

A REPORT ON THE HEAD TIDE, (JEWETT'S), AND KING'S MILL DAMS  
AND OTHER OBSTRUCTIONS ON THE SHEEPSCOT RIVER  
WITH RECOMMENDATIONS FOR  
PROVIDING FOR ADEQUATE PASSAGE OF SALMON AND OTHER FISH

by

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On May 19, 1951, the Atlantic Sea-Run Salmon Investigations' biologists, Floyd G. Bryant and James S. Fletcher, met with Robert Peary, Engineer of the Maine Department of Inland Fisheries and Game, and members of the Lincoln County Fish and Game Association's Salmon Restoration Committee, Messrs. J. White Nichols, Clarence Race and Dale Whitten, at Jewett's Dam at Head Tide on the Sheepscot River to consider needed improvements in fish passage at this and other obstructions in this river.

After considering the various possibilities for providing adequate passage at this dam, it was decided that the easiest and least expensive method would be to blow open a 25-foot wide section at the center of the dam and clear it to the low water level of the pool below. It is also believed that this method would provide the best passage for fish. Engineer Peary stated that after contacting explosive companies experienced in this type of work, they had estimated the cost of blowing and clearing a section of concrete 25 feet wide, 16 feet thick, and 10 to 12 feet high, at approximately \$400 to \$500; the cost to be slightly higher if reinforcements existed. (Mr. Peary later contacted the man who built the dam and was told that there was no reinforcing.) This estimate covered drilling, blasting, and secondary drilling and blasting to remove and clear any remaining large chunks of concrete.

The advantages of blowing out a central opening, as against the other two alternatives; (1) of lowering the left bank sluice floor, and blasting a deeper and more adequate fish approach from below, at an estimated cost of \$500 to \$600, or (2) constructing a two-pool fishway in the sluiceway with a proper approach at an estimated cost of \$1,000 to \$3,000, are as follows:

1. There is deep water below and above the center of the dam (over 8 feet deep below) that would provide by far the most satisfactory and direct approach for fish, and this deep water could also "absorb" more of the blasting debris and thereby decrease the secondary clearing cost.

2. There would be no costly ledge blasting, some necessarily underwater, for a jump pool and proper fish approach to the passage through the dam, as would be necessary if the left bank sluiceway were improved and used.

3. If the left bank sluiceway were used, the stream bank below the dam would have to be cut back to decrease the white water turmoil presently created during periods of high water. There would be less white water at a center fishway, which would greatly facilitate the approach of fish from below during high water periods.

4. A centrally located fish passage would tend to direct and concentrate approaching fish in the center of the stream, rather than along the bank, as it would if the left bank sluiceway was utilized. This would greatly reduce poaching losses.

5. Since during periods of high water levels both of the present lateral sluiceways would always be open to spill excess water, there would be an advantageous reduction in the pressure and velocity at an added center opening, which would enable fish to pass with greater ease and less delay during freshets. This is very important as the stream appears to be suitable for not only salmon, but alewives, shad and striped bass, and fish passage design should suit all of these species.

6. There would be less clogging with debris at a center opening than at the side sluiceways, where debris always wedges against the banks and collects in the side eddies, and maintenance and attendance would be reduced to a minimum.

Messrs. Bryant, Fletcher and Peary then attempted to contact the owner of the dam, Mr. Alan Jewett, at Head Tide. Mr. Jewett unfortunately was not at home, but his sister and co-owner, Mrs. Gregoir, and her husband were present and talked with us. They were asked if they would consider giving permission to open the dam for satisfactory fish passage if arrangements could be made by interested sportsmen to raise the funds necessary to defray the expense of this operation. They stated that they desired to sell the dam, although admittedly there was little likelihood of a sawmill ever being located there again. Incidentally, we believe the possibility of selling the dam for other purposes to be practically nil because of the lack of buildings at the site and the seasonal lack of water for power in recent years, as the stream flow at the dam is often less than 10 c.f.s. during the summer months.

