

vincent-dick-2016-03-02.mp4

Dick Vincent [00:00:11] Well I guess, to start with, what I think has been important in my career, and difficult at times, but a pleasure most times. Is the fact that, when I started, there was no technology or equipment or anything, to understand river fish populations, mostly trout, is what I'm speaking of. And so I was assigned to try to develop some gear to sample the fish, and then try to quantify what the populations are like in the river. Because we were guessing. So I said, "If fishing is poor, the population is down, that's just a guess of a fisherman."

Jim Thull [00:00:50] What year would of this been, about?

Dick Vincent [00:00:51] That would have been 1966, I started. And, I thought it was a great challenge. He said, my boss at the time said, "Have at it. Do whatever you have to do, to develop, this what we want, as an end product. We want to be able to sample out of our large streams, and then be able to do something with the data after you've sampled 'em, not just see the fish. But kind of come up with some way of quantifying what's going on out there." Because we really didn't know. And, to be honest, if you'd go back to 1966, or maybe '67, some of the things I said, I would have eaten later, because I was being more like a fisherman than a biologist. I only recognized what you caught, as what was there, not what was there, was there. And so, within two years, I developed ways to sample large rivers. And then come up with a system to quantify the populations. Which end up being a mark-recapture system. And that way, we could actually, quantify numbers of different species, numbers of different sizes, and then through an aging technique, using on fish scales, which was known, kind of quantify how many were 1 year old, 2 year old, 3. You kind of want to know, how the population's faring, are there enough recruitment coming in, or there's too many old ones going out, or not enough. So, without that data, we were basically not much better than guessing what was going on.

Jim Thull [00:02:24] Now was this for all species of Trout, Whitefish?

Dick Vincent [00:02:28] Everything. Whitefish sort of got to be the outlier. No one, at that time, including us, to some level, were interested in Whitefish. Even though they're salmonid, and they're a game fish. Fisherman as a whole, couldn't care less. And they're native. They coulda cared less. I had fishermen say, "Why don't you just throw 'em out when you catch one?" They go, "No we can't do that, they're native species." And, it turns out, very important native species.

Dick Vincent [00:03:01] white fish, kind of tell you the health of the systems. They're a little more fragile than say, trout. In the sense that, water temperatures, flows, all these things, have a real important role in they're, how well they do. And it is sort of like a canary in a coal mine scenario, if they're not doing well, then there's problems out here. That we haven't identified. Some of the Johnny Come Lately trout, which are Brown trout and Rainbow trout, are a little more hearty. In the sense that they can take a little more disrupted environment, and kind of hang in there. Grayling and Whitefish not so much. And Whitefish have done real well, until recently. The numbers were huge in these streams, just everywhere, but that's not true anymore. Which I can get into in a little bit.

Dick Vincent [00:03:58] So it's not even population. There'll be places where there's more Brown trout or Rainbow trout, more large Brown trout, or large Rainbow trout. Small fish inhabit a certain area, and so when you go down a stream in length, there will be sections that are not very good. The habitats poor, there'll be some there. And then you'll hit a good

section, where the habitat is more ideal for whatever, say large trout. Versus smaller trout, versus Whitefish. Whitefish have a different need than, say, trout do. So it's not uniform. And, and our electric fishing was developed with, what we call a mobile probe. You know, prior to developing this system, the only way we could do, and we collect fish with electricity. Direct current, is the primary current that we use. And it's, it causes fish to align, so their head goes towards the positive electrode, that's where they get the least shock. So if they align themselves with those lines of force, they can move with less shocking. If they try to turn, then they get, shocked, for a better term. And so when they swim, they swim towards a positive electrode, which is our mobile probe, and then we net 'em up, put 'em in a tank, and it doesn't really knock them out, they just. They tend to just, because you pull electrode, everybody disappears. So it's a pretty nifty system. And we did float down and do certain sections and accumulate an X-amount of fish. And then we go into our population work, where we take scales, we mark the fish, this type of thing. So the technique that we used, or developed, what I said earlier, is mark and recapture. And that way, we may, on a river like the Madison, have each section, each stop is a half-mile away, we may have a four-mile section that we actually do estimates on. We stop every half mile, work the fish, do what we have to, to mark them, tag them whatever. And put them back. And then start over again, and keep doing that. And over a period of several days, we'll mark X-amount of fish. And, say we've marked a thousand fish, in a particular section of the stream, we'll give it a couple of weeks, come back, and then we do the same technique. Only this time we're looking for marked and unmarked. So when you, say you take another thousand fish over a few days, and 20% of 'em are marked, that meant you marked 20% of the population, or the population is five times whatever you marked, which in this case would have been 5,000. That's a simplification of what we do, it's done, each size of fish is more or less shockable, so you have to estimate by sizes. And so you do the number of fish between five and eight inches, for example, and eight and ten, and ten and twelve. Because, the longer the fish is, the more easily it is shocked. Or collected. Up to a point. At a certain point, the fish can sense the electricity, prior to it being a problem, and it goes, "I'm out of here." So you find that, the percent that you can actually shock and capture in any one day, is... The little ones are hard to shock, because they're too short, they're not long enough, big ones, because they can sense it and get away. So you have sort of a bell-shaped curve. If you plot size against efficiency.

Dick Vincent [00:07:43] Totally different.

Jim Thull [00:07:44] Really?

Dick Vincent [00:07:44] I mean, you take a section, and I'll just give the example, on the Madison. If you go the Madison River, above Varney Bridge, which is the open, flatter water. That's more Rainbow, type water. Brown trout like bank cover. Particularly large Brown trout. Anything over, say a pound, prefers, oh behind a rock, where brush is in the thing, they like a heavy cover. Rainbow, they're more of an open water fish, depth is their cover. In other words, if the water's deep enough, that's fine for them. And you'll find the upper Madison, is probably 70% Rainbow, 30% Brown. But as you move down the river from Varney, to the lake. And it becomes more channeled, and there's a lot more bank cover, so Browns dominate there. From there down, it's 70% Browns, 30% Rainbows. And then you'll have streams where it's equally. Then you have streams where there's no such thing as a Brown trout, for all purposes, like the Gallatin. Once you get it in the canyon, Brown trout are rare. Exceedingly rare. It just isn't their type of water.

Jim Thull [00:08:53] Do they tend to hang out in the same spot?

Dick Vincent [00:08:57] Yeah, interesting enough, that's another thing none of us really knew about. So we used numbered tags, a lot of times, in the early shocking. And we'd release them there, and they'd end up back where they always were. We found that 5% would leave the small reach that we called a subsection. And that might have been just fringe movements, you know, cross a small boundary. But trout don't like to move a long distance. They, the exception to the rule is spawning time. And you'll see adults kind of start shuffling around, but they generally return to where they came from. Amazing enough. And one of the things that we found with trout, and I think good fisherman would know this, is that if there's a big fish in there, he owns that until he dies. And they have a pecking order, based off of size, so the best feeding cover belongs to the biggest fish, and there on down. And so it's clear, when you're electrofishing, you can see the same thing fishermen see. You go, "OK there's gonna be some nice fish in this piece." Just from looking at the habitat, you know they're there. And it's a lot like fishing, but kind of cheating. You don't have to be real skilled.

Jim Thull [00:10:15] Are Whitefish the same way, do they hang around?

Dick Vincent [00:10:17] No, they're just everywhere. I'm sure they have a distinct habitat, but they are not so confined, as I saw it, to any particular thing. They can. They like open water, you can see them a lot in the open water. Small fish, whether Whitefish or trout, pretty much hang into the quiet waters, where the big fish aren't. It's just not in their best interest to mix it up with big fish. But Whitefish are more general. And Grayling, I've not seen enough in my life, to have any good feel for it. Because the rivers I worked on, a Grayling was a rare sight. You may see one a day, or never. They're real uncommon. Except in the Big Hole, there aren't a lot of them around.

Jim Thull [00:11:01] There seem to be just a couple of pockets left here in Montana.

Dick Vincent [00:11:04] I think they're a remnant from the glacial period, unfortunately. And I think as we have changed the environment, as humans, and as things move along. The odds of them hanging in here are remote.

Jim Thull [00:11:17] And they were, they're one of the few Native fish to Montana, correct?

Dick Vincent [00:11:21] And there used to be huge numbers of them. That's the interesting thing. Much like Whitefish. Whitefish are on, in a lot of places, on a heavy decline, right now. Without a total unknown culprit of why. They were ignored by fishermen and fish biologists, both. And so we don't know a lot about their numbers, we just see a lot of them, but we never enumerated them, and never tried to do estimates on them. Because, it was, you couldn't do both. One of the things you found is Whitefish are more fragile. If you net them and put them in a tank, their chances of dying were higher than trout, by any means. They just don't like to be handled, and contained that well. You start losing them. And so we tended to see them, but not capture them, unless it was by accident, because they're pretty fragile. And they don't take well to electrofishing anyway, so you gotta turn down the total wattage to work with them, and then at that time, trout ignore you. And so they didn't get looked at, unfortunately. I feel badly about that, because, frankly, they are native fish, and they're important to the trout. Because I'm sure trout eat lots of small Whitefish. Because they come out in huge numbers, Whitefish have a very small egg, and the smaller the egg, the more eggs they put out, and so the more young. But the survival rate is poor. So they turn out to be food. Which is not all that bad, for other species.

