



Upper Missouri Reservoir Perch

April 18, 2001

TO: Governor's Office, Todd O'Hair, Room 204, State Capitol, P.O. 200801, Helena, MT 59620-0801
Environmental Quality Council, Capitol Building, Room 106, P.O. Box 201704, Helena, MT 59620
Dept. Environmental Quality, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901
Montana Fish, Wildlife & Parks
Director's Office
Fisheries Division
Wildlife Division
Enforcement Division
Legal Unit
FWP Commissioners
MT Historical Society, State Historic Preservation Office, P.O. Box 201202 Helena, MT 59620-1202
MT State Parks Association, P.O. Box 699, Billings, MT 59103
MT State Library, 1515 E. Sixth Ave., P.O. Box 201800, Helena, MT 59620
Senator Duane Grimes, #4 Hole in the Wall Rd, Clancy, MT, 59634
Representative Dave Lewis, 5871 Collins Dr. Helena, MT 59602
James Jensen, Montana Environmental Information Center, P.O. Box 1184, Helena, MT 59624
Janet Ellis, Montana Audubon Council, P.O. Box 595, Helena, MT 59624
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Jerry DiMarco, P.O. Box 1571, Bozeman, MT 59771
David Payne, Missouri River TU, 4620 Liberty, Helena, MT 59601
Jack Sautter, Broadwater Stream & Lake Comm., 41 River Rd., Townsend, MT, 59644
John Wilson, Trout Unlimited, 405 Monroe, Helena, MT 59601
Virgil Binkley, Broadwater Rod and Gun, PO Box 641, Townsend, MT 59644
Tom Sather, Headwaters Fish & Game Association, PO Box 1941, Bozeman, MT 59771-1941
Don Drake, Jefferson Valley Sportsmen, Box 6, Whitehall, MT 59759
Vince Fischer, Skyline Sportsmen's Club, PO Box 173, Butte, MT 59703
Tony Garibaldi, Manhattan Wildlife Assoc., 107 Commercial Dr., Bozeman, MT 59715
Randy Newburg, Headwater Sportsmen's Assoc., 306 East Granite Ave., Bozeman, MT 59718
Prickly Pear Sportsmen's Assoc., c/o Fred Easy, PO Box 48, East Helena MT 59635-0048
Walleyes Unlimited, Helena Chapter, PO Box 5791, Helena, MT 59604
Walleyes Unlimited, Gallatin Valley Chapter, c/o Jerry Witmer, 2270 Shatto Dr., Belgrade, MT 5971
Walleyes Unlimited, Great Falls, c/o Ed Gierke, 110 So. Virginia St., Conrad, MT 59425
Montana Wildlife Federation, P.O. Box 1175, Helena, MT 59624
Perry Backus, 65 Redtail, Dillon, MT 59725
Wayne Hurst, P.O. Box 728, Libby, MT 59923
Glen Hockett, 745 Doane Road, Bozeman, MT 59715
Lewis and Clark County Commissioners, 316 No. Park Ave., Helena, MT 59601
Broadwater County Commissioners, County Courthouse, Townsend, MT 59644

Ladies and Gentlemen:

On April 10, 2001, we issued a notice of decision regarding perch habitat projects on Canyon Ferry and Hauser Lakes. These projects consisted of putting Christmas trees into the water at various sites on these reservoirs to enhance perch spawning habitat.

On April 13, we received a late comment inquiring whether we had addressed issues revolving around fire retardant and flocking applied to trees that were to be placed into the water. These issues had not been considered in the original EA. We decided at that point that the issues merited investigation so we put the projects on hold until we had been able to review these issues.

Attached, please find a supplement to the original EA which addresses issues of fire retardant and flocking in relation to potential water quality impacts. After researching these issues, it is my belief that although some retardant and flocking may be found on a small percentage of trees (less than 2%) it poses no significant risk to water quality in the reservoirs. As a precaution, however, we will monitor the areas where trees are located so ensure that problem levels of ammonia do not develop from those trees that were treated.

