Yankee Fork. Successful exploitation of the resident and non-resident fish species in these fisheries depended on extended travel and thorough knowledge of seasonal variations, including flow rates, water temperature, and other conditions.

There are ten ethnographically verified, traditional weir sites and falls/cascades sites in the Lemhi Shoshone-Bannock homeland. According to this stream evaluation and the methodology proposed above, they would each produce a typical maximum catch for ca. ten days, three times per year. I estimate their catch to have been 200 fish per day, per weir, averaging 15 pounds each; this yields a potential average, annual harvest of 900,000 pounds, or about 60,000 fish.

As part of comparative verification of these estimated catches, I have also derived estimates for two other major fisheries of the Shoshone-Bannock confederation based on similar weir counts. The Weiser-Boise Valley fisheries contained 25 traditional weir sites and falls/cascades sites. They would each produce a typical maximum catch for ca. ten days, three times per year. I estimate this to have been 200 fish per day, per weir, averaging 15 pounds each; this yields an average, potential annual catch of 2,250,000 pounds or about 150,000 fish. Likewise, the Hagerman-Shoshone Falls fisheries contained 15 traditional weir sites and falls/cascades sites. Assuming they each produced a typical maximum catch for ca. ten days, three times per year, their productivity would have resembled the Weiser-Boise Valley fisheries, thus yielding an average annual catch of 1,350,000 pounds or about 90,000 fish.

Table 1

Stream systems traditionally fished by tribes in central and southern Idaho (bounded on the north by the Salmon River and the south by the Snake River); (highest value = I; high value = II; moderate value = III; little or no value = IV); principal Lemhi Shoshone-Bannock fisheries in boldface

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
I. Snake River	I
A. Bennett Creek	III
B. Big Wood River	I/II/III
1. Baker Creek	I
2. Camas Creek	II
a. Corral Creek	II/III
b. Cow Creek	III
c. Rock Creek	II
d. Soldier Creek	II/III
e. Wild Horse Creek	II
f. Willow Creek	I
3. Deer Creek	I
4. East Fork - Big Wood River	II
5. Groy Creek	II
6. Lake Creek	II
7. Little Wood River	I/II/III
a. Fish Creek	II
b. Muldoon Creek	I
c. Silver Creek	I
8. North Fork - Big Wood River	I
9. Prairie Creek	I
10. Seamans Creek	II
11. Trail Creek	I
12. Quigley Creek	II
13. Warm Springs Creek	I
C. Boise River	I/II/III/IV
1. Cottonwood Creek	II

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
2. Dry Creek	III
3. Middle Fork Boise River	I
a. Roaring River	II
b. Queens River	II
c. Yuba River	II
4. Mores Creek	II
a. Grimes Creek	II
5. North Fork - Boise River	II
a. Bear River	II
b. Crooked River	II
c. Rabbit Creek	II
6. Sheep Creek	II
7. South Fork - Boise River	I
a. Big Smoke Creek	I
b. Fall Creek	II
c. Johnson Creek	I
(1) Ross Fork	II
d. Lime Creek	I
(1) North Fork Lime Creek	II
(2) South Fork Lime Creek	I
e. Little Smoky Creek	I
f. Rattlesnake Creek	III
g. Smith Creek	III
h. Trinity Creek	I
i. Willow Creek	I
8. Willow Creek	II
D. Clover Creek	III
E. Cold Springs	III
F. Deep Creek	I
G. Grand Creek	I
H. Indian Creek	II
I. King Hill Creek	I/III
J. Little Canyon Creek	I
K. Mid-Brownlee Creek	III