Dick Vincent [00:13:03] Because trout fisherman push, or sportsmen, push what you study. You know, they're not interested in studying suckers, or sculpins, or other species. It's the fish they're interested in. And they're paying the bill, so. They have every right to ask that. And so the focus was on Rainbow and Brown trout, to be honest, and to a lesser degree Cutthroat. Which, by the time I got there, as a biologist there weren't a lot of Cutthroat in the stream site or the large rivers. They just are here and there.

Dick Vincent [00:13:42] Primarily. I believe so, because I don't think the rivers, at least now, are in that bad of shape. With flows, and water quality, and habitat. So, my assumption is, that the Rainbows and Browns kind of pushed them out.

Dick Vincent [00:14:02] Well, when I started, the battles were, fish habitat and flows. Because that was a contentious issue, then. And I don't think that's changed. I think the demands on water, and water use, and habitat preservation. Are ongoing battles that don't end. But one thing I've noticed, and I can get into that a little bit, is that when, we did a lot of fish stocking. And I'm kind of moving to another area, people were less concerned about flows and habitat, believe it or not. It was, that was not their primary concern. No one said, "How good are the flows in the Madison? How good is the habitat? We're kind of, poor fishing, could you put some more in?" And when we stopped the stocking, and it was wild fish. Then wild fish need, and I think they recognized, they needed flows, they needed habitat, and they needed protection. Or you don't have anything. You can't put some back in, because what you have there, is what you allow to happen with however you want to manage the flows, and the habitat. So. That battle got more angler support. But it hasn't changed, I think that it's just an ongoing problem. Water quality being thrown into that. That whole cup. And I think that's the future. The other one that's, it doesn't have to do with fish, primarily, but the fisherman, is access. That is always, when I grew up, that was not a problem. There was no such thing as no fishing. Or no trespassing, while you're fishing. Everyone let you on. But as more and more anglers came, and then problems came and then things got posted. And Montana's kind of unique, in a lot of ways, 'cause there, they have protected, through laws, access for fishermen on streams. And if that ever, if anglers ever lose that, we're in a lot of trouble. Because then it will become more of a private fishery than a public fishery.

Jim Thull [00:16:10] It seems one of the things that we've got right, and in a few places in the States, is public waterways. In Montana, and the idea that the State, the people, own the stream bottom, and own the river to the high water mark, I believe it is?

Dick Vincent [00:16:23] Right. And you can trespass in a sense, you can walk up and down the high watermark. And there states that is not possible.

Jim Thull [00:16:32] True, yeah. Wyoming, I believe.

Dick Vincent [00:16:33] Yeah. And I think this is something unique about Montana. And I think anglers should be very vigilant, and don't let that be taken away from 'em. Because if it does, it will not be what it was now, or is now.

Jim Thull [00:16:46] There's regular challenges to it.

Dick Vincent [00:16:48] Every year, there's a challenge. I, Even though I'm not as active in this world, you can see it in the newspapers. Somebody wanting to shut down, for

private use only, certain sections of streams. And so I think anglers, and angler groups, should be really vigilant. Because there is an area they can lose big time.

Dick Vincent [00:17:08] A lot of trout. That's me, that's my opinion. I never enjoyed fishing for stocked fish in streams. Because, I don't know, it was too easy. They were predictable. They weren't a real challenge, and I think angling's about a challenge. A wild fish, you have to know what they're doing, and where they're doing it at. And, quite frankly, one of my experiences, both as an angler and as a fishery biologist, is that hatchery Rainbow trout don't abide by rules. They have no habitat rules, they're everywhere, where they shouldn't be. They don't recognize dominance by size. They just do what they do, and it's very disruptive, because trout are very social. They have hierarchies. And I enjoy fishing wild things. I kind of ruined my fishing, somewhat, knowing what was there. I think part of the allure to fishing is not knowing what's there. And, boy, there must be one 10 pounds, under that piece of brush. Well, I know there probably isn't. In that specific thing, and that does take a little bit away.

Jim Thull [00:18:24] A little of the mystery.

Dick Vincent [00:18:26] The mystery is part of the deal. You know. And again, the stocking, there was no mystery. You were gonna catch them, ten to twelve inches long, and that's pretty much all you were gonna get.

Jim Thull [00:18:36] And just to clarify, when you say wild, you mean wild, not native. Any species that's...

Dick Vincent [00:18:41] I don't discern between native, wild, and introduced wild, here. Most of these fish, now, have been here almost a hundred years. And while they're not native wild, they're certainly wild. And you're not going to get, we're not going to return to native wild, that's just not going to happen.

Jim Thull [00:19:00] Yeah, certainly not everywhere, that's for sure.

Dick Vincent [00:19:02] No, I just don't. There might be select spots, that we can pull that off, but not, you know, but as an angler, I just like the mystery. Just to be out there. I didn't really care if I caught a lot, or didn't catch a lot. Just being there was fun.

Jim Thull [00:19:16] That's true.

Dick Vincent [00:19:17] And I've tried to teach the boys that, my three sons that, and some of them caught on to it. A good day isn't 20 fish you caught, it's just being out there. That's all it is, there's nothing more than that.

Dick Vincent [00:19:34] I would look at the park as different than the rest of the world. And while it's not going to be possible to totally extract non-natives, whether they be wild or not, out of there, the goal should be, probably, for native. Because that's what parks are about. So I don't really have a problem with that, I just think that it may be unrealistic to believe you can do that everywhere. In say, Yellowstone Park or Glacier Park. But that ought to be the goal. Is to try to get as close to native as you can. I just think it's not gonna happen in places.

Jim Thull [00:20:12] And the Yellowstone cuts and Whitefish I'm guessing here?

Dick Vincent [00:20:15] Yeah, and on the other drainage, like the Madison, the West Slope cutthroat.

Dick Vincent [00:20:26] Yeah, I have two people who influence me, my dad who loved to fish, that's he did when he wasn't mining, and my grandpa. Who, for all I could tell, that's all he did, was fish. Which was cool. Because he took my brother and I fishing all the time. And I think, what I liked about fishing, and the Madison strikes me as the place, because I grew up on the Madison.

Jim Thull [00:20:51] This would have been the '50s?

Dick Vincent [00:20:54] '40s. I started fishing the Madison, in 1945. When I was five. And, because we lived in a little town called Norris, which I'm sure you know where it is. And Dad worked in some gold mines around there. And, many evenings, we'd just go out to the river and fish. And my grandpa had a ranch, in the '30s, right off of the Madison River, same area. It was sort of a truck ranch. It wasn't like a cow ranch or anything, or cattle ranch. When they'd asked me where we want to go fishing, I'd say Madison, because that's my remembering point, that was where dad took me fishing, brother went with me, my mom fished, my grandpa went there all the time, and so we fished the Madison, from one end to the other. My dad was born in McAllister, which is on the Madison, and so the Madison is, when I was young, that was the only river that existed, to me, personally. So, when I think of fishing, I think of the Madison. And it kind of brings great memories to me. Everything we've done there. So. But I like to fish other places. But that was my spot, and I always felt blessed that I got to actually work on it when I got older. And so, I just have never felt about a river, like I feel about the Madison. Just simply because that's where I grew up.

Dick Vincent [00:22:20] Yeah, I do. The biggest fish I ever caught my life, I was 6 years old, and I was fishing along, and my mom was always undoing my snags, because I'd always hang it up on something. And I was jerking on it, and she said, "Oh, you're snagged up again." I go, "Yeah." And so she got a hold of it, and it started going, and it was five pound Brown.

Jim Thull [00:22:46] Wow.

Dick Vincent [00:22:46] The biggest fish I ever actually caught, trout wise. You know, I've got bigger trout, but not that. Not Browns, Rainbows.

Jim Thull [00:22:57] Were you fly fishing then, or spinning?

Dick Vincent [00:22:58] No, I was worm dunking. Little kids, you know, you just walk along with the worm. Dad fly fished. That's what he liked. But I don't think they wanted to dig flies out of the brush for me, so I dunked worms for a while.

Jim Thull [00:23:11] I think that's how most of us started.

Dick Vincent [00:23:12] And it was fun, I enjoyed that, and it kept me busy. Or I'd use something like a salmon fly or something, on a hook. It was live bait. And as I got older, then I kind of migrated into other types of fishing. But my first fishing was worms.