If you have questions or wish to discuss this supplement further, please don't hesitate to contact me at the Helena Area office, 444-4720.

Sincerely,

A handwritten signature in black ink that reads "Michael Korn". The signature is written in a cursive style with a long horizontal line extending to the right.

Michael Korn
Helena Area Coordinator

**UPPER MISSOURI RESERVOIR PERCH SPAWNING HABITAT PROJECT
SUPPLEMENT TO ORIGINAL NOTICE OF DECISION
APRIL 18, 2001**

Background

On April 10, 2001, Montana Fish, Wildlife & Parks issued a decision to proceed on perch spawning habitat enhancement projects on Canyon Ferry and Hauser Reservoirs. The project involved the placing of a number of Christmas trees in various sites in the lakes as a means of providing additional spawning habitat for perch.

On April 13, seven days following the close of the comment period, we received comments raising questions about the effects of flame retardant that may have been applied to Christmas trees that were going to be placed in the lakes. Additionally, the issue of artificial snow or flocking and its potential effect on aquatic life and water quality was raised. The department decided that the issues merited review and so FWP suspended further work on the projects until review of those issues could be completed.

Potential Effects of flame-retardant and Flocking applied to Christmas Trees on Aquatic life in Hauser and Canyon Ferry Reservoirs

Flocked trees were not being used in Canyon Ferry and those flocked trees that had originally been put into bundles destined for Hauser (approximately 10) have been removed. In the future flocked trees will not be accepted for use in this project.

The department contacted numerous Christmas Tree plantations in the state to determine the extent of the use of flame retardant on Christmas trees they produce. Retailers generally handle the application of retardant and all the producers contacted agreed that such applications are limited to less than 2% of all trees that are sold. Fire retardant is required for trees that are to be displayed in commercial businesses due to insurance considerations. At the same time, the practice of using natural trees at stores has declined as more and more are opting to use artificial trees.

Staff surveyed local hardware stores for retardant and was unable to find any currently in stock, as it is a seasonal item. Those stores contacted indicated that they usually sold only a few containers during the Christmas season. Retardant brand names were solicited from plantation owners who offered two of the most popular brands, *Christmas Tree Flame-Retardant* and *Ever Green Christmas Tree Flame-Retardant*. The manufacturers of these tree flame-retardants were then consulted.

Material Safety Data Sheets for these products list one chemical for each product that are hazardous: ammonium hydroxide and phosphoric acid. Once in the water, these chemicals should dissociate to nitrate, ammonia, and phosphate. At this point, they become nutrients and will potentially cause enrichment of lake waters and contribute to algae growth. The quantity of these nutrients that might enter the two reservoirs was calculated as follows:

- 1) Percent of trees treated with flame retardant (2%). 1% assumed to be treated with Christmas Tree Flame retardant and 1% with Ever Green Flame Retardant
- 2) Six trees are assumed to be treated with each gallon of the formulated product.

3) For each tree sprayed, the spray will include 18 grams of nitrogen and 2.1 grams of phosphorus.

4) Assuming 1500 trees are used in Hauser and 3000 trees are used in Canyon Ferry, then 15 trees will be treated with each brand flame retardant on Hauser and 30 trees treated with each brand on Canyon Ferry.

5) For Hauser: 15 trees x 18 g N = 270 g N; 15 trees x 2.1 g P = 31.5 g P.

6) For Canyon Ferry: 30 trees x 18 g N = 540 g N; 30 trees x 2.1 g P = 63 g P.

When these values are compared to the nutrient loading that comes from the Missouri River, the addition of N to Hauser constitutes 270 g N in retardant/1,365,900,000 g N input from river = 0.00000019% nitrogen as a percent of total; for phosphorus, the loading is 31.5 g from retardant/206,846,000 g input from river = 0.000000152 % of total. For Canyon Ferry Reservoir, these calculations are as follows: 540 g N in retardant/1,457,000,000g N in input from river = 0.000000371% of total; for phosphorus, the loading is 63 g P from retardant/242,000,000 g P input from river = 0.00000026% of total. These percentages are considered to be so low that their impact on algae standing crop or oxygen depletion would be unmeasurable and therefore insignificant.