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
L. Sturgill Creek	III
M. Rock Creek	III
N. Wildhorse River	I
1. Bear Creek	II
2. Crooked Creek	II
O. Payette River	II
1. Big Willow Creek	IV
2. Harris Creek	III
3. Little Willow Creek	IV
4. North Fork - Payette River	III
a. Big Creek	III
5. Middle Fork - Payette River	II
a. Anderson Creek	III
b. Silver Creek	II
6. South Fork - Payette River	I
a. Canyon Creek	II
b. Clear Creek	II
c. Deadwood River	I
(1) Deer Creek	I
d. Warm Spring	II
7. Squaw Creek	III
a. Little Squaw Creek	III
b. Soldier Creek	III
P. **Salmon River**	
1. **Boulder Creek**	II
2. California Creek	I
3. Challis Creek	III
a. Darling Creek	III
b. Mills Creek	III

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
4. Chamberlain Creek	I
a. McCalla Creek	I
b. West Fork - Chamberlain Creek	I
c. Whimstick Creek	I
5. Great Basin Creek	II
6. Bayhorse Creek	II
7. Bargamin Creek	I
8. Big Mallard Creek	I
9. Carmen Creek	III
10. Cottonwood Creek	I
11. Crooked Creek	I
a. Lake Creek	I
12. Disappointment Creek	I
13. East Fork - Salmon River	I
a. Big Boulder Creek	II
b. **Germania Creek**	I/II
c. **Herd Creek**	I
(1) East Fork Herd Creek	I
(2) East Pass Creek	I/II
(3) Lake Creek	I
(4) West Fork Herd Creek	I
d. Little Boulder Creek	II
e. Road Creek	I
14. **Five Mile Creek**	I
15. **Fourth of July Creek**	I/II
16. Fourth of July Creek	II
17. French Creek	II
18. Garden Creek	III
19. Hat Creek	I
20. **Horse Creek**	I
a. West Horse Creek	I

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
21. Indian Creek	I
22. Iron Creek	I
23. Jenkins Creek	IV
24. Kitchen Creek	I
25. Lemhi River	I
a. Canyon Creek	II
b. Big Eightmile Creek	II
c. Big Timber Creek	II
d. Eightmile Creek	III
e. Hawley Creek	III
f. Hayden Creek	I
(1) Basin Creek	I
(2) Bear Valley Creek	I
g. Kenney Creek	III
h. Texas Creek	III
26. Little Mallard Creek	I
27. Little Salmon River	I/II
a. Little Boulder Creek	I
b. Hard Creek	I
c. Hazard Creek	I
28. Middle Fork - Salmon River	I
a. Bear Valley Creek	I
(1) Elk Creek	I
b. Camas Creek	I
(1) Silver Creek	I
(2) South Fork Creek	I
(3) West Fork Silver Creek	I
(4) Woodtick Creek	I
c. Elkhorn Creek	I
d. Goat Creek	I
e. Little Loon Creek	I
f. Loon Creek	I
(1) Cache Creek	I
(2) West Fork-Mayfield Creek	I
(3) Rock Creek	I
(4) Warm Spring Creek	I
g. Marble Creek	I
(1) Dynamite Creek	I
(2) Trail Creek	I
h. Marsh Creek	I
(1) Dynamite Creek	I

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
(2) **Trail Creek**	I
(3) **Beaver Creek**	I
(4) **Cape Horn Creek**	I
(5) **Knapp Creek**	I
i. **Big Creek**	I
j. **Papoose Creek**	I
k. **Pistol Creek**	I
(1) **Little Pistol Creek**	I
l. **Rapid River**	I
(1) **Float Creek**	I
m. **Roaring Creek**	I
n. **Soldier Creek**	I
o. **Sulphur Creek**	I
29. Morgan Creek	II
30. **Moose Creek**	II
31. North Fork Salmon	I
a. Hughes Creek	I
b. Owl Creek	I/II
32. **Pahsimeroi River**	II
a. Big Creek	II
b. Morgan Creek	III
c. Morse Creek	III
33. **Panther Creek**	II
a. Beaver Creek	II/III
b. Big Deer Creek	II
c. Blackbird Creek	II
d. Clear Creek	II
e. Deep Creek	II
f. Moyer Creek	II
g. Musgrove Creek	II
h. Naplas Creek	II/III
34. Pine Creek	I/II
35. Rapid River	I
a. West Fork - Rapid River	I
36. Rock Creek	II
a. Crave Creek	II
37. Sabe Creek	I
a. Hamilton Creek	I
38. Scott Creek	IV