Dick Vincent [00:23:32] Well, eventually, you know, I'd recommend going out with the concept that you're going to have a good time, just experiencing the water. And the type of

fishing is sort of up to you. If you're a beginner, you're probably going to start with something other than flies. So as that's a little more skill type fishing. And, whatever makes you happy, and then you will, like I've seen almost everyone do, migrate from bait, to lures, to flies. Simply because the challenges increase, as you move with bait types. But just enjoy the experience. Don't worry about how many fish you caught. I see too many new anglers, I've always personally objected to kid fishing sites or dump a bunch fish in for fishermen, or young fishermen, to catch to get them excited. It didn't take that with me, I didn't have to have a five-pound hatchery fish to make me happy, just to go out with my dad and brother. And enjoy the whole thing. And if I caught one, I felt good, even if I was 10 inches long that. Was fine.

Dick Vincent [00:24:42] The number of people. Just huge. Where we fished, when I was young, which was the lower Madison up from Norris, that was a dirt road. There was no highway there. And to see another angler was an unusual experience, I mean, I'd go a whole day, never see anybody. And same with the upper river, when I started fishing up above Ennis. You know, probably when I was in high school. And I fished it before then. But you could go and not see people. I dare you to go out there and not find somebody. That's just the way it is, it just, the number of people. And the number of people fishing from boats, you never saw that. And, I mean, it's just unbelievable. The change. In the amount of people. And I think that brings problems. And. But it brings protection. Because the more people that enjoy it, the more people don't want it taken away. And so, if you look at the stamp, and I know some people that don't like out of state fishermen, for example, because they're our waters. I look at it, it's everybody's water. And the more people that say, "That's my water and I don't want it changed." The more, the better the chance you have of preserving it. Because if people don't care, it gets taken away.

Dick Vincent [00:26:05] A person that doesn't get upset by not getting a fish that day. Because I've seen people throw tantrums over not getting a fish, and I'm going... My young son said it the best, he said, "Boy, we had a bad day today." And I said, "Really? I said you got out in this open, we fished together, we talked. Who cares what you caught?" And he said, "I think you're right." And later he told me this. He said, "I always think about what you said there, that it isn't how many you caught, or how big they were, it's did you have a lot of fun? Did you enjoy it?" And I like people that take that, I don't like to fish with someone that thinks they need to fill their creel. That aggravates me, actually. That's not what it's about. It's having a good time. And enjoying nature.

Dick Vincent [00:26:58] You know, as I sequenced through my studies, you know, I started with flow studies, worked with a stocking study, which shows wild. And I mentioned earlier, you have new problems that occur. Because no longer can you just fill your creel, and not feel like you're having an impact. And what we found on the Madison, I don't think you can destroy a fishery by overfishing it, but you can destroy the structure. And by that, I mean, for example, on the Madison we found that fish say, over three years old, or over a pound, 90% of those were being lost. To either anglers, or something. And that's not acceptable. I mean, you can't recruit enough young fish in to fill those spots up. So what it did is, tilted the population of where they're all small. Plenty of them. Total pounds of fish didn't really change much. But how they were structured changed. And it bothers me that when we change age structure, or size structure, because what you do, is nature is selecting the most fit individuals to go through the system. And when you're four and five, you're entitled to spawn. And put your genetic stamp on the population. If we allow that to be one and two-year-old fish, which they can do, have we started to select fish that haven't proven they're good enough to live and reproduce? And I think a population that's more... Evenly structured, is healthier in the big picture, because, down the line, there are gonna

be some tests on these populations; flows, parasites, diseases, you know, all these things, and these fish have to prove that they can handle these things. And when you back it, to where there's nothing but little fish on the Madison, they would take them out when they hit eight inches. And the population was distorted, just for example in a study section, there might be 10,000 yearling Browns and Rainbows. And then the rest of the population, like four or five hundred. When we restructured it, in other words, allowed nature to structure like it wished to be, and not selectively remove sizes, you didn't see that. They dropped down to two or three thousand small fish, and then maybe a couple of thousand large fish. So, poundage wise, it was supporting about the same amount of pounds of fish, but they were distributed in a different manner. So what catch and release did, is allow that structure to be more natural. It didn't save the fish, it might have saved them, but it is certainly returned it to more natural. We did a study, I designed a study, on the Madison, where we had the old angling, you could keep 10 fish at that time, we had a catch and release section, and we closed a 7-mile reach, couldn't fish on it at all, and ran that for six years. To see how no fishing, catch and release fishing, compared to what we knew heavy harvest was. And while no fishing, and catch and release fishing, the end product was almost identical. In other words, population structure was correct. How it went there was different. For example, populations, generally, if they're untouched by humans, and just whatever else changes them. You will lose most your fish during the winter. That's when the highest mortality rate, natural mortality. So the summer might be; lose 30% over summer to other fish, predators, disease, whatever it is. The wintertime you lose maybe another 50% so if you add them together, it's about a 60% loss, because you can't add the 2 percents. But what we found is, with catch and release, there was enough release mortality, that the summer was around 45% and the winter was, like 30, but if you added them, you ended up with the same overall annual mortality. About 60%, either way. But not all fish that are released live.

Jim Thull [00:31:17] Now is that just people not knowing how to properly release them, or is there just a stress that's on the fish regardless?

Dick Vincent [00:31:23] It's the stress. There's two or three things that happen to a fish to stress them, one of them is playing them too long. And for example, playing them too long in warmer water, particularly with Rainbows, they tend to die. So and then hooking doesn't see, hooks don't seem to be, in themselves, a big issue. Maybe how you handle a fish after you take them off of there, you stress them but hook itself isn't so bad. But long-playing, handling them improperly, and tossing them out, hoping that they'll be fine. When we release fish, they get to rest for a while, they just don't get chucked back in the river. But the faster you can bring them in, and take them off, the better the chances are. Brown trout are not subject to that, they seem to not overextend themselves with fighting. You know, that may sound like a bad practice, but I think the stress of fighting on Rainbow, which is very energetic, versus a Brown trout, which is a little less so. The Brown trout do not, we cannot measure hooking mortality or release mortality, we are unable to. So, if you measure mortality in Browns, it wouldn't look like the Rainbow one. But right now, and I think it's holding, is that while the summer mortality rate's a little higher, the winter's a little lower. If you had no fishing, it would be reverse of that, but the end product is about the same. And it's worked. And that's a change that more people caused, if you think about it, a good population of fish is probably four or five thousand a mile. That would be pretty good. In fact, that'd be outstanding, to have that many fish a mile. And you think now, 4,000 anglers per mile is pretty easy to come by, if you count for the whole year. If everybody took one, guess what happens? Not good. I even went to the commission with that scenario. I said, "We can afford to let everyone have a half a fish without damage, or we can have two and some damage." So they chose, no. Go catch and release. And I

actually was not a particular fan of catch and release, but it works. I'm more than willing to say it works quite well.

Jim Thull [00:33:35] What do you, recently there is, I understand there's been a change in the regulations, here in Montana. It's now, as I understand, five fish, regardless?

Dick Vincent [00:33:47] I think it is. I kind of lose track of regulations once I. I don't fish quite as much as I used to, and I think that's right. Now, there's still a lot of catch and release. You know, and, in every little reach, or reasonable sized reach, has to be managed differently, depending on who's there. The Madison's unique because it's so catchable. The catch rates are so high in there. If you have a section of river that catches support, you don't need to protect it much. But yeah, I think there have been changes, and I'm not totally up on 'em I'll be honest.

Jim Thull [00:34:20] That's fine.

Dick Vincent [00:34:21] That's one area that I always heard complaints, as a fisheries biologist and manager. Is, it just gets more complex with the year, and I go, no question about it. But, unfortunately, this heavy use, that's probably the way it's going to be. They would like a simple one, I can have 10 anywhere I want, or five anywhere I want, or. It just can't work that way. Well, you might say you can have Brown trouts, you can't have Rainbows, you know, unfortunately. More people bring that. No matter how good the waters are. And I can say it, the Montana waters are good. We have done a great job as sportsmen, and everything, to keep our waters as good as anywhere.

Dick Vincent [00:35:13] Yeah, I've known Bud Lilly a long, long time. In fact, he was my high school chemistry teacher. I think I was a sophomore, or something. Probably about '54 '55. And I did an interesting little project on the side, where I had some water chemistry, from the river. And to give you a little background on the river, the Clark Fork River at that time, was so polluted by Anaconda Copper Mining Company, that it ran yellow, and the fish, there were no fish. It was dead. At least in the area that I lived. And so I thought I'd do, see what kind of aquatic insects were in the river. And so I did some small-time sampling and tried to correlate it with the river water chemistry. And it was a pretty small time thing. But it was kind of interesting, and Bud Lilly, even at that time, had a tackle shop in West Yellowstone. That's what he did during the summers, when he wasn't teaching. So I've known Bud a long, long time.

Jim Thull [00:36:10] Great. And Bud, as I understand, was supportive of your study with the hatchery fish.

