- Forest Service, Region 10
Box 1631, Juneau, Alaska 99801

2620

Forest Supervisor, South Tongass N. F. March 20, 1964

M. B. Bruce, Assistant Regional Forester, By

Surveys, Studies and Plans (Habitat)

The report on Marguerite Creek by Eric Muench is excellent. Rangers Hays, Muench and the Ketchikan District should all be commended on this report; it is the result of initiative, and hard work, both in the field collection and office analysis of the data. This is exactly the type of analysis we need of habitat improvement sites to enable us to decide whether or not the improvement will be worthwhile from a cost benefit standpoint.

The analysis shows 237,000 square feet of good spawning gravel above the falls. Assuming we can effect a good seeding of pink salmon in the system above the falls, at 5 females per 100 square feet, the area will accommodate about 12,000 female pinks. Egg deposition at 1600 eggs per female will amount to 19,200,000 eggs. A 10 percent egg to fry survival will then produce 1,920,000 pink salmon fry. A 5 percent saltwater survival rate will bring a return of 96,000 adult pinks, 25,000 of which will be needed for escapement. This leaves 71,000 salmon to be harvested. At $.50 a piece harvest price will amount to about $35,000.

Ziemer's estimate for laddering the Marguerite Creek falls is $100,000. If we accept this estimate and if we attain full production for a ten year period, the benefit cost ratio is $\frac{350,000}{100,000}$, or 3.5.

Another thing to consider with regard to the Marguerite Creek project is the fact that most of the good spawning area is upstream from the lake (according to Muench, about 83 percent). This means pink salmon fry must leave the stream in the spring and go through the lake to get to saltwater.

Although we know of no definitive studies on this point, Sheridan believes that a large number of the pink fry might be lost to the predaceous cutthroat trout now resident in the lake. This could reduce the cost-benefit ratio substantially and lower the value of the project.

Sheridan feels that Marguerite Creek has good potential, but because of unknowns and the high initial cost, it may be better to complete other less expensive projects first and defer Marguerite Creek for future consideration. For example, a controlled headworks channel in Traitor's River will give 20,000 square feet of spawning area. Using the same method of calculation as outlined above for Marguerite Creek, 7 females per 100 square feet will give an egg deposition of 2,240,000 eggs. A 40 percent egg to fry survival will then yield 896,000 fry. A 5 percent

saltwater survival rate will yield a return of 44,800 adult pinks, 3,000 of which will be needed for escapement. This leaves 41,800 to be harvested. At $.50 a piece harvest price will amount to $20,900. If the construction of the controlled headworks channel can be done for $30,000, benefit cost ratio for a 10 year period is then $\frac{209,000}{30,000}$, or 6.97.

The report, figures, and maps have been copied and will be held here for reference. The originals are herewith returned. Again, this is a good piece of work. It is suggested that a similar survey of Dog Salmon Creek in Polk Inlet would be very helpful in determining the desirability of a habitat improvement project on that stream.

Enclosures

R. E. LOCKHART