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
39. Sheep Creek	I
40. (Upper) Slate Creek	I
41. (Lower) Slate Creek	III
42. **South Fork Salmon River**	I
a. Bear Creek	I
b. Blackmare Creek	I
c. Buckhorn Creek	I
(1) North Fork Buckhorn Creek	I
d. East Fork South Fork Salmon	I
(1) Johnson Creek	I/II
(a) Burntlog Creek	I
(b) Riordan Creek	I
(c) Sand Creek	I
(d) Trapper Creek	I
(2) Profile Creek	I
e. Elk Creek	I
(1) West Elk Creek	I
f. Fitsum Creek	I
(1) North Fork-Fitsum Creek	I
g. Secesh River	I
(1) Lake Creek	I
(2) Lick Creek	I
h. Sheep Creek	I
43. Squaw Creek	II
44. Thompson Creek	III
45. **Trout Creek**	I
46. Twelvemile Creek	II
47. Valley Creek	I
a. Trap Creek	I
48. (Upper) Warm Spring Creek	I/II
49. (Lower) Warm Springs Creek	I/II
50. Warren Creek	I
51. White Bird Creek	I
52. Wind River	I

RIVER/TRIBUTARY	STREAM CLASSIFICATION (STREAM VALUE AS A FISHERY FOR RESIDENT AND/OR ANADROMOUS SPECIES)
53. **Yankee Fork**	I
a. Cabin Creek Fork I	
(1) West Fork	I
Q. Weiser River	II/III
1. East Fork Weiser River	II
2. Hornet Creek	II
3. Keithly Creek	IV
4. Little Weiser River	II/III
5. Mann Creek	III/IV
6. Middle Fork	II
7. Pine Creek	II
a. East Pine Creek	II
8. West Fork - Weiser River	II
a. Lost Creek	II

These estimates fit well within the range of annual, per capita, Columbia River tribal catches proposed in recent historical estimates prepared by the Northwest Power Planning Council (1986:71). After taking into consideration calorie losses due to migration and waste, these estimates provide a Plateau-wide, annual, per capita average catch of 635 pounds. Unfortunately, the Council's report underestimates the annual, per capita catch for "Bannock, Northern Paiute, and Northern Shoshone," giving a figure of 179 pounds. The present study indicates that this figure should be raised to the Plateau-wide average of 635 pounds for the Shoshone-Bannock, and probably higher for the Lemhi Shoshone-Bannock. Similarly, higher figures should also be used for the Weiser-Boise Valley and for the Hagerman-Shoshone Falls subgroups of the larger Shoshone-Bannock confederation.

Conclusions

This study reviews prior efforts and methods used to estimate the historical reliance of the Lemhi Shoshone-Bannock and other Shoshone-Bannock groups on fish resources of the Snake and Salmon rivers. The deductive methods used in prior estimates are rejected in favor of a more empirical and comprehensive methodology. A distinguishing feature of this methodology is its reliance on direct historical and comparative observations. This includes direct observation of the productivity of traditional fishermen using traditional techniques, actual counts of fish harvests at weir and falls/cascades sites, surveys of contemporary hunters and fishermen, and extensive review of archaeological, ethnohistoric, and ethnographic sources of related information.