Dick Vincent [00:36:16] Yeah, that, and the special regulation catch and release. Yeah, he's been supportive, and supportive in the whirling disease studies, the temperature studies, on the river. All those things.

Jim Thull [00:36:27] Excellent.

Dick Vincent [00:36:33] Well, I think the biggest challenges, as I mentioned earlier, are flows. I think if climate change is real, and I believe it's real, that we're going to have some real problems, not only with volume of water, but the temperature of the water. And that's going to limit what might be trout habitat now, into not trout habitat. And how we get around that, will be interesting, and I think that's going to be a huge challenge. And I think it's coming quickly, unfortunately. And the other thing is, I mentioned it again earlier, is

access. I just, I'm always concerned that access will become limited, through complacency by the people that use it. And I think those are two big challenges. There are some other challenges with fish. Whitefish concern me. As I had mentioned earlier, whitefish numbers, even when I was still working for the department, were dropping dramatically, a good example where we do have some hard data is Hebgen Reservoir. And we used to do a net survey, which gives us kind of a population index, it doesn't tell us the numbers, but relative abundance. Whitefish were the dominant species, in Hebgen. And they usually catch them off the bottom, that's, where their habitat was. During the period, up to the time that I retired. Which, 2008, the number had dropped from like 25 per net set, to four or five. And they were all big ones. I'm always alarmed, I know fishermen aren't alarmed, but anytime I see that all you see is big fish, you have a problem. Because you better see a whole gamut of sizes, or sooner or later, the big fish will disappear. And that's what we saw in Whirling. Things look good, before they really turn bad. And so Whitefish concern me. It could be, with climate change, could be part of the Whitefish problems, I think Whirling disease is playing a role with Whitefish. None of that's documented, it's speculation. But I think if they disappear, there's trouble brewing. Because it bodes poorly for the trout. And as I told some angling groups, the Madison River Foundation, that if you lose your small Whitefish you're going to probably lose some food for big trout, which is what you like. And they actually did fund a graduate study here at MSU. It has just been completed. And of course no, question they're declining. The question is why. And that wasn't answered.

Jim Thull [00:39:11] Do you know, is anybody working on that question?

Dick Vincent [00:39:13] I hope so, but I don't know it at the time. There are similar problems in Colorado, and Idaho. Where Whitefish are starting to decline. And I think it's probably not one single factor, it's probably a combination of changing, could be water temperatures, water flows, and I think Whirling. I know people don't want to hear that, biologists included, but, quite frankly, it's either coincidence that the big losses are where Whirling is, or it's real. And I don't think it's the sole player, but I think, I sort of look at problems with populations is, something exists almost to get them. In other words, they can kind of break even. But if one more factor comes in that's adverse to 'em, it tips it. And I've seen that more than a few times. Just, they're barely hanging on, and it looks fine. From just looking at it, from our viewpoint, but it's not fine. And it's this close to going from really good, to not so good at all, and that's how populations tip. It's fast, when they go. Because if they're on the edge for water temperatures, and you add one more thing they can't deal with, that probably is too much. And it'll tip them right over.

Jim Thull [00:40:39] You mentioned Colorado and Wyoming?

Dick Vincent [00:40:42] Colorado and Idaho.

Jim Thull [00:40:43] Colorado and Idaho. Is the Rocky Mountain West the native habitat of Whitefish?

Dick Vincent [00:40:49] Yeah, it's probably Colorado North. Colorado's program is southern fringes of the Whitefish habitat, but we are right in the middle of it. You know, we have some of the best Whitefish habitat, in the lower 48. And, if it goes, I don't know where they're gonna be. You know, it's sort of like Grayling. Grayling faded out a lot earlier. I think their demands for water temperature, and flows, and all these things, are more critical than they were for Whitefish. It may not bother Brown trout, or Rainbow trout. The last fish that will be here, will be Brown trout, quite frankly, they're tough. They're very tough.

Dick Vincent [00:41:36] No, I think it's knowledge. I don't think we know enough. And one of the studies that was done here at MSU, the one just completed, was more of a life history. Finding out where they spawn, where the young live, which is important, because we're really working from nowhere on knowing about Whitefish. And so, I think the more we know about what they require to be a healthy population is important. And then I think the next step is to get into, have you got, have some ideas why they're going downhill? And can you find streams where they're not? And why here, and not here? Type of thing. But I think research, I'm a big fan of research, because without it, you know nothing. I mean, you're guessing. You can protect something, but if you don't know what you're trying to protect, as far as habitat, then you're never going to get there.

Jim Thull [00:42:28] Makes sense.

Dick Vincent [00:42:29] And that's why I like the research into things. I've always considered myself more of a researcher, than a manager. Because that's what I love. And the managers need that to make decisions. And if you don't have that, you're making decisions, like I talked about earlier, from guessing. And trust me, that doesn't work well. I can remember a lot of guesses I'd like to forget. Because I even made a statement at a public angling meeting that, in 1966, that everything was fine on the Madison, there's plenty. When it was not true. Because I had no information. And we shock a few big fish, and go, "Oh, yeah there's some here." But that didn't really mean anything. So once you had the data, the data allowed us to make all the decisions necessary to, just like habitat. Does protecting this bring you more fish, or are you guessing? We can do that now. We can actually, and I did a study early on, on flows on the Madison River. Where they, they being the power company, was dewatering the river during early spring, late winter, and actually causing Brown trout not to do well. And I went to the power company with, what I now consider pretty minimal sketchy data, and they bought it, and they said, "Fine." And then we used research done by the Soil Conservation Service for snow flows, and worked out plans on how to get more water in the river at that time. And no one got hurt. Power Company, or the fish, or whatever. So again, getting back to Whitefish, I think it's research. I think there needs to be more research, and don't go into it with a bias. Because I see that too often, people don't want it to be this. Well, that may be what it is. Because some problems are more difficult to resolve than others, and biologists, like most humans, want to not have the hard things, up here, is the problem. It's easier to have simple solutions to hard problems. I saw a little thing, and I cut it out, in the comic strip, that aces what I have learned over the 40-some years. It's a little strip called, Non Sequiter, I think it is. Anyways, the cartoon says, it's a trail going, and the guy's sitting here with a, he's answering a question, is it; take this way for an easy simple answer but wrong, or this direction for a compl- hard answer but right. And everybody was taking the path with the simple answer, that was wrong. And that's the tendency of anglers and biologists, is to look for simple solutions to difficult problems. And they don't want to hear it.

Dick Vincent [00:45:39] I started my career with insects. My graduate thesis was on aquatic insects. Yes, I think there are things to look at, and I think Whitefish are a precursor. I think, what she was saying is, that the speed of change is always an issue, and that's what caught us with Whirling, it was, change was so rapid that it was struggling. But what I can say, is, and I know it's old hat, but wild fish are a better bet to make it, than us helping it with stocking. Because, you've got a fixed genetic individual, trying to beat a problem that they can't beat, genetically. Whereas a wild fish can adapt. Maybe if you do it too quickly, you wipe them out, but the thing on the Madison is what amazed me. I would not have predicted it to come out of the Whirling, that quickly. And I know why it did. I'm

positive I know why it came out so quickly. But, if that would have been a stock river, it would never come out. Ever. We would have frozen it to even a worse problem. So if you got wild fish, and you're protecting them. They could adapt. It may be not as quickly as we'd like them to, but they can adapt. Until you get to a point that, that species can't go there, from here. And so, I'm always more comfortable with wild fisheries, because, at least they have a chance. And again, getting back to the structuring thing I told you about earlier, is, if you leave it to the unproven, you're going to lose. In other words, you need these fish that actually reproduce and add new genetic material, are proven survivors, you're better off. And so I think, while I never thought of it at the time, a healthy population is a well-structured population. As well as just, how many pounds of fish you have, or how many total number of fish. That's really not as important as, is it structured correctly, on a long term basis.

Jim Thull [00:47:52] So do you think that things like whitefish, and healthy hatches, and things like that, can serve as kind of the canary in the coal mine on some of this?

Dick Vincent [00:48:00] Yeah, I told you, I'm worried about the Whitefish being a precursor. Because Grayling were a pre-precursor. I mean, we eliminated what they needed, real quickly. And sometimes we don't know what we eliminated. But we eliminated it, nonetheless. And so, something is amiss. I can't honestly tell you what it is, because I don't really know. But I do think that we, as fish biologists and as anglers, need to push for more information. Because that's the only way I know of that you're going to have a clue. It may be, the answer is, you can't do anything. But I'll worry about that when you get there. You know, because, most likely, we can do something. You know, maybe some further protection on something, or, you know, I don't know. What fish require. But they're not getting it. And I know biologists can be as prejudiced or as blind as anglers, because I've been both. And so you can not see what's in front of you. And data doesn't lie. I've always thought, if you have good data in front of you, you really can't go wrong. And I think making decisions on the seat of your pants is dangerous. Because you could be dead wrong.