Since Mr. Jewett had once considered going into the alewife business, we stressed the possibility of more rapidly establishing a good run of these fish if the dams were opened so that they could pass upstream unhindered to spawn. A run of several hundred alewives was at that very time being held up below the dam by the high velocity and drop at the sluiceway, and by debris blocking the sluiceway opening. We cited the example afforded by the

Town of Orland which sponsors an alewife business that netted the town a reported sum of \$6,000 this past year. We also stressed the probability that taxes levied on the dam would be reduced if the dam were opened, and therefore in effect non-functional.

Mr. Jewett's sister expressed a possible willingness to give permission to open the dam at no cost to the owners, but stated that Mr. Jewett had always handled business matters pertaining to the dam, and that he would have to be consulted before any definite promises could be made. Since Mr. Jewett is presently working in Augusta, Mr. Peary agreed to contact him and present the proposal to him during the following week. The biologists, and possibly Commissioner Bond, would then follow-up on the matter, if necessary.

The Lincoln County Fish and Game Club members present stated that they were quite sure that they could raise the necessary funds (\$500.) through donations by sportsmen and other interested persons if definite permission to do the work could be first obtained from the dam owner.

After permission had been secured and the necessary funds raised, Mr. Peary would immediately arrange to have the work done. This would also include a low-water concentration groove approximately 2 to 3 feet wide and 8 inches deep, in the center spillway.

The following information was obtained by the biologists and Mr. Peary after his initial contact with Mr. Jewett:

1. Although Mr. Jewett may not presently have any really great interest in reestablishing salmon in the Sheepscot River, he desires to do the best he can as regards the property and the neighborhood.

2. Mr. Jewett will be assured that a center portion of the dam will be removed only to the low water level of the pool below and that approximately 8 feet of the dam and the foundations below this dam will remain intact. Furthermore, a prospective buyer could utilize the center opening in the construction of a required fishway at some saving in cost of building the latter.

3. It is reported that the dam and mill property was assessed at \$2,400, presumably before the mill burned, and an informant stated that Mr. Jewett would probably sell the dam and adjacent property for approximately \$1,500.

4. Mr. Jewett still appears to have some interest in a possible alewife business on the Sheepscot. The State would probably put such a fishery up for bid, and Mr. Jewett would have an advantageous site for such a fishery. He should, therefore, be more willing to cooperate if such a fishery is developed.

In order to build up the present small run of alewives as rapidly as possible, it is recommended that the State regulate the taking of alewives in this river in such a manner as to provide for a major escapement to the spawning grounds until a run has been established of a magnitude sufficient

to support and maintain a maximum annual yield. Under proper regulation, an alewife run would not interfere with reestablishment of a run of salmon.

5. After two or three conferences with Mr. Jewett, Mr. Peary stated that the dam owner still desired to maintain a pool above the present dam if possible, and also preferred to have a fishway located at the right bank sluiceway. The biologists and the inspection group considered this to be the poorest location for a fishway, largely because a ledge projecting from the bank just below the dam created a small shallow pool, approximately eight feet wide and two feet deep, at the foot of the sluiceway, which makes a very poor approach for ascending fish.

A subsequent inspection of this lower stream section by U.S. Fish & Wildlife Service biologists C.E. Atkinson and J.E. Mason with the Salmon Investigation biologists, together with inspection of historic records and stream survey data secured in 1950 indicates that the stream has a possible potentiality for not only salmon and alewives, but also for shad and striped bass. Therefore, if a fishway is to be built, it should be so constructed that it can be used by all of these species. Shad require velocities of not over 5 feet per second, and jumps of not over 8 to 10 inches, and it was recommended to the engineer that the fish-way meet these requirements. To do so, a fishway at the right bank sluiceway would require the construction of many more pools than would any of the other plans considered, as it must successfully pass fish without delay from tailwater level below the dam to pool level above the dam, a distance of approximately 10 feet. Furthermore, since the lower entrance to the fishway must be as close to the dam as possible, it will be necessary to curve or reverse the fishway to gain the desired rise, although a direct, straight run fishway is much preferred. The cost of building even a wooden fishway meeting the above requirements will probably be between \$1,000 and \$3,000. Annual maintenance costs and the constant adjustments necessary to meet the changing stream flows make such a fishway more costly and less satisfactory than the simple direct passage recommended by the biologists.