Linkages between the northern Great Basin and Plateau are hypothesized by both archaeologists and linguists. Earl Swanson (1970) has asserted that there are Plateau-Great Basin linkages along several north-south axes. This study of Lemhi Shoshone-Bannock fishing practices supports Swanson's argument for deep Plateau-Great Basin cultural linkages and also places this northernmost Ute-Aztecan group easily within the ethnographic picture typical for Salishan and Sahaptian fishing groups of the Plateau. Another obvious conclusion is that where Swanson favored north-south mountain ranges as linking axes, this study suggests strongly that the principal linking corridors are the river systems connecting the Plateau and Great Basin. It is therefore most probable that along *these* corridors cultural diffusion and parallel ecological adaption took place prehistorically and produced the ethnographic similarities between the Lemhi Shoshone-Bannock and Plateau groups. Future research into these linkages should consider the possibility that all cultural groupings of the Columbia River system possess a fundamental cultural core centered on a riparian ecology. As part of this additional research, high priority must be given to direct observation of fishing among contemporary tribes of the Northwest (Alaska Fish & Game 1989:14-15; Walker 1992). The convergent fishing techniques and practices of the Plateau and Great Basin evident in this study are an important beginning point. For example, Treide (1965) and others such as Hewes (1947) have suggested that fishing may produce predictable results in the social organization of tribes in western North America who occupy and exploit similar fishing environments. Other yet-to-be-fully explored cultural linkages between the Plateau and Great Basin are evident in art, mythology,[4] technology, and social organization. There appear to be quite similar religious practices regarding fishing throughout the Plateau and Great Basin. The presence of fish leaders (chiefs), fish shamans, and veneration of the rivers and falls in both areas have been verified ethnographically.

Finally, this study suggests that prior estimates of Lemhi Shoshone-Bannock reliance on fish have been too conservative. Such lower estimates reflect the Great Basin orientation of prior research and researchers, the effects of intertribal litigation, and conflict over reserved treaty rights. A fuller consideration of the cultural significance of

fish and fishing is needed for both ethnographic and archaeological interpretations of all Shoshone-Bannock subgroups. Preliminary analysis indicates that most of these groups fall within patterns typical of Salishan and Sahaptian groups of the Plateau.

Endnotes

[1]This ethnographic account of Lemhi Shoshone-Bannock fishing has been partly supported by the Bureau of Land Management. I wish to express my appreciation to the various officials and staff of the Idaho State Office of the Bureau of Land Management, Boise, Idaho, and the Salmon District Office, Salmon, Idaho. I remain indebted to the many tribal elders who have assisted me for more than three decades in the research necessary for this account from the following tribal groups: Northern Paiute, Cayuse-Umatilla-Walla Walla, Nez Perce, Flathead-Kootenai, Fort Hall Shoshone-Bannock, Eastern (Wind River) Shoshone-Bannock, and Crow.

[2]The observations I make here are not intended to affect the treaty-based, legal debates among tribes, states, and federal agencies concerning rights to use of the natural and other resources of central and southern Idaho and neighboring regions. Nevertheless, I wish to note that legal facts and research procedures must be distinguished from anthropological facts and research procedures. The findings of the courts in tribal treaty adjudication sometimes diverge substantially from established anthropological findings (Stewart 1973). A "spirit of advocacy" sometimes motivates anthropologists, historians, and other experts who are retained to assist tribes in litigation. The varying, contradictory tribal claims to reserved treaty and other rights in the Northwest have produced contradictory anthropological claims and findings that reflect a lengthy history of confusing legal with anthropological facts.

[3]The Lemhi Shoshone-Bannock are a composite of three formerly distinct groups, the Tukúdika, Aquídika, and Bannock. Especially the Bannock were responsible for the socio-economic and political integration that occurred among the Lemhi Shoshone-Bannock and related peoples of central and southern Idaho after the adoption of the horse in the late seventeenth century. Julian Steward (1955) and others have described how such transformations frequently occurred on the eastern and northern margins of the Great Basin and elsewhere in North America due to adoption of the horse. Ultimately, this process involved the socio-economic and political integration of all Shoshone-Bannock peoples in central and southern Idaho into a unified social system, which is discussed in a separate paper (Walker 1993:139-160, this issue).

[4]The Lemhi Shoshone-Bannock myth "Coyote Helps the Salmon," (Ray Crow 1986, pers. comm.) is a variant of the classical myth found among Plateau tribes describing Coyote's release of the salmon so that they might ascend the rivers and be available to other tribes.

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BUREAU OF LAND MANAGEMENT
Idaho State Office
3380 Americana Terrace
Boise, Idaho 83706

BLM-ID-PT-94-013-321A