ORAL HISTORY INTERVIEW
THURSTON DOTSON
MAY 2016

INTERVIEWS CONDUCTED FOR
FISHERIES DIVISION
MONTANA FISH, WILDLIFE AND PARKS
HELENA MONTANA

INTERVIEWS CONDUCTED BY MARGIE PETERSON

INTERVIEWER: This is Margie Peterson. We are beginning the Oral History Project for Fisheries. I am a Certified Oral Historian and will be recording and transcribing the interviews. Today is Friday, April 29, 2016. We are meeting at Helena Headquarters with Thurston Dotson who was the Hatchery Bureau Chief for Fisheries from 1986 to 1998, September 5, 1986 to the last day of March 1998. Prior to that he had other jobs in Fisheries, having begun permanent employment in 1971. All right, Thurston, I think we'll go through some of your biographical information to get your background before you go through your hatchery career. Let's start with where you were born, the date you were born and the schools you attended.

DOTSON: I was born February 8, 1936. The address on the birth certificate is Leck, Virginia. But I was actually born in a one room cabin on the end of Rough Ridge in Dickenson County, Virginia. I grew up in Dickenson County, Virginia, on a hillside farm which I characterize as one plot of ground located in rural rugged southern Appalachia. I attended Darwin School in Darwin, Virginia, grades 1 through 7. I went to Dickenson Memorial High School in Clintonwood, Virginia, from grades 8 to 11. Dickenson Memorial High School was a school that was built in memory of the World War I veterans. It outgrew its function and a new school was built and named Clintwood High School. I went there in my 12th year of school -- the last year of high school. We just moved across the lawn to the new building. I attended the University of Montana in Missoula and got my degree in Wildlife Biology, Aquatic Option. And I worked for about eight months for the Corps of Engineers in Libby after graduation on the pre-impoundment

study of the Kootenai River. That was a limited employment of eight months and I returned to school for one year of post-graduate work and when I completed that year I got a call from Art Whitney and he offered me a job in the hatchery system, which I took. I began that in June 1971. During the summer of 1970, I worked for three months for Joe Huston as a summer temp.

INTERVIEWER: And what was your job title offered by Art Whitney?
DOTSON: It was Fish Health Inspector/Fish Culturist. I was the second person who was a trained biologist in the Hatchery system and that's how it started. My duties were to inspect all the domestic and wild broodstock which we took eggs from to ensure they were disease free.

INTERVIEWER: So you actually did start with the department then. Did you go anywhere else and come back?
DOTSON: No. Prior to that I did have military service. I spent eight years, six months in the US Air Force. Joined in June 1955 and served until December 1963. My rank was Airman First Class. I had basic training at Sampson Air Force Base, New York. Then Tech School at Lowery Air Force Base in Denver, Colorado. And then after tech school, I served 18 months on Guam. A year at MacDill Air Force Base, Tampa, Florida. And after that three year tour at Aviano Air Force Base in Italy which was about 40 miles north of Venice. And two years at Glasgow Air Force Base. I was discharged in December 1963. I intended to make the Air Force a career but I contacted some allergy problems with the compound we were using and I could no longer function in that job. So I decided to leave the Air Force. The opportunities in the Air Force with that condition were really limited.

INTERVIEWER: Lucky for the department that you did that.
DOTSON: The Glasgow Air Force Base is where I learned to love Montana. If you can learn to love Montana in Glasgow, you can live anywhere.

INTERVIEWER: Absolutely!
DOTSON: There's a story I can tell, I don't know if it would be appropriate here.

INTERVIEWER: Absolutely. All the stories are great. That's what we want.

DOTSON: When I was traveling to Glasgow they advised us not to bring family until we secured housing. I went ahead on a Greyhound Bus and crossed Montana border about midnight in a raging blizzard on January 2, 1962. And the bus dropped me off in Culbertson and I walked the streets of Culbertson for about four hours and I was getting ready to knock on doors when finally the bus station opened up. (Laughing) About four or five months later, I brought my family to Glasgow. Both my kids grew up knowing Montana as their home and when I was discharged I worked at the Glasgow Courier as a printer pressman for a couple of years. They upgraded their equipment and my job was eliminated. I went to Lewistown and worked on the Lewistown News Argus as a pressman for a year and in the meantime Congress passed a new GI bill for military heroes in the Cold War. I went back to school and got my degree and this brought us up to date to June 1971 when I accepted a permanent position with the department.

INTERVIEWER: That's great, that must have been a good time, especially with a young family.
DOTSON: We enjoyed it very much.

INTERVIEWER: So that brings us to your wife's name.
DOTSON: Betty Lioutza Dotson.

INTERVIEWER: And your children?
DOTSON: Mark Jeffrey, born September 27, 1958. David Lee, born April 19, 1960. That was in the Army hospital when we were in Italy, Aviano Air Force Base. Aviano was just an outpost and there were no permanent medical facilities or clinics. So any serious medical issues we went to a U.S. Army facility about 60 miles away. So we drove the roads about two o'clock in the morning when he was born.

INTERVIEWER: Oh my goodness. And did you get married there?
DOTSON: No, we married when I returned from Guam. I knew Betty since high school and she was my date for our senior year high school prom. In Virginia. We got married in December 1957 and then Mark was born in 1958.

INTERVIEWER: And what are your parents' names?

DOTSON: My Dad was Welford and my Mom was Alma Adkins Dotson.

INTERVIEWER: Okay. Do you want to list your brothers and sisters?
DOTSON: If it's important, Mark, he went to school and is now living in Russia, married to a Russian lady and is a missionary. David is deceased, he was in an auto accident his senior year in high school. His friend and he were out after a basketball game in a hot car and the young man couldn't manage and didn't make a curve. My siblings were Jewel, born 1932, deceased, just shortly after birth. Dallas, born in 1934, he is deceased. He succumbed to spinal meningitis in 1944. Then me in 1936. My brother, Billy Wayne was born in 1938, he's deceased. My brother Evans was born in 1940. And Hassel in 1945. Linda born in 1947. June born in 1949. And Betty Jo born in 1953.

INTERVIEWER: You come from a big family.
DOTSON: Yes, they needed farm hands. Hillside farm. There was no machinery and they needed all the hands.

INTERVIEWER: Are there a few short stories you'd like to share with us about growing up with a large family. That you want to share and have written down?
DOTSON: We lived in an area that was very poor, was subsistence farming. We raised ninety percent of our own food and butchered our own animals. Our work was centered around hoeing corn, cutting hay, raking hay, stacking with a pitch fork. Stacked in a particular way too, it went around a pole and it was high so the water drained off. I don't know if you've ever seen those.

INTERVIEWER: No, I've only heard about it. (Laughing)
DOTSON: I'm a master at it.

INTERVIEWER: Oh, I'm sure you are, sure you are. Looks like you were one of the oldest too.
DOTSON: We had a jersey cow that we got milk from, and only my Dad and I could milk her. None of the others kids could do anything with her. So when I joined the Air Force they had to sell her as my Dad was working the coal mines and no one else could do anything with her. And

the other was our mule. Beautiful palomino mule, there again my Dad and I were the only ones who could do anything with him. So when I left, Dad had to get rid of him, sell him.

INTERVIEWER: So do you think your brothers and sisters weren't that interested or didn't want to learn the routine.
DOTSON: Well, I was considerably older than they were and it just fell to me to take the lead. And that's naturally what happened. So I got acquainted with that cow and we had a good relationship, after we got to know each other, so she absolutely would not let anyone else touch her, except my Dad. And the same with the mule. None of the other kids was big enough or strong enough to do anything like that. So it fell to me to take the lead. And you build up a relationship with the animal. So when I left for the Air Force in 1955 a change in routine for everybody.

INTERVIEWER: And I'm sure your Mom appreciated all the help from the older kids to help with the younger ones.
DOTSON: I was in 7th grade before we ever got electricity. I was in the 10th grade in high school before we ever got a water system in. Other than that it was outdoor privies. Taking a bath in the washtub.

INTERVIEWER: And an outdoor pump? Water pump?
DOTSON: Yes. Well, it wasn't a pump. It was a well with a bucket that'd drop down on a pulley. A long skinny bucket with a stopper on the bottom. And when it filled up and put some pressure on it, it would hold the water in it until you lifted it up with the pulley.

INTERVIEWER: Okay, you know I think we conserved water better in those days. We weren't as frivolous as we are now. I think there was more conservation, but maybe it wasn't called that.
DOTSON: Well you needed to do that. We preserved all our food. In the fall there was a tremendous effort to can food and preserve meat. And the only other way of preservation we had was smoking which was not practiced very much. No freezers.

INTERVIEWER: Sure. Did your Mom cook on a wood stove?

DOTSON: Sure, she had a wood stove. We had a four room house; three were bedrooms and a kitchen. It was heated by a fireplace and later on we got a wood stove that did a better job of heating and kept the place warm.