However since Mr. Jewett has requested plans for a fishway at this site, Mr. Peary will furnish him with them. Then, if the fishway is not built before the 1952 season when the first possible returns from the Atlantic sea-run salmon plantings could occur, the State should proceed to provide the desired fishway in accordance with provisions of the law. It is hoped that if Mr. Jewett finds it impossible to finance and construct the right bank fishway before that time, he will give permission to proceed with the recommended central fish passageway, and will receive financial aid from the interested sports groups.

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The group then moved on to Whitefield where fish passage improvement possibilities at the unused King's Mill Dam were considered.

Although one of the most direct approaches to the dam from the shallow pool below the mill and ledges would be via the passage under the mill, this route was considered the least desirable for the following reasons:

1. It is reported that the local residents and owners of the dam and mill hope that a new industry may be located in the mill. Therefore, in order to prevent any further deterioration of the mill and its foundation, they desire to keep the water passage under the mill blocked as completely as possible. The old mill is fairly small, has no doors or windows, and the floor is sagging. The concrete dam is leaking in several places and although it could easily be repaired, the whole does not appear very enticing for prospective buyers.

2. There is a drop of 5 feet at the upper end of the mill that is now largely blocked by plank stop-logs and debris, and that might require construction of a fishway. Neither the owners nor other interested parties are reputed to have funds to finance such construction.

3. Debris always collects in the 77-foot raceway leading to the mill and would require greater effort and cost of removal than would be the case at other potential fish passage channels.

4. Repairs to the deteriorating concrete dam would be constantly necessary if this passage was used for fish. There are two or three bad leaks that are now considerably larger than when first viewed by the survey party last summer.

The present small channel running from the right bank spillway of the dam and over the ledge to the pool below appears to offer the easiest and least costly possibility for improvement. Further, since most of the needed improvements would be on natural ledge rock, the work could be done without delay by the Salmon Commission at a small cost of probably less than \$200. It was agreed and recommended that:

1. A satisfactory wider and deeper jump pool be constructed by blasting ledge rock at the foot of the right bank sluiceway. The water now drops into a narrow 2-foot deep hole that should be widened and lengthened to at least six or eight feet and deepened to at least 4 feet. With permission of the owners, the bottom of the 8-foot long sluiceway can then be lowered to secure a greater flow during low water periods and to decrease the present jump height of about 2 feet. This would greatly facilitate the upstream passage of alewives as well as salmon.

2. At two or three places along this channel the water is spread thinly over ledge rock, and minor blasting should be done to concentrate the flow during low-water periods in a more definite and deeper channel.

3. At approximately half way down this channel over the ledges, there is a split, apron-like drop of approximately 3 feet in a 3-foot long section. This drop should be smoothed and improved by blasting a 3-foot wide, concentrated spill channel, and at the same time decrease the drop.

4. Leaks on the face of the dam should be plugged, the debris should be cleared at the head of the mill, and the stop-logs should be refitted and tightened to stop the leakage down this channel and lessen the attraction to fish.

It was agreed and recommended that all contacts and work necessary to complete desired fish passage improvements at the Head Tide and King's Mill Dams be done immediately so that fish passage during the summer and fall low-water periods will not be hindered. Completion of this work should enable fish to readily ascend the Sheepscot River to the Coopers Hill Dam. If the new fishway that was constructed there by the State in 1950 is kept in constant and satisfactory operation, the fish should be able to ascend the remainder of the Sheepscot River with but one other possible hindrance, namely the shallow channel section in the big meadow above Somerville. Mr. Peary agreed that he could arrange to blow a small channel through this marshy area with explosives provided by the Salmon Commission, if the proposed fish passages at the lower two dams are provided. It may then be necessary to live-trap and remove the beaver now damming the stream further up in this meadow and open the dams, if the new channel drainage does not cause a new drainage opening to form in the flooded area adjacent to the two present beaver dams.

July, 1951.