Dick Vincent [00:49:36] To give you a perspective, when I started, TU wasn't even here. At least in this area. And sporting clubs were, you know, like hunting and fishing clubs. And I never heard anybody jump up to say, "There's not enough water, or the habitats poor or, it's just, there's not enough fish in here." But TU took a different perspective, as well as the other, like FFF and some of the others, that there's more to fishing than how many fish there are, it's why aren't there that many fish? And I think they got into habitat protection. And I think that's a plus, and then course, access. Which is a benefit, but not a bonus to trout, whether you have access or not, trout don't care. But, their emphasis more on, where they lived, and how many there were. And, while their motives for catch and release were different than mine, the end product ended up being the same, is, they worry they were all being caught out, I was more concerned that you were losing important spawners, end product the same. They are at least concerned that, you just can't go on believing you can take every fish that ever gets on your hook, and you haul them home. I did that when I was a kid, you caught a fish, you took it home. And finally, my dad said, "Why are you bringing them home, we can eat all these fish. Just put 'em back where you found 'em." You know, and I go, well it makes some sense. I didn't think about it is preserving the resource, it just was stupid to waste them. And that was his objection, you're just wasting them. So, I guess, their main goal was; fish are more important than just hauling them out and hauling them home. And I think that's important. Because that's a kind of a change in philosophy, and they actually did listen to biological things, where, no offense to the sporting clubs, that, that just wasn't a topic. His habitat and water and stuff,

it just it's down to me looking back, 'cause no one ever said, "You know they're dewatering the Madison River in February and March." 50% of the water was taken out, to store at Hebgan. When there was no snow runoff to make the difference. No one ever said that was bad. Just, the fishing is poor, do something. You know, and then, these clubs took over, the philosophy started to change, whereas it was important that these trout had a home, that was actually useful to them. And I think that's where they, and I think that's what they need to be vigilant in the future, that battle never ends, in my mind, never ends. I mean, water quality is as important as water quantity. You look at the Clark Fork, like I mentioned earlier, lots of water but nothing could live in that. And we have to realize that these are finite resources, and you just can't waste them away. And every piece is important. It may not appear to you at the moment, but even a small tributary might be a key ingredient to what's going on in this river. And they're all important.

Dick Vincent [00:53:02] Well, the type of angling has certainly changed. When I was growing up, fly fisherman were in the minority. I'm not saying fly fisherman are better than worm fishermen, than lure fishermen, I'm just saying that, what people want to use to catch fish has changed dramatically. And I'm not saying any of them are bad or good. Just the fact that, there's been a real change to fly fishing. And I think a lot of that is, it's skill levels. It's just much more difficult to learn to fly fish than the worm fish, and be good at it, and I think you have to know more about the fish. And that's one change I've seen, the other change I think is for the good. I think populations, if you would look at 1950 and look at now, I would dare say, there's very few places-- with the exception of a few native species--that things aren't better than they were, 50, 60 years ago. Population-wise. Things are all better. There was total disregard for stream banks, erosion, pollution. That just wasn't there. And I think people are more aware to, to, our benefit. And so, I think things are better in Montana than they were 50, 60 years ago. I'm not saying I can say that 50 years from now, I hope I could. But I just think people are more aware and more interested. In why fishing is bad. No one ever worried about why it was bad or good. They just went fishing. Now they're smarter than they were then.

Jim Thull [00:54:42] You think part of that is the economic impact, it plays such a huge part in our state's economy?

Dick Vincent [00:54:46] I saw a figure on, just river angling, it's just mind-boggling how much money it brings in.

Jim Thull [00:54:52] Like hundreds of millions of dollars.

Dick Vincent [00:54:53] Yeah, it's the number one industry, almost. Over hunting. It does more than all the hunting there is. And that's impressive. And that's good.

Jim Thull [00:55:03] I think just tourist dollars, are over four hundred million.

Dick Vincent [00:55:07] Yeah, I just looked at and I thought, 'You got to be kidding me.' And it should be, we have the best of the best, far as I'm concerned. And I've had friends in most of the states, and they'd kill for what we have on resources. We can do things, management wise, say a state like New York can't do. They've already lost a lot of their resources, and they have too many people. In Colorado, it's kind of in that area, where there's more people than resources. And they, unfortunately, haven't fared well in saving them. We've done a good job here. And I say we, I mean anglers, because that's who eventually writes the shotgun on this, and says how good or bad things are going to be. Because if they don't support the data and the information, it doesn't happen. I mean I, as

a biologist, I can say we should do this, but if you as an angler don't believe this and won't support it, doesn't work.

Dick Vincent [00:56:11] It has to happen. And without it, no one listens. You know, not everyone likes good trout fishing. And so you have to speak up. And that's a role that didn't happen before, and it's happened, and that's why we have what we have. Is people that fish, will say something. I think it's really important. I know anglers like, you know, Bud, and I can name a whole pile of people, who have been well-known enough they can be listened to. And they deserve a lot of credit for... Taking the word out.

Jim Thull [00:56:55] I think John Bailey was another one of the supporters.

Dick Vincent [00:56:57] John Bailey, there's Tom Morgan, who runs the shop. I mean Tom is a really good friend of mine, and has done an outstanding job. Always been supportive, always supports what makes trout fishing better. I can't say enough good things about Tom.

Dick Vincent [00:57:19] I probably, I shouldn't say it, but it's Brown trout. They're tough. They've always been my favorite fish, even though I like catching Rainbow, I mean they're pretty spectacular. But Brown Trout can take more blows, and they get bigger. And of course, fishermen like big fish. And big fish are always Brown trout, almost always. And, yeah, they're not native. But boy, they're resilient.

Jim Thull [00:57:46] They're a little more wary I think.

Dick Vincent [00:57:48] They're wary. The don't. It's a good life lesson. Rainbow go crazy when they're trying to escape, Browns, for whatever biological reason, don't. And I think it is to their best interests. In other words, if things get real bad, don't get frantic. Just tough through it, and be calm. And that's Brown trout. That's why I like them. I like Rainbow real well, and Cutthroat. Cutthroat, my only exposure to Cutthroat as a kid is, the small tributary streams. Because my brother and I, when we lived over on Deer Lodge, and there was no big river to fish because it was dead. We, 8, 9, 10 years old, we'd grab a fishing pole, and walk three miles through a little creek to fish. Our parents allowed us to do this, I think in this day and age that wouldn't happen. But we'd catch these little Cutthroat, little Westslopes. Probably six to eight inches. They weren't very big. But we had fun. We never kept any of them, just got them and put them back. And that was my exposure to the native species, I didn't really see a lot of Cutthroat. Except when I first started with the department, I spent two summers fishing for a living. I don't know if I had told you this.

Jim Thull [00:59:03] No.

Dick Vincent [00:59:04] But I was hired as a summer worker, you know, I've just finished my freshman year, got a job, not that year, but after the sophomore year, up in Kalispell, and they had no way of capturing fish, because of water, they had no way of getting. And they wanted to do a movement study, so. Four of us were hired to fish 10 hours a day, and we'd be in a boat and we'd have a section, and we'd tag all the fish that were over a certain size. And I think, in the two years that I did that, and I fly fish six days a week, 10 hours a day, I tagged a little over 4000. It kind of burned me a little bit, to be quite honest, but it was fun. And that was all Cutthroat, it was all Westslope Cutthroat. And they were doing movement studies, so we'd fish this section, this day, and then we'd tally length and everything, and give 'em back to the biologist.

Dick Vincent [01:00:06] Yeah, I always have a fly that's been my favorite; Royal Wulff.

Jim Thull [01:00:09] Royal Wulff.

Dick Vincent [01:00:10] Yeah. That's been my favorite, that and Elk Hair Caddis are the two flies I use. Because, one I could see them, and as I got older that became an issue. And it just worked it, it always worked. And I did a lot of fly tying when I was young, and I actually, a friend and I actually sold them in high school, we'd tie flies and sell them to people or other anglers for extra money. And that's the one I liked. It was an easy fly to tie, and it's easy fly to see, and it floats nice, and I like that one.

Jim Thull [01:00:44] Catches fish.

Dick Vincent [01:00:45] Yeah, my wife, when we got married, didn't fly fish. She just bait fished, and there's nothing wrong with that. And finally we were out fishing in the East Gallatin, and she said, "Let me try that," she said, "This is boring, this way." Because there's more action because you can see them come up and get at it, even if you don't get it, you still see 'em strike. And she got hooked on doing that. And that she liked.