INTERVIEWER: Did it get very cold in that part of Virginia?
DOTSON: It could get down to 10 below but not very often. It could be uncomfortable. Especially in the middle of the night when you had to go to the privy with the snow (Laughing)

INTERVIEWER: So you probably helped chop wood and kindling for the stove all the time.
DOTSON: Sure. It was an absolute necessity. And one thing I grew up with; the American Chestnut, the blight that killed them occurred somewhere in the early 1900s, I don't remember exactly the dates when that happened, but there were huge trees that were dead and they just were all over the place. And you'd go cut one of those, bring it in and cut it up for wood, kindling, it created a delightful fire, burned well, good flame. So we would have to cut wood. Eventually as the economics improved we could hire a sawmill that would bring in a truck to cut the slabs and we would cut those up for firewood instead of going out and cutting trees. It was really a dangerous occupation, for a kid. And we'd have to haul it with the horses. Cut them the length where they could pull it and it had a device that we called grabs that you hammered into the logs and hitched to the horses and they'd pull them out.

INTERVIEWER: A lot of work, a lot of manpower and takes a long time.
DOTSON: Lot of boy power. Ha. Then we did a lot of hunting and fishing which added to our table fare.

INTERVIEWER: Yes, it was a necessity at that time. So did you feel when you were fishing in those days that that would be your life's career?
DOTSON: I was always interested in the fish and I had the inclination to do that but I didn't have the means or anything until I got to go to school on the GI bill. And going to school as a GI bill family I was there for a different purpose than the kids going to school. So I took heavy loads and I graduated in three years. And went to summer school. And one of the stories came out of that when my last year, or college, we had very little money left. But my degree wasn't

mortgaged. So, two items of convenience that we'd like to have was a dishwasher and a TV set. Betty was working and the kids did a lot of dishwashing. So we put it up to a family vote, which should we buy dishwasher or TV set and the dishwasher won hands down over the TV.

INTERVIEWER: Oh, that's great. Over the television? (Laughing) You raised a good family. That's great. So, we've kind of gone over most of your background. Since you started with Art Whitney in 1971…
DOTSON: It was really Joe Huston in 1970 but that was a temporary job, in Region 1.

INTERVIEWER: Okay. So, you've basically worked for the department for your whole career.
DOTSON: Yes, outside of the military. And when I joined that, the legislature passed legislation where we were able to buy back five years of military time, which I did. I retired with 28 years hard time and five years military.

INTERVIEWER: It's great to do that since the state offers it.
[End of Recording #1, 4/29/2016]

[Beginning of Recording #2, 4/29/2016]
INTERVIEWER: Okay, so we are ready to go again.
DOTSON: When I began work for the Hatchery system, June 1971, the department was housed in the Mitchell Building in Helena. At that time, Forest Anderson was the Governor. Department Director was Frank Dunkle. The Fisheries Chief was Art Whitney and the Hatchery Chief was Bill Alvord. We had seven hatcheries at the time. There was Flathead Lake Salmon Hatchery at Somers managed by Vern Campbell; Jocko River Trout Hatchery at Arlee, Montana, managed by Warren Taylor; Washoe Park Trout Hatchery, Anaconda, managed by Bob Mitchell; Giant Springs Trout Hatchery in Great Falls managed by Bob Hughes, Big Springs Trout Hatchery in Lewistown, Ed Furnish was the manager. Yellowstone River Trout Hatchery at Big Timber, Tom Morgan was the manager and the Bluewater Springs Trout Hatchery at Bridger, Emmett Colley was the manager when I came on. At the time there were three federal hatcheries, located in the Flathead, Bozeman and Ennis. But since that time there has been several hatcheries added to the system. One is Koocanusa Reservoir Hatchery out of Eureka, Montana.

There is a small Westslope cutthroat hatchery in the Flathead River; I don't recall the name of that, a tiny little outpost. We added the Miles City Fish Hatchery and the warmwater hatchery at Glasgow below the Fort Peck dam system. I don't recall the name of that one. The hatchery as I understand it at Eureka and at Fort Peck is federally funded with the state managing those hatcheries. When I was employed I was the second biologically trained person in the fish hatchery system. And I was hired as a fish health inspector/fish culturist. I took a lot of training at the fish health center at the federal hatchery out of Bozeman. And learned the technique for giving tissue samples, processing the results and being able to document the status of fish health of the stock we were interested in. We did a fish health survey at each hatchery once a year and twice a year at each broodstock station. And we took samples from all the wild stock that we took eggs from, primarily at that time was kokanee in the Flathead system. Any time we went into the wild to collect eggs to upgrade our broodstock we took certain statistical level samples from those fish with the understanding that the stock there was small so we kept sacrificial numbers as low as possible, and took tissue samples of ovarian fluids and fecal materials to examine without killing large numbers of fish. At each hatchery with a large stock we could sacrifice sixty fish and take tissue samples from each of those. We would take ovarian fluids, bacterial swabs from the kidneys, and there were three viruses and two bacterial and one parasite that we were interested in at the time. I don't recall the names of all these viruses. The bacterial diseases we checked for was furunculosis and bacterial kidney disease and the parasite was whirling disease. The viral diseases we had to send fish tissues and fluids to the fish health center in Utah at that time; later it was relocated to Fort Morgan, Colorado. The bacterial sampling I processed at the hatchery in Anaconda when I first started, later on at Bluewater. Which included swabs that had been affixed to microscope slides and later looked at every one of those slides in a particular pattern to make sure if there was a large number of those organisms in the field it would pick it up. The bacterial disease for furunculosis we grew in a laboratory agar and it would reveal if an organism was present and it would exhibit it, then we could examine the growth, bacterial growth on the agar, and determine if it was the bacteria we were looking for. There have been other diseases that have come to the forefront that I'm not really familiar with but our fish health system now has the capability of dealing with those. The biggest single issue we've had is whirling disease and we can get into that a little later.

INTERVIEWER: Yeah, yeah, I'm sure we will. At this period of time, where were the fry coming from?
DOTSON: Most of the fish that we stocked came from resident broodstock – Westslope and Yellowstone cutthroat. We had a resident rainbow broodstock at Arlee which we took eggs from. Kokanee salmon was the wild spawning stock mostly from the Flathead area. And occasionally we would take eggs from the rereg reservoir out of Helena. Which was a good egg producer for Kokanee salmon.

INTERVIEWER: So, do you think that some of the diseases … where do you think they were originating from?
DOTSON: Some of them were natural and some of them came in by the importation of eggs and fish from other locations that had the disease. Now furunculosis and bacterial kidney disease are resident diseases that can be found in real low numbers and due to the condition in the wild they present little problem. But when you rear fish in high intense cultivation, their presence can be devastating to a hatchery and also transmit a very viral bacterial strain through feces or consumption of specimens of those diseases to the wild population if they have that disease when they are stocked. And it's ongoing infection within the fish. It's a balancing act with those two but the whirling disease and the viral diseases we chose to make sure they were not imported in any of the stock. In the early '70s, or in the late '60s, the department started a program requiring any fish imported in the state be disease free. There was very little protocol at the time to do that but the US Fish and Wildlife Service had several fish health centers where they could analyze fish samples and provide us that information, and the department chose to be proactive and hired my predecessor Bob Dent to work as fish health inspector, fish culturist. When he left I was hired to fill that slot. And continued that process until I became Hatchery Manager.

INTERVIEWER: That is so interesting. It's very detailed work.
DOTSON: In the spawning seasons, it would require us be ready to go basically instantaneously – particularly with the Flathead if there was fish there, there was very little warning to get ready. So I had to be ready in advance. I'd get a call at ten o'clock at night to be at Swan Lake at seven o'clock the next morning.

INTERVIEWER: Oh, so this was to transport to the hatcheries?
DOTSON: I would go there and take the fish when they were spawning and take the fish into headquarters in Kalispell and I would conduct the fish health survey by extraction tissues, fluids for examination at the headquarters and viral samples would be shipped out to the federal fish health facility to process them that night. They had late night depositories at most of the post offices and I could send them out.

INTERVIEWER: Oh boy, fast turnaround.
DOTSON: I retained the other samples to be examined as time went on. Any fish that were stocked from those wild fish had to have the fish health survey completed and the status of the fish health confirmed before they could be stocked.

INTERVIEWER: And you were living at Helena at that time?
DOTSON: No I was living at the fish hatchery at Anaconda. Later on I transferred to Bluewater and operated out of there. And that's when I was promoted to Fish Hatchery Manager in 1977 at Big Timber which reared the Yellowstone cutthroat. The Yellowstone cutthroat broodstock at that time was really genetically deficient due to the inbreeding and the lack of adding new genetic material to it. So we developed a protocol to find a suitable replacement for the old stock and I was instrumental in that search, we went into McBride Lake which is located in Yellowstone Park and coordinated with the Park, we would take eggs three years in a row to get broodstock to replace the existing Yellowstone cutthroat stock. Unfortunately that broodstock had an endemic bacterial kidney disease – it was not causing any heavy mortality but it was present and detectable. And so when we cleaned out the old stock before we started moving the McBride strain of Yellowstone cutthroat into the hatchery, we disinfected the system and we were out of Yellowstone cutthroat stock for a year or so. And then the McBride strain came available. We set up a protocol to obtain wild genes to add to the hatchery stock. We would return to McBride Lake every three years for new wild genes. The McBride Lake is really a unique system.