These estimates of nutrient loading are undoubtedly extremely liberal because the Christmas trees that go into the water will certainly have a small portion of the formulation that was actually applied. This is due to 1) much of the fire retardant will have already washed off in the 3.5 months since Christmas that the trees have been sitting at the landfill; 2) much of the retardant that was originally sprayed probably did not actually cling to the tree; and 3) the trees will have lost many of their needles between the time of application and when they are placed in the lakes.

Toxicity of Formulations

Although the toxicity of these formulations of flame retardants to aquatic life are not known, it can be assumed that they probably have similar toxicities to retardants used for forest fires. To make a calculation of the possible effects, we assume that trees are treated with an average of 696 g of formulation. Since the tests on the toxicity of forest fire retardants are based on 96-hour tests, we will assume that the fire retardant on the Christmas trees comes off the trees at a steady rate (7.25 g/hour) over 96 hours. We also assume that the water exchange rate around a six-foot tall Christmas tree is once per day. Therefore, the maximum concentration that would build up around a submerged Christmas tree would be about half of the 24 hour buildup, or 7.25 g x 12 hours = 87 g. The volume of water surrounding a 6-foot tall tree would be 6626 liters, so the concentration of fire retardant would be 13 mg/L. The lowest 96-hour LC50 value for an aquatic organism that I found for four different brands of forest fire retardant was 40 mg/L for scuds, although the lowest value for swim-up rainbow trout fry was 94 mg/L**. Therefore, under the scenario where a tree was sprayed and then immediately placed in the water, we could expect some minor mortality of both species of animals if the organism stayed entirely within the cylinder of water surrounding the Christmas tree for 96 hours. On Hauser, there would be perhaps 30 trees where conditions are toxic, and in Canyon Ferry perhaps 60 trees.

***Chemical Forest Fire Retardants: Acute Toxicity to Five Freshwater Fishes and a Scud. W. Waynon Johnson and H.O. Sanders. U.S. Fish and Wildlife Service. Columbia, Missouri. 7 pp.*

In actuality, we believe this is probably not a realistic estimate of toxicity, because as mentioned previously, the Christmas trees that go into the water will likely contain only a small, residual portion of the formulation that was actually applied. This is because the estimate of the amount of retardant that originally clung to the trees was overestimated, and because much of the fire retardant will have already washed or fallen off. An additional consideration is that the trees will have lost many of their needles between the time of application and when they are placed in the lakes.

Another conservative assumption made in the evaluation of toxicity is that the exchange rate of water through submerged Christmas trees was only once per day. In reality, the exchange rate may be much higher, especially if there is any wind, which is typical this time of year. When all of these conservative assumptions are taken into account, we believe that actual concentrations that the fish will be exposed to will be many times lower than the 13 mg/L calculated above. Therefore, we anticipate that there will be no effect on fish or fish eggs that come in contact with the sprayed trees that are about to be placed in Hauser and Canyon Ferry reservoirs.

Conclusion

Probably no more than 2% of Christmas trees used for these projects have been treated with flame retardant. Given the low number of trees that expected to have been treated, combined with the fact that these trees have been sitting outside since after Christmas losing much of the retardant every time it rains or snows, we anticipate minor, at most, potential for tree retardant to pose any problems for aquatic life or water quality. However, as a safeguard, FWP staff will monitor the areas where trees have been placed and regularly take water samples to assure that ammonia levels are not showing significant increase due to the presence of the trees.

It is my conclusion that these findings do not affect the original decision and therefore this project will be reinitiated immediately with ammonia level monitoring at selected sites where trees are located.



Michael Korn
Helena Area Coordinator
April 18, 2001