Dick Vincent [01:01:14] Well, I think they are, in this area, because this is their area. Just to give you an example, you, there's been fish brought in here, that didn't evolve here, that aren't trout. You know, I recognize Rainbow and Browns didn't evolve here, but they're salmonids, and they kind of require a certain type of habitat, water flow, temperature. When you bring in a say, I don't want to necessarily use Walleye, but Walleye or Perch or something, they're on, if you have a habitat range, from this being good and this being bad; Trout are right in the middle of ideal. You bring in a Walleye, or Perch, or a warmer water fish, if it gets warmer, it's better. See, we have, it, their range is wider on the bad end. And by bad, being warmer, I'm not saying warmer is bad. But if, so trout appear to be more fragile. But they aren't. It's just their habitat range is here, and we're moving it to here, and they can't use all that. A warmer species, water species, they're starting at the very top. And so they can adjust warmer yet. And so it appears like they're more resilient, they're not. If you started them at this, a fringe area for them, and it got worse, they're going to die out too. And whitefish probably have another range, that's above the trout, so they can take from here to here, and drop from here to here, and we're moving this way. Well, pretty soon, we move out of the Whitefish, Trout are still hanging on, but there's another range over here, for a warmer species, and we're moving into their habitat now. So it's not a matter of fragile, but for the given habitat that's here now, they'll be the first to go, if it gets worse. And the others, eventually, if it got worse and worse, they're going to go too. It's just, so I don't consider one more fragile than the other, it's just the requirements for this particular species, and Grayling's probably way up here, and we moved out of theirs real quick. And so I don't look at it as fragile or not fragile, it's just. Their habitat loss is first. If that's the direction we're going. If we're going colder, trust me, these fish should go first. But we're not going colder, unfortunately, but if we were, that's who'd go.

Dick Vincent [01:04:12] I think they're all in the same boat. Brown trout just. There's places Brown trout can't exist. For example, where there's a stream with little bank cover, they're not going to do well at all. Because the young Browns have to have bank cover.

Jim Thull [01:04:26] Why is that?

Dick Vincent [01:04:26] To stay away from the big ones. They don't do well, when the big Browns move in they're gone, one way or the other way. And so, you look at streams that are not doing well for Brown trout, like the upper Madison, as you move up the river, less and less Browns. The Gallatin, once you go into the canyon, Browns disappear. There's just no place for, habitat for Browns. There is for big Browns. But you'd better have little Browns, before you can have big Browns.

Jim Thull [01:04:56] Makes sense.

Dick Vincent [01:04:57] And so, you know, they're not gonna do well. And so some species, their habitat doesn't overlap as much as you might think it does. It could be that there's just a lot of both in the area, and Whirling pointed this out real quick, that some species could be eliminated. Rock Creek in Missoula, Rainbow are eliminated. For all purposes, there are Rainbow there, but it was a Rainbow stream that became a Brown trout stream. So what it was is, it was kind of equal habitat. Rainbows did a little bit better, because they're better at that type of habitat. But when whirling took the Rainbows out, Browns go, "Well we have open field" and they expanded. And matched out. So you just changed species in the stream. And it may be permanent. The Madison, it appeared that the habitat wasn't overlapping. And Browns, even though the Rainbows initially disappeared, in huge numbers, Browns didn't take over anything, they were using all they could. And there wasn't anymore spots for them. So eliminating Rainbow didn't make more spots, in Rock Creek it did.

Dick Vincent [01:06:17] That gets asked a lot, and I'm not sure the answer. I don't think it's fully sold among biologists. I really don't.

Jim Thull [01:06:26] Isn't the proof in the pudding, so to speak?

Dick Vincent [01:06:27] I know, I know. But it's just so easy to give the sportsmen some fish. One of the things that, when I was younger, I actually recommended a department in a letter I sent from high school, that we stock more fish in the Clark Fork and it'd be better. Well, couldn't have been further from the truth. But the point being is, that it's so visual. You see a truck pull up, and say that they're this long. And they're dumping them in, and it looks like something is happening. And it appeases fishermen, like you can't believe. It makes 'em happy. It shouldn't, but it does, because it looks like you're actually doing something, there's more fish in there. Well, it doesn't work that way, but I think that's part of it. And it's easier to ignore, public opinion's nasty when it comes to this. We're fairly educated in this state with this, we don't, as anglers, seem to demand it. But I've talked about this in other states that said, "There's no way we could quit without being crucified." And the anglers aren't sold on it. And that's, was the hard sell, I, you know, is, if they don't buy into it, and if fishing to you, is getting a whole bunch of fish in your creel, then you're not going to like being a wild fish only, where you may not get as many fish in your creel. You may not. It's just, but if that's so important to you, that will drive the management. And so I don't know the answer, other than I know it's politically suicidal in places. And at a break, I told you that they're trying to do this with Steelhead. They have stocked steelhead, hatchery Steelhead, on wild Steelhead forever, with more millions than this state knows about, and they're going extinct. So it apparently isn't working. But it's hard for anglers, say, "Well, least do something." And these other problems are hard. They're hard problems to solve. Like dams, you know, water flows, whatever else is limiting wild Steelhead numbers. They are hard things to solve, this is pretty simple. We just dump some more in. And people go for simple answers to hard problems. And like that one

cartoon just jumps at me, because it's true. We don't like hard answers, even if they're right.

Dick Vincent [01:09:22] I get, actually, mail from other countries, off and on. And Canada stocks more than we do. I am astounded, they got better resources than we have, as far as natural resources, and Alaska stocks. I just think it's a well-ingrained fisheries tool. I'm not saying it's always bad, there are times when I could care less whether you stock or not stock because, if they can't reproduce, then the only way you have trout in the stream is to buy some, I guess that's what you do. But. If they can reproduce on their own, you oughta adjust your expectations in angling satisfaction, accordingly. In other words, maybe you can't keep fish anymore, or you can't fish it year-round. But. It's frustrating for me, because the data is clear. I mean, not only the study that I did, but I can go places where we did population estimates, like the upper Gallatin, above Big Sky, there's a section from Big Sky bridge, up to Porcupine creek, we used to do estimates, when it was stocked. And it was heavily stocked, in there. And there was like 500 fish a mile, we didn't put it in the study form, but when it quit, it's not twenty-five hundred a mile. Without doing absolutely anything. There is a place where water flows really haven't changed, probably more anglers than ever, you know, there's no places there's less. And, in spite of that, the population increased 500%. And I can go on Willow Creek Reservoir, I worked on a project there, and we had, you know where Willow Creek, yeah, over by Harrison. Well, interesting long term piece of population data, it's a late population that lives in Willow Creek Reservoir; they come up and spawn and the return. Well, through the '30s, and '40s, and early '50s, that was a spawning station. Because up till about 1954 or '55, all the progeny, or all the fish that were stocked, were from eggs taken from the wild populations, and that was a source of wild, they had a run of fish up there, I saw some of the data like three, four, five, pound fish coming up there; they didn't do a very good job recording data. They just kind of, haphazardly. But there were a lot of big fish in there. I mean, four-five pound Rainbows. And that's big fish. About the mid-'50s to late '50s, it just, we changed the stocking policy, and started stocking catchables in there, why, I don't know. There was no real need to, but it did. And by the time I came on in '66, there was virtually nothing in there worth even catching. We damned it. You get fish maybe up to 10-12 inches long. And they stocked catchables in there, the spawning run just quit. I monitored run in 1970, no, 19, late 1960s, don't remember the year. There were seven total spawners come out of the lake. Seven. And I monitored that for two full months. So, and then we had creel census studies, that Jim Posewitz, who you may know or not know, did a graduate study on creel census, to find out why fishing was so poor. People hated it. I, right after the Madison I ask permission to go and find a wild Rainbow trout, in some other state, that lives in lakes, not a river. And I wanted wild, I didn't want a long term hatchery fish; we found one in Wyoming, Lake DeSmet, Wyoming. And they had a spawning trap, and they gave us x-amount of eggs. We stocked it in there. And by, probably the late '70s, we had a spawning run of three to four thousand fish, with the average size over two pounds. And not stocking any catchables in there. So this is just not as, and that fish had a later history that helped the Madison. That fish is, for some reason, naturally semi-resistant to whirling. Naturally.

Jim Thull [01:13:53] Only the ones you brought up from.

Dick Vincent [01:13:55] From Lake DeSmet. We don't know where they came from, they didn't come from Wyoming. They imported them, somewhere in the 1880s from California, but no one has any idea of where, in California, they came from. They spawned some tributary, and brought some there. In milk cans, and dumped them in the lake. So it works in that population. The Big Horn River. When I had a special assignment to do population

works, once it was transferred from Indian ownership to state ownership, or to federal ownership. We monitored the populations. And they stocked Rainbow in there, because the philosophy was, that the management at that time is that, if we don't stock Rainbows, there won't be any. Cause there's no reproduction and so. And so. Through one way or another, it stopped. And we took some fish out of the Madison River, some yearlings, and put them in there. And that Rainbow is wild, and doing very well. Without any of our help. And so I can just name you, just spot after spot. That actually isn't in a documented study, but. And yet, that question you asked me, gets asked and I have no answer. Other than politics. People don't buy into it. Certainly, politicians don't buy it, and I'm not knocking politicians, but they go with the flow, what everybody else wants. And if that's popular that's what we do. It was nasty. Going from stocking to no stocking, with data, in this state. It was not fun.