INTERVIEWER: In the Park?

DOTSON: In the Park. It is protected by a huge escarpment down below and nothing can get upstream to it. There is a lake resident population there as well as access to a stream population of Yellowstone cutthroat. This is kind of a rough shape of McBride Lake (Dotson diagramming the lake) and there is a high cliff all the way around it except this one end. And the stream came into this end of McBride Lake and exited down into Slough Creek which flowed into the Park from Montana on the south end and entered the Yellowstone River. There was a resident population above the escarpment in this creek and when we would land there, we could look at June the 20th as the spawning date. It was real odd weather that would keep this from happening and one year it did. On July 20th fish would be coming out of Slough Creek into this little McBride Lake creek to spawn. Also lake resident fish would go up in there to spawn. And we got genetic material from fish that were both stream spawners and lake spawners and due to the Park Service regulations; we never stocked anything back into it. It was just a reservoir for genetic material. And in three years we got a broodstock of Yellowstone cutthroat that had the widest genetic variability that the geneticist had ever seen in Yellowstone cutthroat. And every three years we'd go back and get a sample of fish to keep the genetics updated. From that we developed probably the most adaptable fish that we've had access to except brook trout. They could survive in a wide range of environments -- stream, lake. And it was a beautiful fish to work with. Unfortunately, the stock got infected in the hatchery with bacterial kidney disease and as we developed stock we worked with a veterinarian out of Idaho who was the fish health expert, I forget his name, but hopefully I can find it. We inoculated every fish every month for three years til we had got the entire system free of bacterial kidney disease. Unfortunately the only thing we could do with these fish once they were inoculated because they were unfit for human consumption was to euthanize them. The eggs were okay and the resultant fish were okay to stock. So it was a sad thing that the fish had to go into the dump, landfill or rendering plant. We were successful in eliminating the bacterial kidney disease in that stock of fish and I don't know if it's been accomplished since. It's the first time that a resident stock of fish had been treated and bacterial kidney disease eliminated out of that stock.

INTERVIEWER: That's amazing. What was the time period that happened?
DOTSON: We started this 1978, I believe. And I left Big Timber in 1986.

INTERVIEWER: So, were there articles written about what you were doing?
DOTSON: Unfortunately I think no.

INTERVIEWER: Well, we'll find them if there are.
DOTSON: This lake is really a resource -- at the time the Park Service, one of their requirements was to maintain these unique genetic populations and make them available to state agencies; which under their supervision and guidelines and with their accompanying us, we could go get our fish health samples. What we got out of there were disease-free fish eggs but in the hatchery at Big Timber, the fish became diseased.

INTERVIEWER: Is it because they are used to a certain environment in the natural setting?
DOTSON: That I could not know; you could presume that was the case. This system is really unique and just gorgeous.

INTERVIEWER: I've been to Slough Creek but I didn't know about McBride Lake.
DOTSON: Have you been to the big escarpment, with the campground below it?

INTERVIEWER: I may have, I don't remember seeing it. I drove in there but haven't camped there. I'll have to look next time.
DOTSON: That protects that system from below.

INTERVIEWER: Perfect situation.
DOTSON: And we've had grizzly bears that were spotted in the area a day or two before we went in.

INTERVIEWER: Oh, I'm sure. They may have been watching you. (Laughing)
DOTSON: They wouldn't even let us carry anything to protect us. (Laughing) But usually we had a Park Service employee and a helicopter standing by; I don't know what use that would be if a bear attacked. But I had the opportunity to …
(Break in interview when a visitor stopped in to the interview.)

INTERVIEWER: So were there other parts of the Park where they let Montana come in and get some strains of fish? Or was this just a special area?
DOTSON: This was a special area, but years ago out of Yellowstone Lake there was a spawning station on one of the streams that the Fish and Wildlife Service managed and the department supplied some manpower to it during the spawning season to get Yellowstone cutthroat eggs to bring into the hatchery to produce fish to stock. At that, those fish were in a small hatchery at Emigrant and by the time I was employed by the department it had been closed and that stock transferred to Big Timber. So that stock that preceded the McBride strain at Big Timber Fish Hatchery was those that originated at Yellowstone Lake. They later became unavailable because of circumstances, the Park Service closed the spawning station; I don't know the reason. Could have been political, lot of other issues including the status of the Yellowstone cutthroat played a part and the spawning station at Yellowstone Lake. We had to go to another source of the Yellowstone stock. And we chose McBride. Working with the Park, they allowed us to go in and get our initial broodstock and every three years get a genetic update to the broodstock. I believe that the hatchery at Big Timber has now been redirected and they're rearing graylings and a lot of other small populations of fish. The McBride strain has been stocked in a lake in the Crazies into a system that is still sustaining and will be available to us at any other time -- we can go back and get fish with that genetic background. They're in the Crazies and more easily accessible than they are in McBride but it still has to be in the helicopter. At the same time, we did a lot of stocking in the high mountain lakes and I got to view the Beartooth plateau up close and personal with Doug Getz who was the helicopter pilot.

INTERVIEWER: So is this a good time for you to talk about stocking some of the high mountain lakes and if there are any adventures that you can remember? I imagine stocking with the helicopter, you had to have some kind of procedures from where you land, where you can land the helicopter to how you get fish to the lake.
DOTSON: No, you don't land.

INTERVIEWER: You don't land? Oh, okay. Let's talk about that.

DOTSON: Initially, stocking by air was developed by two pilots out of Billings. The initial air stocking technique was developed by Dick Logan and Herman Hendricks, flying biplanes out of Billings into I think Lake Elmo.

INTERVIEWER: They were federal?
DOTSON: No, they were private. And we just worked with them to provide fish to test it and they worked out the techniques. With fixed wing aircraft there are certain parameters both in air speed, altitude and size of fish that could be successfully stocked by air. Maximum four inches. When they are four inches or less, the weight to surface area ratio is such that when they're released from the airplane at about 300 and 400 feet, by the time they reach the lake they are fluttering and falling straight down. The forward motion has stopped. And they have to be low enough so that the gills don't dry out in the descent. And at that size range we don't know exactly what the mortality is but we do know that we stocked those lakes successfully and worked out techniques of stocking the numbers so that the lake can be maintained with certain stock in like two, four even six years rotation depending on the circumstance of the lake. And the numbers are dependent on the perceived or known fishing pressure that they could stock at a rate and maintain a stocking frequency that is suitable.

INTERVIEWER: So how many do you think you may have stocked at one time? Do they keep numbers like that?
DOTSON: Okay. At one time probably a thousand at four inches or less. In the airplanes initially they could not put a lot in the tank as they didn't have oxygen they could meter into it. So we had to keep the numbers down so they would survive the trip. Later on, they were fitted with tanks with remote control trap doors, oxygen metering devices so they can take up to two pounds per gallon of water on short flights. And the numbers could be reduced to where the fish would survive to the limits of the aircraft range. The aircraft would fly at about between three to four hundred feet, release fish, and they would go in the lake and provide fishing. They tried to develop a release site location on that lake where they could plan on calmer waters, like near the shore where there wouldn't be as much predation. But sometimes the physical conditions or weather over the lake would not permit that. One story that Cliff Higgins told me, he was planting Edith Lake, and the airplane …

INTERVIEWER: Outside of Townsend, that one?
DOTSON: Yes. There were some people camped at the campground, and he said just as he released the fish he was getting near a shallow area, he was buffeted by the wind and he dumped the fish on the campers there. (Laughing) By the time he got back to the airport somebody had already called in to the department complaining about this pilot out there dumping these fish all over the ground. (Laughing)

INTERVIEWER: Oh my goodness, that is a funny story. So when they left the planes they were in a net, or …
DOTSON: No, they were just in water. The tanks had water with oxygen in it and he tripped the trap door and the water and fish exited the tank. In the airplane they have now they have a hole right in the bottom of the airplane with a two-compartment tank inside. The helicopter has a tank on either side. They have four compartments and they can plant eight lakes in one trip if they are located nearby. If they go on a trip and have to plant one here and another fifty miles somewhere else, that is not good organization.

INTERVIEWER: And the less amount of time that the fish have to be in that kind of atmosphere.
DOTSON: With the oxygen metering devices they have and with the aircraft we know we maintain good populations in those places with the numbers and stocking frequency which we have developed.

INTERVIEWER: That is really interesting to learn how the high mountain lakes are stocked.
DOTSON: This happened after I left, I heard about it, one of the places we stock is out of Yellowstone Lake, what's the name, Cooke City; there's a little place outside Cooke City, a landing site that we operate from and one day when they went up to do fish stocking and the helicopter came in and all of a sudden he was being tailed by a Black Hawk helicopter. They did not tell us but President Bill Clinton was there doing something and they had a sheriff's deputy monitoring those guys and every time they would take off they had to let them know and this Black Hawk would tail them and saw what they were doing. After a couple of flights, they said

go ahead, just let us know where you are going. (Laughing) It was a security issue and sheriff's deputy had to document that the only things they were putting in the helicopters were water and fish.

INTERVIEWER: Oh, that's good. That's a good story. So when you first started working for the department when you were a fish culturist, are there any other stories you'd like to add before you were the Hatchery Bureau Chief? We can always get back to something too.

[End of Recording #2, 4/29/2016]

[Beginning of Recording #3, 4/29/2016]

DOTSON: Each hatchery has its own annual cycle. The production hatcheries obtain eggs, from broodstock either domestic or wild stock. Normally eyed eggs from these sources, that means the eggs have been collected from domestic broodstock or a wild source. Incubated at the broodstock hatchery until they reach an eyed stage. That first bench mark, the eyed stage from fertilization to the eyed, when you spawn fish the fish eggs are… when they exit the female due to the body fluid concentration and so forth they're quite turgid and the instant they exit the female they have lost that environment, and they're kind of wrinkly. And sperm is added to the eggs by artificial or natural means. You let them set after you've collected so many eggs and you rinse all sperm away from them in the clean water, they're placed in tubs, vessels, or if you are out in the wild into a cooler to transport back to the hatchery. You go through a process called water hardening… that's where the eggs will absorb water and the fertilized eggs and rest undisturbed for an hour. You can move those around for about two days. And without harming the eggs as long as you are reasonable and careful in the way you do it. The eggs when you bring them in to a hatchery from an outside source they're disinfected with betadine, a concentration specified and you put the correct amount of betadine and it disinfects them for fifteen minutes. Then they are placed into the incubators either in boxes or trays that provide an upwell water and a stacked tray water that comes into the back and upwells over the eggs and out the front. And goes back into the back of the tray below or if it's a single box it upwells and spills out the top. They stay in that environment, very quiet and in the interim you have to treat them with formalin to retard the growth of fungus on the eggs because of the high egg concentration. This fungus happens in the wild and I'm sure we lose some. In the hatchery, we can bring the highest percentage of eggs from spawn to a hatched embryo. Before the eggs get

hatch you can see the eyes spots, little black dots on the eggs, that's called the eyed stage and they have developed to the stage where they can be handled. They go through a shock system and the dead eggs that didn't fertilize turn white and you pick out the white eggs and discard them. You put the eyed eggs back into the incubator and allow them to develop until they hatch. When they have absorbed the yoke sac then you can put them out in the raceways. And we start feeding them real fine food a number of times a day and you have to be really careful you don't over feed them. As they grow you can be a little bit more liberal with the food. And they have to be cleaned daily where all the fecal material and so forth is cleaned out of the troughs and raceways. They grow into a fingerling and stock out. At the eyed stage the eggs can be shipped around the state, air shipped. Also to out of state sources. The state has a history of supplying unique species of eggs to a number of states, such as cutthroat, rainbow and Kokanee. And actually the rainbow that are caught in New Zealand have a Montana strain to their genes.

INTERVIEWER: Really, New Zealand? Wow. So, was it -- what we need first, then the excess is sold to other states?

DOTSON: They are not sold. We provide them free of charge. To other government entities we provided free of charge and they pay the transportation. While I was bureau chief we developed a method whereby we would sell surplus rainbow eggs on a bid basis to private operators. Montana private operators had first choice. If the hatchery had a surplus to their needs they'd inform me as the bureau chief and I assume that's continued until now. We set it up through the legislature and we actually got legislation; in fact, let me back up. When this first occurred, there were some private hatcheries that due to disease or other issues, could not obtain the stock or eggs from out of state. Ron Marcoux was the Deputy Director at that time and we had a surplus of rainbow eggs and he authorized us to sell those eggs to private hatcheries in the state, on a bid basis.

INTERVIEWER: Do you remember what time period this might have been?

DOTSON: This was when I was the bureau chief, so maybe in the late 80's. So the legislature was in session and the department processed a request to the legislature and a bill was drafted and they passed legislation and the governor signed it. We could now sell these eggs by this process on bid process to private hatcheries and sell the eggs to them. We would provide the

containers for we could not take anything in from those hatcheries. They'd pay for the container. It was past the normal surplus property regulations because due to the nature of them they couldn't be warehoused. So they had to process the sale quite rapidly.

INTERVIEWER: So this was a very fast process and so when you realized you had an excess you contacted them and put them out for bid. Were there certain strains or did it matter?
DOTSON: We could not do it on a threatened or endangered species. We could do it with rainbow, cutthroat stock at the time. But the cutthroat eggs we had to sell them on the condition that they were reared outside the Westslope range and they could not sell them to the hatcheries that were within the Westslope cutthroat range.

INTERVIEWER: So this was something you were instrumental in initiating in the beginning and Ron Marcoux took it one step further. Very interesting.
DOTSON: Well, I needed his authorization. We were a little nervous, that was an authorization outside the normal laws of disposal of surplus property. It was something we had a very short timeframe to complete. Jim Flynn was the Director at the time, and he was supportive.

INTERVIEWER: Over a period of time, you and the hatchery personnel knew exactly what would be excess from what your needs were? Did that fluctuate very much over the years?
DOTSON: It did a little bit. But in order to keep the genetic viability we had to spawn so many fish. In that regard we would usually wind up with several hundred thousand excess eggs out of a million that would be processed. At one point, it was before I came on, years before, this is anecdotal from the Anaconda Hatchery, Bob Mitchell was part of that. So the stories that I heard which is probably true that the spawning station out of Georgetown Lake at one time produced 54 or 55 million eggs a year. And they were transferred country wide and internationally in a couple places. But they would take the eggs and they would grow them up to the eyed stage and all the dead eggs had to be picked off.

INTERVIEWER: I bet that's not an easy process.

DOTSON: Ha, there's another story there. Fish culturist, we lived at the hatcheries and provided security 24 hours and took turns being there on the 24 hour basis. Family housing. And at that time the wives who lived there were expected to pick eggs.

INTERVIEWER: Really?
DOTSON: Yes, and they did it even though they weren't hired, not compensated in any way. They did that mundane work of picking the eggs. I can just imagine a modern day woman getting approached to do that. (Laughing).

INTERVIEWER: (Laughing) Yes, with no compensation. So, what's the process to do that – do you tell them what they looked like, the ones you don't want?
DOTSON: Now, the eggs, when I mentioned earlier about shocking, what you do is take buckets with water and they pour the eggs from the incubator into a bucket of water which shocks and kills any unviable eggs. And they turn white so they can be easily picked from the live eggs. Huge rubber balls on a glass tube were used to suction the dead eggs.

INTERVIEWER: Tedious, though.
DOTSON: Yes, it is. However, with modern technology now there are egg pickers by light and air and so forth and you can run them through this machine and the air will eject bad eggs.

INTERVIEWER: Was that while you were working?
DOTSON: The technology was beginning to come in and we did not have one at Big Timber. At the Yellowstone River Trout hatchery they had to be picked by hand. But we heard of the technology and shortly after I became bureau chief the hatchery manager Daryl Hodges that followed me he said that they retained a new egg picker which really reduced the manpower involved in the broodstock population. Nothing is ever a hundred percent so a few get by. But it took the mundane drudgery out of the process. And removing the bad eggs had to be done. One of the pleasant situations at Anaconda, as we were west of the divide we planted a lot of fish west of the Divide and in the Flathead. During cherry time our hatchery manager Bob Mitchell assured that everybody had at least one trip to the Flathead to stock the fish. And we stopped at the cherry stands too.

INTERVIEWER: Oh nice a little added benefit, bring back cherries.
DOTSON: So it was a delightful trip – he was good.

INTERVIEWER: I suppose when you became the hatchery bureau chief in Helena, did it seem like more of an administration job rather than, of course it wasn't hands on anymore.
DOTSON: But I would fill in occasionally when they needed some help or were shorthanded.

INTERVIEWER: Good. Was it something you missed from being in the field?
DOTSON: Yes, but field work … it was a tough choice to give up. And we, I decided to take the job when it was offered.

INTERVIEWER: And you were moving your family to Helena?
DOTSON: Yes at the time it was just Betty and I. We lost David when we were in Big Timber just after we transferred there. My other son was in college. At the time we owned a home in Bridger and anticipated completing my career as hatchery manager in Big Timber and moving back to Bridger. So when this job came available I was offered it I accepted and moved to Helena. So we got to know new friends and by the time I retired it was 25 years away from Bridger and close to 15 or 20 from Big Timber. We had made new friends and settled in and bought a house here. The option of moving back to Bridger or Big Timber was receding.