Dick Vincent [01:15:43] When I started, it was stocked. We stocked, roughly, one hundred and twenty thousand a year in the Madison River, above Ennis Lake, in that fifty miles. And they were not little guys, they were 8, 10, 12 inches. And. Every time we'd go to a public meeting, it was; "Fishing's worse than last year. We want, instead of one hundred thousand, we want one hundred twenty thousand." Or, "We want a hundred and thirty thousand." And so we just kept poking more in. And then when came up with ways of estimating populations, we had a clue what was going on. Prior to that, we really didn't know what was going on. And the first thing that I found, was the flow study. I started finding that there was some issues with poor flows in the Madison River, in February, March and, early April. Because they would tend to fill the reservoir at Hebgen, before the runoff came, just as a safety thing. They didn't have to worry, and once the main snowmelt came they were full anyways, and they just let it go. We found that that was interfering with young Brown trout. And, to some degree, young Rainbow trout. So we had a section at Norris, we had a section at Varney, which is above. Norris was not stocked, for some reason that section didn't get stocked. And the upper river Varney section was stocked heavily. One of the more heavily stocked sections. And when I ran the flow study I thought, 'Okay things are going to get better.' Well, little Brown trout did better. And it didn't respond at all. The upper river did not get better. But the Norris section, like, doubled in population. With better flows. And I go, "Oh, cool." But. I always considered the lower Madison River river not as good of habitat, as the upper river, because of thermal problems. Well, I sit down and I go, what's different? Why did this one react to better flows, and the upper river did not? What's the reason for that? Because, I looked at fishing pressure, not much different. In fact, the lower river is year-round fishing at that time. Water flows, the same flow, whether you're there or here, it didn't really matter. Habitat, I considered Varney much better habitat. And the only difference I could see is, one was stocked and one wasn't. So I went to the fish manager, and I said, "This is the difference I'm seeing. Can we try shutting down stocking in the Varney section? We'll leave this one, no stocking." We were doing some other work in a small spring creek, Odell Creek, up there. Which hadn't been stocked ever. And I cut it into two pieces, and said, "We're going to stock one of these sections, and the other one we'll leave with no stocking. And see what happens." Well. The sportsmen did not like this. They came out in throngs with, "You're going to ruin our business. We're not going to have any fishermen here. This is going to be a disaster." Because, the solution was, stock more if things got worse. And they were progressively getting worse. There were a few icons that didn't buy into it. Dick McGuire, Lilly to some level, and Tom Morgan to a high level. They supported the idea of doing the study. And, we actually had to go to the commission, to get permission not to stock a section. Normally, that's left up to the manager's discretion, the area manager, you can not stock or stock, based off of his recommendation. We weren't allowed that. I remember going into the commission meeting, and the commissioners were not happy

with this. Because the sportsmen weren't happy. And they even offered up, to the Chief of Fisheries, Art Whitney at that time, would he sacrifice his job if this study didn't work? And he's going, like I would have, "It's a study. It doesn't work or not work, we're just seeking information." But one thing led to another, and it happened. I think the support of some anglers in the area helped, with the stature the Lilly's and Morgan's and such, and we got the study going, but not with, a lot of animosities. I mean, I virtually couldn't go into a public building, without being yelled at. And you couldn't have breakfast, you couldn't have a beer. We got run out of a bar because they said, "You don't belong in here." We got our trailer vandalized, once. You know, it's the way people react. I get it. They were fearful that all hell was gonna break loose. But it didn't take long for the study to, I mean it just amazed even me, that the fact that, we were able to respond that quickly. The trout could respond that quickly, in the Varney section, and the population almost doubled. And people ask me, "Well how could it double without more time?" Well, we always had a lot of little fish. They aren't bothered by stocking. Fish under 10 inches were not bothered, because their habitat choices were different than the adult fish. And the trouble with hatchery fish is, they have conflict in the habitat. They don't obey structure rules. They do, in a hatchery, first come, first served. If you throw pellets out, and you are shy and in a corner, you die. So we develop very aggressive non-territorial fish.

Jim Thull [01:21:29] That would go for food where ever.

Dick Vincent [01:21:30] Great in a hatchery. But lousy in the real world. Because that's what killed them. For a while though, they were very disruptive. They displaced fish. We saw movement accelerate, of wild fish; they start moving like they've never done before, and movement is lethal. You move out of something you're familiar with, odds are, you're not going to do well. We saw angler returns increase, not where they were tagged, but somewhere else. And so, with the population increasing, the proof is in the pudding. When people saw that, actually you're going to have more big fish than you ever had before. There were never a lot of big fish, because hatchery fish don't grow. They live maybe three months tops, then they're gone. And so they have no opportunity get bigger than what you put in. But with wild fish, you can achieve bigger fish. And, when it actually worked, the support, or the opposition, sort of faded, but there was as much internal opposition, as external. There are naysayers, you know, I always went with one plus one is not two. It could be less than two, or less than one. And that's what happens. And the reason it happens, and there's some other work on behavior'd been done, is social disorder. It's. Things are more orderly out there than you believe. There's no contesting of feeding size. The big guy's got his spot. But if you come in and say, "I don't recognize your territory," it causes lots of problems. Movement's one of them, and movement's bad. Except to spawn, movement's not a good idea. And even with spawning, movement causes excessive mortality. But it's part of the system.

Dick Vincent [01:23:34] Half a percent, to one. If they put in, like they did in Varney, ten thousand, in our study area, you might see four, or five, ten maybe. That would make it to spring.

Jim Thull [01:23:48] Because it seems like, in some respects, for re-establishing natives in some areas for reasons, like you had talked about the Clarks Fork earlier, about how polluted that was, it seems like stockfish are the only option to rehab.

Dick Vincent [01:24:04] Well to rehab, you see there's two types of stockfish. Like I mentioned earlier, in the mid-50s we went from wild spawn eggs to our own. And our own didn't work. The reason, in order to raise a catchable-sized trout, you can't take them from

the wild. It's economically not feasible. Because, if you take a Rainbow, and that's a stockfish of favor, in say April, by June they're probably a couple of inches long. And you've got to hold them a full year. So you're gonna have to hold them to the next June, to stock them. So what we did is, manipulate genetics. We kept change, and they're pretty plastic, in when they spawn, Rainbow. So we kept taking the earliest spawners. And we backed them all the way back to September of the following year, so to speak. So you could take the eggs in September in a hatchery environment, and by June they're big enough to be catchables. And so you raised them 6-7 months, rather than 14-15 months, and it's cheaper. And wild fish don't work well in a hatchery. They don't like to be fed, they tend to be frightful, hide. Brown trout are miserable in a hatchery, they won't feed if you're around. So we developed ones that, and that's because it had to be, that had no social structure, not fearful of humans, and spawned in September. Now how do you think that's going to fare in the real world, not well.

Jim Thull [01:25:43] Probably not.

Dick Vincent [01:25:44] So if you're going to reintroduce a fish to a river, you go back to wild.

Jim Thull [01:25:48] I see. That makes sense.

Dick Vincent [01:25:50] And you take something that will work, because they can't spawn in September in the wild; because Rainbow require increasing water temperatures to mature out. But in a hatchery, you can do what you want, it's not important. But that's not the real world, the real world is this, and so you can't do that.

Jim Thull [01:26:11] I see. That makes sense.

Dick Vincent [01:26:12] And so we manufactured a trout, I'll have to give them credit, worked really well in hatcheries. And it worked well for food fish, if you're raising them to eat, it works great. You don't want territorial fish. You can't have a hatchery this big and raise, say ten thousand, in there because they're going, "I don't like this." But if there's no territories, and first come first served, they eat all the food, it hits the water and they're taking it. And if you don't like that, you die. And you're not part of the next generation.

Jim Thull [01:26:48] I suppose it's the same thing with almost any domesticated animal, in some respects. Cattle, or.

Dick Vincent [01:26:51] Sure. Doesn't really matter what it is. We manipulate it to work for what works best for us for that reason. It doesn't necessarily mean that would be a good idea in the wild. Take cattle, who would have calves in February? In a wild world? You'd die. That's not important. They can have them early, and they're bigger for market, by the time they're ready to send them. I get it. Makes sense. But that's not wild. Wild animals have to follow other rules. And that rule will get you. You couldn't be having fawns in February, it just would not work.

Jim Thull [01:27:26] Not in Montana.