INTERVIEWER: The conditions in the hatcheries, like in the winter time, it was hard on people to … I know you said you were on twenty-four hour watch all the time.
DOTSON: Yes, there were times, particularly at Washoe Park; the hatchery had an open source of water for the outside raceways. And a closed source for the inside of the hatchery operation. In the winter especially during leaf season, the intake of the hatchery system had to be cleaned of leaves and whoever had security duty it was up to them to keep the water supply open and the leaves cleaned off the screens. And that was an all-night job. We got done at six in the morning when the normal crew took over and started again at five o'clock and every hour it was necessary to go clean the screens. It was a round the clock operation and occasionally there would be an ice problem with that outside source of the intake that we had to deal with.

Sometimes it was beyond one man's capability and you woke somebody up. Now the Washoe Park Hatchery at Anaconda is the oldest hatchery in the system. I believe it was started in 1908. As it was developed the Anaconda Company was instrumental in getting the hatchery there and installed the water supply and granted the water rights which we needed from Warm Springs Creek. And it just developed as one of the biggest hatcheries in the state. The only one that exceeded that for years was the Federal Ennis hatchery, they have a huge operation. They stocked federal land. And whenever we had an opportunity we would trade and sometimes that created a political situation. If we had a pond out of Dillon and they had fish we would trade. As long as the species going in there wasn't impacting any stock, we would stock the cutthroat for them and they had a requirement for that. Some people took an issue with the fed stocking fish in our waters which they weren't supposed to do normally, but we would do it on an equal trade basis. It got awkward so we had to stop that cooperation. And it hurt both systems. It cost us more to operate.

INTERVIEWER: So you had a hand shake agreement with the feds that if you had excess or they had excess you would help them out?
DOTSON: They had a huge broodstock operation; they supplied a lot of eggs to the federal system throughout the country. Rainbows. And they're still in operation. Some of those springs from the hatchery if you get around them were just marvelous. Bluewater, it's a tremendous spring. That Bluewater basin has got a lot of springs and the water source is warm springs. And they're not hot springs; maybe they're 50 to low 60 degrees temperature. So it's perfect trout hatchery. And they stay the same temperature even in the hot summers they keep the water cool in the creek. And keep it warm in the winter.
[End of Recording #3, 4/29/2016]

[Beginning of Recording #1, 5/23/2016]
INTERVIEWER: This is Margie Peterson. Today is May 23, 2016, continuing the Oral History Interview with Thurston Dotson. Okay, Thurston let's go over any changes or edits you'd like to go over from our first session.

DOTSON: One important omission from the last time, I could not remember the name of the federal fish hatchery in the Flathead. It was the Creston National Fish Hatchery in Creston. Also at that time the USFS operated the Miles City Warmwater Hatchery.
And we were getting ready to go into the modern era of fish culture, as I would call it. When I came on board, I was the second biologically trained person to be hired by the fish hatchery system. Prior to that it was staffed by people who were hard-working, dedicated individuals. For years they worked the hatchery system, kept them operation. It was a little bit of unfair criticism, in my opinion; it was the level of the fish hatcheries in that era as we begin to learn new things about the biology and genetics of our fish stock. And the fish hatchery was stocking fish. And there was very little control of where or what was stocked. That was department policy, not hatchery policy. The people who were working the hatcheries were carrying out department policy, not individual management initiatives that they thought was possible. The major thrust in that era was to plant fish for the people to catch and that was what they did. As we learned more about genetics and the biological nature of our resident stock, we learned that that probably was not the best policy. So we began to transition into a more scientific management era which mandated or required that we take a closer look at our genetics and management procedures to make sure we were having minimal or no impact on real important resident stock, like the Westslope cutthroat, bull trout, Yellowstone cutthroat, and the grayling. And so now we only have one that's self-sustaining natural population of grayling in the Big Hole. Through hatcheries we've been able to transplant graylings and have stocks in other waters to maintain the grayling population and one close to Helena is Park Lake. It's a sustaining population of grayling and it's one of the few places, or only place, where you can catch a grayling and keep it. I may be mistaken about keeping it, but I think the regulations state that. Other than that if you catch a grayling you release it. That may be in error, I haven't read the regs in detail for a number of years.

INTERVIEWER: Yes, right and they [regulations] keep changing. So when they started the transition, this was a period when you were still here?
DOTSON: It was the period when we were beginning to immerge about the time when I came on in 1971 because there were some concerns about fish health. The department had a policy, and backed up by statute, that we could not import any fish from an out-of-state hatchery that did

not have a disease-free certificate. That's about all that it stated. So when I came on, we began to look at more detail of import regulations and fish health management techniques to manage the health of the fish in the hatchery to make sure we're not stocking diseased fish on top of a healthy stock out in the wild, which is really important. And the biggest issues at the time were a couple bacterial diseases, a parasite disease and a couple of viral diseases. We inspected all of our stock, wild stock as well as hatchery stock, every year for those specific pathogens. Whirling disease was one of those and it was an issue we just checked for and we never found it in our hatchery stocks at all. The first whirling disease infection in the state was located in the Madison River. There was a lot of speculation where it came from. By the time they found it, the hatchery stocking of fish in the Madison had stopped many years prior to that and there was some speculation that it was from an illegal import from out of state somewhere.

INTERVIEWER: Okay. So before we get too far into the whirling disease, you were probably instrumental in some of the new procedures when they did the transition to more scientific methods. Do you remember some stories?

DOTSON: I initially drafted the fish health requirements for importing fish into the state. We were required to have a fish health certificate and an import permit associated with that import. So instead of just having the hatchery out of state declaring they were diseased free, they had to have a certificate from a recognized pathologist that they had been tested and declared that they were disease free. I drafted the original language that went into law I believe in 1973 session. I'm sure it's been updated since then. Or amended. I believe it was 1973 legislative session that enacted the first comprehensive fish health law that we had. And to my knowledge until I retired there were not any significant changes to that. Parallel to the fish health was genetics that we began to be concerned. The quality of the genetics in the wild stock as well as our hatchery stock. In that regard and at that time we were fortunate that the University of Montana began to develop a fish genetics laboratory that was operated by Dr. Fred Allendorf. Did you know him?

INTERVIEWER: I did not know him but I knew the name.

DOTSON: You may have heard about him last winter. It was his wife who died in the avalanche up the Rattlesnake out of Missoula and he was injured in that. He was a retired professor at that time. Working with him was another geneticist, Dr. Robb Leary; I think he's

working for the state now. We began a cooperative program with him where we could provide tissue samples for them and in some cases, they would have someone go with us to collect samples to check the genetic status of wild stock as it became available, as well as our hatchery stock.

INTERVIEWER: Oh, okay. So when you went in the wild for stock they went with you?
DOTSON: We provided tissue samples from the stock. The way it would work -- the one I'm most familiar with is the Yellowstone cutthroat from the McBride strain. We developed that strain from McBride Lake that we discussed briefly last time. We would provide tissue samples for them and they would test for the genetic variability and give us a report and we developed a plan to maintain the genetic health of that stock with advice from the genetics lab. That involved a three year sequence that we would obtain eggs from the McBride Lake stock and then after three years, we would go get a significant sample of new stock to bring in to integrate into the resident hatchery stock. In that regard, the McBride strain of the Yellowstone had a very, for a fish, a very broad genetic variability compared to a lot of the other stock. It was almost comparable to some of the rainbow. And we maintained that and they still have areas in the state where they stock the McBride strain that they could go and retrieve that strain if they so desired for fish management purposes. The hatchery in Big Timber, as I understand it, has transitioned from Yellowstone cutthroat to specialty strains such as grayling, primarily, as well as some special stock of the salmonid species. I've been away from that since 1986. My memory of what transpired afterwards is a little bit lacking. But that was one of the stocks that I'm really familiar with that we kept track of -- we did the same thing with the Westslope cutthroat and some of the other strains of wild stock fish when we had an opportunity to… kept the genetics of those stocks updated. One of the unique things that we did, we took samples from several Westslope cutthroat stocks in the wild, developed their genetic profile and learned that the isolated stock had very little genetic variability but if they did have any it seemed to be different from one stock to another. So we took eggs from each of these, I think it was seven different strains of Westslope cutthroat, and developed a Westslope cutthroat broodstock from that that had a very good genetic variability. One thing we found was that this creek that was isolated had a unique genetic profile. The next stock could be a creek right around the mountain that's been isolated with fairly homogenous genetic profile in this stock. But it was a little different from the

other one. We found that all across the stocks that we collected eggs from. We developed a Westslope cutthroat stock that had quite a wide genetic variability in comparison to Westslope stocks in general. We used that broodstock which is now at the Anaconda Hatchery, Washoe Park, to develop, to stock out in areas but never to go back into those streams in which the parental broodstock was acquired. Never to interfere with that natural stock.

INTERVIEWER: Do you remember the time frame for that?
DOTSON: That began in the '90s and was still proceeding when I retired. The actual year date I have forgotten. The records of the Anaconda fish hatchery should show that. But it was quite a coup to be able to develop that and to have a Westslope broodstock that we could use in fish management areas where we like to use the Westslope trout which would be native in genetic profile unique to Montana. It turned out to be quite a successful program. To my knowledge, we are still continuing to have the profile of our stocks examined when we need to and taken management practices in the hatchery to maintain the genetic variability of the stocks we have.

INTERVIEWER: Oh, that's great. Do you remember, so if that was in the '90s, do you remember what might have taken this turn in the '80s that brought this… with management?
DOTSON: In my recollection, it was some concern for the future viability of the Westslope cutthroat and the federal effort or federal initiative to declare these stocks to be a Threatened and Endangered Species. I believe we were successful in keeping the Westslope of Montana off that list by taking the practices that we did.

INTERVIEWER: Right. Very important. Well, do you want to talk a little bit about whirling disease or are there some other things that happened before that?
DOTSON: Well, computers came on the scene. (Laughing)

INTERVIEWER: Oh, yes they did.
DOTSON: And how do we do that? How do we integrate the new scientific information into the hatchery system when it seemed to be such a cut and dried – we go spawn the fish, we feed them, we grow them, but we were able to develop a computer management system with the assistance of the information resources that was available in the Region 3 Fisheries office. Bob

McFarland was the leader at that time. After a false start on one effort, we continued and brought Bob McFarland and all the hatchery managers together with our fish health specialists, asking the questions and trying to come up with solutions, how do we initiate a program with computers and taking care of our management, our feeding projections, our stock and our growth projections to get the fish at the size and the number that we wanted. And after considerable heartburn, Bob McFarland came up with an initial prototype of the hatchery management system.

INTERVIEWER: Like a database?
DOTSON: Yes, it was a database. He used dBase 3 at the time. I'm sure, I haven't inquired recently but I'm sure it continued. As the personnel change they were more acceptable of the computer management. What we finally wound up with was a program and a coding system where we could code out a fish stock if we took it to, let's say from the Arlee Hatchery to Canyon Ferry. That load of fish could be tracked back to the egg take in the hatchery. That was a real breakthrough. When the managers became aware of how that would assist them and provide the information on where fish were planted, their background, and their life history through the hatchery system, it was finally accepted and started to use it. To my knowledge, this was the first hatchery system in the entire United States that had been developed such a program. I think it was … we had inquiries from around the country, people wanting to develop their own system. I just recently had a conversation with the hatchery bureau chief equivalent in the state of Virginia where they are just now beginning to try to computerize their hatchery operations.

INTERVIEWER: Oh my goodness, they are archaic back there.
DOTSON: I thought they would be one of the leaders because of the location where they're at. I contacted him on strictly a private basis for some information when I go back to the area from where I grew up and we got to talking about this and I told him about the system we had. He was just now trying to computerize the stocking records for the state of Virginia.

INTERVIEWER: So this was in the mid '80s, right?
DOTSON: Late '70s, I think it came to fruition in the '80s.

INTERVIEWER: Okay. At that time, you know, we didn't have laptops so they were all desktops. Not everybody had one so you probably had a data entry person that was entering the data whether it was Bob or someone else. Also in the beginning of that era of getting everything digitized, people were hesitant to lose data because it was easier to lose things in those days. Do you remember anything like that about how, if there were only a few people who entered the information or how …

DOTSON: If I can go back and review our first start, that was developed by two people who were interested in the protection of the data at all costs. You had to have code numbers, you had to have your personal number in there, and it was really a dinosaur.

INTERVIEWER: And it was cumbersome to enter the data.

DOTSON: And it was difficult to use, but what it did, it gave us the initiative to continue and to take a different track with Bob McFarland and his office and we needed to be able to have anyone at the hatchery do this. If you don't always have a data entry person around. And we may have one man on the weekends that needs to put data in. So at the risk of anything, all we wanted was our personal number that you entered in and you just logged out.

INTERVIEWER: Sure, like a password.

DOTSON: And it was very easy to work with. This computer system became so accepted that we were able to integrate into it the growth records, the status of the fish and project when we would have a fish of a certain size. What we could do was really do a specific growth pattern -- if we needed fish at Canyon Ferry for instance in May of a particular size -- we could start if there were enough of them that they could occupy a raceway, start a growth pattern for that raceway that they would come out at that size. It was so beneficial and so easy to manage the guys really accepted it. I'm not saying it wasn't without its detractors.

INTERVIEWER: Wow! Well, every database program, you start at a certain point, you may end up at a different point. It makes you think about it and dissecting the details on how to get the data in.

DOTSON: One thing that helped from that from the very beginning and made it easier from years ago, I don't know initially when it started, but the department started to develop these code

numbers for every fish, every strain and that was integrated into the computer system. And the lot number of the fish was the key to everything. Lot number contained the species of the fish. I mean the species code was the identity of the fish and the lot number was the tracking of that from the egg take to stocking and we never had that kind of information at our fingertips before. And it was such a beautiful way to access that information. And particularly during a legislative session someone would call up and want to know what's stocked where, when and for how long, we could just pull it up and tell them. One of the biggest problems with that was integrating the historical data into it. We initiated trying to do that and we could go back to a certain time, maybe not have all the information we would like but have some information of all the fish that was stocked that we had any kind of written record for. And to my knowledge it's on the database now.

INTERVIEWER: Do you remember if each hatchery had to provide the data entry?
DOTSON: Yes, each hatchery was responsible for their data and each hatchery had to enter their own data.

INTERVIEWER: Each hatchery entered their own data? Good.
DOTSON: Yes, each hatchery entered their own data.

INTERVIEWER: Good, good. I wasn't sure if they had to send it to Bob to have it entered. Good.
DOTSON: No, all he did was, they would send the reports in on floppy disk and he could organize the state records. I don't know how it's changed since then but my guess is not really significant from that.

INTERVIEWER: Well, maybe one of the most obvious changes would be everyone has their own laptop now so they can enter the information live. They can put it in daily.
DOTSON: Oh, that was one of the requirements. Any change at all, that information went into the database that day if possible. And when it became accessible by everybody it really has cut down on the amount of personnel to a certain extent, in each hatchery. And the hatcheries have always been an easy target.

INTERVIEWER: Yeah, I'm sure, with FTE reduction?
DOTSON: FTE's, money, fish food is not cheap.

INTERVIEWER: I'm sure.
DOTSON: Even though personnel is the biggest expense I think the hatchery has the largest budget for non-personnel expenditures as the percentage of our operations of any division of the department. Everybody else is personnel. And we were the only ones that purchased commodities in large amounts.

INTERVIEWER: Sure, the only section of a division that feeds anything. Sure.
DOTSON: Except a few wild horses.

INTERVIEWER: That's great. The conversion, for all of us, to go from writing everything down in ledgers and keeping these spreadsheets to being able to digitize on the computer and…
DOTSON: The impact… later on we were, we began to have federal funds integrated into the hatchery system. Up until late in my tenure here it was all just state dollars so we didn't have to worry about federal, but finally it was integrated into the system and I assume it still is. But that as well as the management division we were able to use computers to easily manage the funds and the split of the federal and state money that would go into our operations and be able basically push a button and get a report out of what you did. But it takes the initial development of the program and the data entry to affect that.

INTERVIEWER: It does. And knowing what type of report you're going to need helps in how the data is entered. How you put it in and how you get it out.
DOTSON: The hatchery manager could print out a report for his races, each raceway if he needed. But on a monthly basis, they could provide information on growth, fish food, cost to feed the fish. And the beauty of it was you could establish the profiles where you wanted for a specific fish to come out at a specific size for a purpose you wanted and do it cheaper than you could by… Initially when we got the fish, we would sample how many numbers per pound in the raceway and the feed company would provide you a feeding chart for that. And we were really

able to cut down on the amount of fish food we used because we could program the amount of fish feed we need based on our needs rather than what the fish food supplier thought we needed. And I'm sure he didn't take our options into account when they made those charts.

INTERVIEWER: Sure, you were able to profile a little better. So as bureau chief, did they send these reports to you?
DOTSON: Yes, I got the summary reports and if I needed something particular from a hatchery I would call them up and I'd get it in the mail in a couple of days. If it was really urgent for the legislature, I'd go get it.

INTERVIEWER: Do you remember if they filed copies of the reports, like at the state library or…
DOTSON: That I don't know. I know when I was here Bob McFarland's office was the repository of the statewide – he was head of the fisheries information bureau and he was the recipient and did the compilation of the summary reports.

INTERVIEWER: Yeah and that was in Bozeman. Good, maybe we can see if we can find one of these.
DOTSON: Okay.
[End of Recording #1, 5/23/2016]

[Beginning of Recording #2, 5/23/2016]
DOTSON: Before the hatchery computer program became available to us, we would have to keep all the data at the raceway by hand, compile it once we got into the office which consumed a lot of time. If you have a huge hatchery like Great Falls that was a tremendous amount of personnel time involved just tracking the information and keeping it current. Any small inaccuracy or divergent in your information when you are computing growth rates and so forth, one tiny mistake could cost you hundreds if not thousands of dollars in fish food. And the computer era allowed us to eliminate a lot of that -- compilations were required and projecting the growth rate was a tremendous time saver. But there was a little bit of a transition between strictly pen and pencil data, until the computer program came on the horizon there was a period

of a few years there where programmable calculators were available and people who knew how to do that could program those to help you with your feeding projections and needs. A couple of the hatcheries, Big Timber was one, Lewistown was the second, the only other one that had one of those when computers suddenly popped on the stage. At Big Timber hatchery there was one employee there that really knew how to do the programming and he developed these programmable formulas for our station and proved that it would work and purchased a more complicated program in the hatcheries for Lewistown and he programmed the information for them and then they would just… it was kept on magnetic strips. And that was an initial time saver and the effort on that in Lewistown kind of helped ease the transition into computers because it made their job a lot easier. And that was the largest salmonid hatchery that we operate. When they learned that you could do this cheaper, quicker and easier than through these mechanical calculators they adapted to the computer system easy and then it seemed to flow throughout the system. But it was a learning curve.

INTERVIEWER: And a time-consuming learning curve.
DOTSON: Yes it was. But you had to look at the future when they came on the stage, you know that was not going to be the end of it. (Laughing) You didn't know where you were going with computers but that was not the end.

INTERVIEWER: No, the beginning.
DOTSON: And I'm sure there have been some modifications to adapt to the newer technology.

INTERVIEWER: And I think you did that because now with laptops and so much more security in the operating systems, it probably does advance as it goes along the technology allows different types of calculations to be done faster.
DOTSON: I'm sure Eileen could give you a little … I might have an opportunity to go ask her what the status is now. She's the hatchery chief.

INTERVIEWER: Good.
DOTSON: That was one of the major transitions in the hatchery system. Let's see, we covered the personnel issue.

INTERVIEWER: Yes. So with new management techniques and new procedures and guidelines on how to enter the data and the reporting, sure it was a big deal. A lot happened while you were the bureau chief.
DOTSON: Yes there was. It was kind of a transition from pen and pencil to the digital era.

INTERVIEWER: Yes.
DOTSON: And I feel that we made some real progress while I was in the hatchery system.

INTERVIEWER: Oh, I'm sure. Definitely, with the stories you've told us, there's been a lot of improvement.
DOTSON: Yes. I know we changed the way we did things but the Montana hatchery system had a good solid reputation and a good rapport with most everybody in the state. I was the beneficiary of well-oiled, well-run system and I wanted to leave it that way.

INTERVIEWER: Yes, it became that way because of a lot of your expertise and dedication.
DOTSON: And going the extra mile, working extra hours. I know we all felt like we were under staffed out there, Big Timber was a two person station. When I started there as the manager, it was not unusual at the end of a year for me to turn in a hundred hours or more of comp time.

INTERVIEWER: Oh my goodness, and not be able to take it.
DOTSON: Well, I was not going to sit there just to take the comp time and we had to cover the hatchery 24/7. We lived on station and with two people every other weekend somebody had to be there. When we worked the previous week, the policy was that you could take the following Friday, Saturday, Sunday and Monday off. And you'd get a lot of your busy things done in that timeframe. And it required spending less vacation time. So it benefitted in that way but I just could not stay at home and sit there just to spend the comp time, I had too much going on in the hatchery to do that. (Ha.) It was …

INTERVIEWER: Good dedication.

DOTSON: And that was the attitude of ninety-five percent of the hatchery employees. The heck with comp time. If there's something to be done, we'd do it. And we had that flexibility.

INTERVIEWER: Sure, like we were saying before, the different duties and responsibilities of the department because you were 24/7 and you were growing the fish that all the fisherman in the state wanted to be able catch. Lots on your shoulders, that's for sure. So, do you think we covered most things and we should go into whirling disease? Whatever you would like to do.
DOTSON: Sure, we covered fish health issues in general, but the specific fish health issue I think that impacted the state more than any other fish health issue was whirling disease. And it was a surprise. And I believe it was 1994 when we first discovered it in the Madison. That date needs to be confirmed. That was the general era. And Jim Peterson could do that for you as well as Eileen, she should have a record somewhere too.

INTERVIEWER: I'm sure I can get that.
DOTSON: At the time, Pat Graham was the division chief. Peterman was the fish management chief.

INTERVIEWER: Larry Peterman.
DOTSON: Yes. And what a shock it was to get the report that the fish in the Madison River were detected positive for it.

INTERVIEWER: Do you remember what part of the Madison River?
DOTSON: I believe it was the upper Madison not too far from Quake Lake. That's my recollection.

INTERVIEWER: We can look it up. So was that from a report from the fisheries biologist in that region?
DOTSON: Well, what occurred they were noticing, I believe, an increase in small fish having a weird deformity. And they took some and had them tested and they came back positive for whirling disease. What whirling disease does, it's a parasite and it doesn't have the usually pathogenic trail where it goes into the system, provides an infection, and the entire system is

infected like a bacterial disease. You either treat it or in the case of most fish out there when they contact it, it's a death sentence. In the hatchery system we can treat a lot of these pathogen issues. But whirling disease is different. It has such a complicated and long life history. For it to get into the fish and be noticeable it was probably two or three, maybe four years after the initial contact or release of that pathogen into the system. The way it works in the most simplistic terms, for an infection to proceed like whirling disease, the fish that initially have it have to die and deteriorate and the spores in their system is then released into the water. The spores are taken in by these tubificid worms. The spores changes character from spore to a trophozoid, I believe that's the term when the organism completes the life cycle. And the trophozoid is released into the system. It attaches to the fish and the little protein particles travel through the nervous system and gets into the brain, the spinal cord, and as it grows and develops it eats away at the initial cartilage skeleton of young fish and they become deformed. And with specific swimming actions because the tail deforms, hence the common name whirling disease. Now this could take at least a year or more to occur. By the time you see fish that have this disease in the numbers that you can detect and give you some concern it has been there a while. The tragic part of whirling disease is once you detect it in the Madison it can be transported to a whole lot of waters by birds, particularly fish-eating birds that are migratory.

Let me back up for a minute. What this bit of protein is doing is eating away at the cartilage and it turns into spores and resides in the cartilage of the fish. When that fish dies it releases the spores and it starts all over again. And as it gets wider and wider it has to be there for some time, years at least, to be detected. And that's why it's so dangerous. There's really no way that you can eradicate it that we know of, even if you nuke the entire Madison. I'm sure it is somewhere else.

The tragic nature of whirling disease and the ways it can be transported and spread is that it will eventually get to wherever it can reside, in my opinion. Where it is possible for it to reside. Montana has been fortunate enough that we've been able to manage around that disease for a while. It's even in the Missouri downstream in the system below it.

INTERVIEWER: Right. Do they think it was illegal introduction at some point?

DOTSON: That's speculation.

INTERVIEWER: Speculation. But it would have been years before they knew it.
DOTSON: But it would have been years before detection. It was years after hatchery stocking operations had ceased in the Madison. And any of the hatcheries that had stocked fish in them, in the state hatchery, into the Madison, we have never had a known infection of whirling disease at any of the hatcheries in the state, even private hatcheries.

INTERVIEWER: Well you've been proactive to keep things out.
DOTSON: That was the beneficiary of the initial fish health requirements that we developed early in the '70s to prevent that. But yet this one happened. It's really, in some places in some parts of the country, it's devastating to salmonid fisheries. And due to the location of Montana and the water temperatures as I understand it we've been able to manage the impact to some extent. Either natural or proactively doing things that would limit its impact. Since then we still require any hatchery plant to be free of these pathogens that we list in our fish health regulations or be imported. You may have read in the paper recently where they are destroying fish at the Great Falls hatchery from the water backing in from the dam. I believe that whirling disease has been detected in the Rainbow Dam area.

INTERVIEWER: Recently?
DOTSON: As it moves down. In my opinion, it's the right decision. Quarantine and destroying those fish is the only option. They could go right back in the Rainbow Dam and a couple of fish ponds close to the hatchery.

INTERVIEWER: And Northwestern Energy has agreed to help with cost and cleanup?
DOTSON: Yes, with cost and cleanup according to the newspaper report. That has been in my opinion the most devastating fish health issue in the state.
INTERVIEWER: Do you remember if there have been any laws written to tighten up the fines for illegal introductions? I imagine it's really hard … too difficult.
DOTSON: Unless you catch someone red-handed doing it. Or you have someone who is a witness. It's extremely difficult to tie it to someone and get a conviction for it.

INTERVIEWER: So you have to try to use education and informational resources to keep everyone informed not to do that.
DOTSON: Even though it wasn't an issue when I was in the hatchery system, but recently the mussels issue in recent years has been very important. And I guess we have some of those in some places in the state. But whirling disease has been the most tragic illegal introduction in my opinion. But the other mussels that are of concern, I don't know much about that biology, but when you look at the photos of what they can do, plugging waterways, totally devastating some of the aquatic environment, they pose a tremendous concern for the fish.

INTERVIEWER: Have they been illegally introduced too?
DOTSON: At the most ultimate test, probably, but I don't think intentionally. They will stick to the bottom of the boats and things like that.

INTERVIEWER: Were they found at the Flathead or ..?
DOTSON: I don't know. I know that the New Zealand mud snail has been found in the Madison up in the Park area which is strange. That's what I've heard. But that's something that's going to be a threat and probably we need to try to work to contain it. If we can eradicate it, yes.
[End of Recording #2, 5/23/2016]

[Beginning of Recording #3, 5/23/2016]
INTERVIEWER: Okay, Thurston. Do you want to talk about some of the publications that you authored for the department?
DOTSON: One publication I authored that was published in *Montana Outdoors* was the broodstock management; the emphasis mostly about the Yellowstone broodstock of which I am mostly familiar with but it covered both the Westslope cutthroat and the rainbow broodstock at Arlee. I also wrote a news release regarding air planting of fish released January 12, 1982. And I also authored an article that was published in the *North American Journal of Fisheries Management* in 1982 titled, "Mortalities in Trout Caused by Gear Type and Angler-Induced Stress", that was a study that we developed where we studied the effects of mortality on gear type with trebles, single-barbed and single-barbless hooks. The findings of that was that the

treble hook was the least damaging to the trout. Contrary to popular perception. Also with the variety of temperatures at our hatchery we would set up a program at three of the different hatcheries, Bluewater was the warmest temperature, Anaconda which was our coldest temperature, and at Big Timber was just kind of mid-range. We found in that testing the fish and playing them to exhaustion and then releasing them and tracking them for thirty days we found that fish mortality increased with water temperature. Bluewater had the highest. It was 58 degree F. water system. You could only speculate but with the higher the water temperature and catching rate, the mortality would increase with increased temperature. We did that with the treble hook and we found it was the least damaging gear type. The most times that the fish was hooked from the front of the mouth due to the number of opportunities to being hooked and we would gently release them without doing damage to them during the releasing process. In addition to that there was a magazine, a popular magazine called *Northwest Sportsmen* that was published out of Big Timber and one of the reporters for that, Marjery Pepiot. It was a feature article on "Perpetuating the Yellowstone Cutthroat Trout" where she reviewed the hatchery operations and the activities we were engaged in at the hatchery. And the other article she wrote was "Spring Planting in the Beartooth" where she went with us and documented how we deal with loading the fish, transporting them safely and releasing them at the release sight. They were all; all of these are available in the Fisheries Office. I think particularly the article that was published in the *North American Journal of Fisheries Management* and the one with broodstock management made a real impact in management of those species.

INTERVIEWER: Sounds pretty good, sound procedures that would help with mortality.
DOTSON: We were able to learn what species response was, gear type, stress under different water temperatures, etc. It was really insightful for me and when I developed the article I had a lot of encouragement from Art Whitney and other people in the Fisheries bureau. Art reviewed and suggested some things about the article and other people and they found it worthy of publishing in the national journal.

INTERVIEWER: That's wonderful. And we'll get copies of those. So I assume you also had Dingell-Johnson reports you had to write periodically?

DOTSON: No, the hatchery system was excluded from the DJ funding until just as I left. So I wasn't involved in that.

INTERVIEWER: So when you decided to retire, what was going on at that time?
DOTSON: Well, after thirty years in the state of Montana or more and living in Glasgow, Lewistown, Missoula, Libby, Missoula, Anaconda, Bridger, Big Timber, and Helena (Laughing) – I had a good view of all of the state and what it has to offer. No place in the state of Montana, I don't think, I would be unhappy if I lived there. But with our family, Betty and the boys had got a huge education at the different areas we lived in and it was great. We settled in Big Timber for nine years and the only real negative or difficult thing that occurred was after we were in Big Timber for just a few months our youngest son was involved in an accident and didn't survive. Other than that Montana has been good to us and we've enjoyed wherever we were.

INTERVIEWER: When you retired from Helena, what did you think about doing, were you going to travel or have some hobbies?
DOTSON: Oh I have a hobby. (Laughing) I love fishing. But I love hunting, I love reloading and shooting but I guess the thing that I spend most of my time at… in the early '60s my brother-in-law transmitted "rock pox" to me, rock hunting disease. (Laughing)

INTERVIEWER: Oh, rock hunting?
DOTSON: I describe it as a "terminal affliction" and the only thing that will relieve it is more rocks. I've learned how to do lapidary work and I view rock primarily from a cutting perspective even though you do pick up by osmosis some geological information along the way. But you learn a lot, there are people in this hobby that are extremely learned geologists. I belong to the Helena Gem and Mineral Society and I go to the show every year. I cut Cabochons which are the oval rounded stones you see in belt buckles and bow ties and rings.

INTERVIEWER: So do you do gems at all, do you look for sapphires?
DOTSON: Yes, I do faceting. I thoroughly enjoy it.

INTERVIEWER: Oh good. That's wonderful. It's a great hobby.

DOTSON: I'm not a huge, prolific fastener but I certainly enjoy it and the result is quite satisfying.

INTERVIEWER: It's very gratifying when you see what you can do, how you cut it, different cuts, different shapes.
DOTSON: Different shapes and knowing how you have to treat each kind of gem differently, different angles.

INTERVIEWER: Do you go to different parts of the state to look for rocks?
DOTSON: I did a lot of rock hunting all over the state and where we lived gave us plenty of opportunity to take advantage of what was offered in the areas. And we travel to shows. And it was about five years ago, the National Gem and Mineral Society which is, each organization has its hierarchy, there's the state organization, regional and then national. The national organization and the Billings club were successful in bringing that to Billings. I believe it was 2005 and we made an application and I was accepted to display our wares at that. It was a four-day event in June in Billings Metra, not the Metra, but the hotel area just off the Interstate in Billings. And huge attendance and saw my first moon rock there, my only moon rock, it was on display. And the material and the cutting ability of people around the country was displayed there. And they accepted our application and we enjoyed that and had a very successful show.

INTERVIEWER: Great! And you are still doing that now?
DOTSON: I still do that. I've been doing the local Gem and Mineral Society show each year. Next year will be our last one. At the stage of advancing years, but the camaraderie of that and being able to visit with people and get their ideas on how they do things has been very educational.

INTERVIEWER: I'm sure. And you've been able to show them how you do it too. Everybody learns from each other.
DOTSON: And we're trying to get some younger people into the society. Due to all their distractions, these kinds of endeavors are… with all the competition for kids times and efforts, we've been successful at the local level in converting a lot of youth to the interest.

INTERVIEWER: Very nice. Good hobby to have.
DOTSON: We've enjoyed that tremendously. And Betty before she encountered her issues with breast cancer, she was a very competent silversmith. That lady could do things with a piece of silver.

INTERVIEWER: That's great. To have that knowledge and skillset.
DOTSON: She was good. She encountered breast cancer in 2009 and luckily it was in the very beginning and we were able to get her through the treatments. We're six and a half years out and there's no sign. So we are hopeful she won't get a reoccurrence.

INTERVIEWER: Of course. Yes, they've learned so much more in that field now.
DOTSON: We've enjoyed our time in Montana. With my military time, when they started in the early '70s, the legislature approved the option for us with military background could buy up to five years military time for retirement. The initial buy back options were very inexpensive. So I took advantage of that and bought five years back. When I retired I had 28 years with the department and five years with the military. Like everything else, younger people coming up are more educated and advanced and there were issues facing us that I determined I was not ready to confront or have the stamina to deal with. It was time to retire and get a new crew on board. But I enjoyed it and the people here were very helpful. It was a wonderful experience.

INTERVIEWER: Well, after thirty some years.
DOTSON: If I had to do it over again, I don't know much of my life I'd do different, other than ask my wife to marry me earlier than what I did.

INTERVIEWER: Oh, nice. Well, it's great to have a good solid career that you've enjoyed doing and would do it again.
DOTSON: I look at it as an enjoyable endeavor, it was never work.

INTERVIEWER: Wonderful, how lucky you were.

DOTSON: It wasn't a problem for me to turn back comp time. If I, it was just a two man hatchery down in Big Timber, if you stuck strictly by the comp times rules it wouldn't be good.

INTERVIEWER: Right the hatchery would not benefit, nor the fish. Well, I want to thank you very much for agreeing to be part of the Oral History Project for Fisheries Division. It's been great hearing your stories.
DOTSON: Thank you. And if there is some gap we need to fill in, that would be okay.

INTERVIEWER: Another short session? Certainly. Sounds good. Thank you for being part of the Oral History Project for Fisheries. This information will be very useful for researchers and others who want to know the history of our Montana fisheries.
[End of Recording #3, 5/23/2016]

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INDEX TO THURSTON DOTSON
ORAL HISTORY