Dick Vincent [01:27:27] And it's the same true with trout. I mean, there's an order, how things have to be. Territorial wise, people don't, can't see it. But they have all the social hierarchy that other animals have. And you start messing with it, and you're gonna have trouble. And who knows? That that may be some of our trouble anyway. But certainly, you

can't introduce a hatchery fish in the wild, and think it's going to live. The objective is, get him out as quickly as you can; for economics. The more of them you catch right away, the better off you are. And probably, there's less stress in the wild, if the hatchery trip followers come in and take them all the first day. Probably minimal damage. But in Montana that doesn't work that way. You're not going to be able to. 30% is the best harvest I ever saw. On hatchery fish. Which runs the cost off the chart. I mean, if you realize how much your fishing dollar went to raise the fish, I think we figured out you can get about three here, and you have to quit. Money's been used up.

Jim Thull [01:28:36] Wow. That's something, yeah.

Dick Vincent [01:28:37] And you go, so the only way you can make that work out is, the wild supports it. Because you can't, you can't support it. With your dollars. Unless you pay a lot more dollars. And it's sort of subsidy program that I'm not really keen on, it just doesn't seem right. But.

Dick Vincent [01:29:02] Yeah, I would. That was sort of frustrating. Because it snuck up on us without us realizing it could happen. In the Madison is where we saw it first, I'm not saying that's the first place it came, but, when we saw the estimates it just kept sucking away the year classes. You'd see no young fish coming on. And yet the fish kept getting bigger and bigger, because it was catch and release. And I go, "Wow, this just isn't right." Because it looks good. But I'm always suspicious when there's no little fish. And then finally it happened, they don't live forever. Even if you protect them, they die. About seven years and you've lost most of them. And it crashed. And it's one of those problems you'd rather not deal with. Because we had no data; I mean, there was no data on wild. It evolved in Europe, and brought over here accidentally, and Brown trout knew how to live with it, but Rainbow, and spring spawners, as most, could not live with it. And so it waltzed it's way through the Madison, and to the point where, it eliminated about 95% of the Rainbow.

Jim Thull [01:30:18] Can I just interject one quick question? Is that because Brown trout are native to Europe?

Dick Vincent [01:30:22] Yeah, they both evolved in the same place.

Jim Thull [01:30:25] I gotcha.

Dick Vincent [01:30:26] So in order for Brown trout to live, they had to have figured that out.

Jim Thull [01:30:30] And then both Rainbows and Brookies, and things like that, were all North American.

Dick Vincent [01:30:32] They had never seen it before. Brand new to them.

Jim Thull [01:30:34] I gotcha.

Dick Vincent [01:30:35] And so, any fish that hadn't seen it before, was likely not to do well.

Jim Thull [01:30:40] With the exception of Browns, does it affect all trout species?

Dick Vincent [01:30:44] Fall spawners less so, simply because the disease only attacks fish in their first, oh probably two months of life. [Editor note: Audio drops out from 1:30:54 until 1:36:30. Vincent is still discussing whirling, and the trout populations affected in the Madison River].

Dick Vincent [01:36:30] These fish, at least over 100 hundred years, have proven they could handle it, don't know. That's always a risk of a totally genetically different fish. Have they seen enough scenarios to say, I could make it? Maybe yes, maybe no.

Jim Thull [01:36:46] I mean is it even possible, if a river's, it seems like there's always going to be slight genetic variations in species, from one river to the next. So once a species is gone, or largely gone, it's pretty much gone right? The only option there is to put in something that's genetically different.

Dick Vincent [01:37:03] Now, these fish still existent in the lower Madison. Because see, they never had Whirling.

Jim Thull [01:37:08] Why is that?

Dick Vincent [01:37:08] Too warm.

Jim Thull [01:37:11] So whirling has a relatively small comfort zone, so to speak.

Dick Vincent [01:37:16] Yeah. They just can't live in anything, too cold or too warm and they're gone. But the lower river still has the original Rainbow in it. And they fish them the original way. My son I sent him up to, the one that fly fishes a lot, that gets frustrated with not catching fish, because he gauges his good day on how many caught. He couldn't catch them at all, because he was unwilling to go from the dry fly to the wet fly. Unfortunately, as an angler, you also have to adapt. That's what they want now. And they're not as big as the original Rainbow, which is, they're still nice. It's still fine. And because the original one wouldn't make it there, trust me, that's the only thing that can make it there.

Dick Vincent [01:38:05] Something, a long term in DeSmets, they have a bad reputation for that. Wherever they go. Wyoming actually eliminated 'em. In lake DeSmet. And went with Eagle Lake Rainbow, which are more surface feeders. Because it frustrated anglers.

Jim Thull [01:38:21] Oh, really? That's funny.

Dick Vincent [01:38:21] Yeah. I always have the philosophy, that's your job to figure it out as an angler, if they're there, you figure out. It's not my job to figure it out for you.

Jim Thull [01:38:30] It just seems curious to me that, that essentially, I know there's slight genetic differences, but essentially, the same fish, would see a food source, and not go for it. Where 10 other slight genetic differences would see it and go for it.

Dick Vincent [01:38:43] Good question. They evolved doing that, and they're probably not as flexible as we'd like to believe they are. That works well in reservoirs, that works really well.

Jim Thull [01:38:55] Well, and who knows, in 10-20 year time, they may evolve to be surface feeders.

Dick Vincent [01:38:59] That's what I like about wild things, they can evolve. They could evolve back to where they're more like they were. Unfortunately, we have no hard genetic data, that just. There's not enough genetic work done on trout, to say, "This fish is DeSmet genetically, and this fish is Madison River Rainbow, and this fish is a combination." We tried it, but the science isn't there yet. Unfortunately. It would be. I would love to know that. For my own, I know it happened, I mean, I don't have hard data, but there's no other explanation. Because everywhere else, like Rock Creek, they've never come back. Colorado, they didn't come back. And there was no means for 'em to come back. Because they can't, I don't think that Rainbow in the Madison could evolve quickly enough, it's like you mentioned earlier, that's too short a time frame. To evolve. You need help from another one, it's already there. And has got this figured out. Why it figured it out, I don't know. I tried to trace the ancestry of DeSmet, and I got locked with, a railroad train came into Lake DeSmet in the 1880s, and they dumped these fish from someplace. And it could have been Oregon, it could have been Washington, it could've been California, I don't know where they came from, and no one else knows. And there's no documentation. They didn't do that then. And they could have come out of a special run from someplace and on the coast, where all Rainbow came from.

Jim Thull [01:40:32] Yeah, cause they're all, all Rainbow are Pacific coast fish.

Dick Vincent [01:40:35] Yeah. But they're different, somehow. and I can't tell you why. I have no idea. I couldn't trace it, there's no way, if the genetics were right, they could probably sample, if California hasn't destroyed it, all those wild runs, and maybe find something that matches this one. But I don't know if that would help us a whole lot, anyway. We know it's resistant. And interesting enough, I did another experiment, because it quickly evolved in Willow Creek. It wiped out a lot of fish in there, the 50% that weren't resistant, got removed. But it quickly adapted. The resistant ones took over the population. So when I started, 50-50 were resistant and not resistant. I knew that we stocked some of these fish at High Mountain Lake, in the Beartooths. So we flew in with a helicopter, gathered eggs from the self-sustaining DeSmet there, and they were 50-50. Just like, I mean, they had the same MO as the ones in Willow Creek. By the time we start testing, Willow Creek was starting to evolve, eliminating the non-resistant. Quickly. And they became very resistant, in a heartbeat. And we don't put anything in there, but it's just DeSmets, so they have, we don't dilute it with non-resistant species. Which would destroy the process. If we brought in a protected, say like an Eagle lake, or an Arlie strain, or another hatchery strain, that they don't have to face it in their hatchery, and we bring them in four, five, six inches long. Well, they don't have to run the gauntlet of whirling, so they could interbreed with what we know is working, and stop the progress. But we didn't do that. We only allowed those to be there. And Colorado's used it. They took a lot of DeSmets down, as eggs, and hybridized them with some of theirs, hoping to get something more resistant.

Dick Vincent [01:42:50] I don't think you ever should ignore it. It hasn't gone away. And it takes fish. It's one of these little things that, I mentioned earlier, it can take this much loss, this population, and whirling may be causing that much loss, but not at a population level. But then you have whirling, and then you go, well, I'm going to add this. Then it's done.

Jim Thull [01:43:11] Kind of the straw that breaks the camel's back.

Dick Vincent [01:43:13] And that's what worries me. And I think, as biologists, we'd rather it never been here, it's too hard to deal with. There aren't good solutions.

Jim Thull [01:43:22] They don't really know how, beyond that it came from Europe, how it got here.

Dick Vincent [01:43:24] We know how it got here.

Jim Thull [01:43:26] Oh, we do?

Dick Vincent [01:43:27] Through illegal hatchery plants, out of Idaho. But, it was inevitable, it was going to get here, you know, one way or another way. And it just snuck in here, like many other aliens. And one, it coulda caused more trouble than it did. I think our diverse wild populations protected us. Not everywhere, but it helped.

Jim Thull [01:43:52] Well, that's great.

Dick Vincent [01:43:53] But I don't think it's something to ignore. It could be a Whitefish problem, it could be a later problem. It's not gone away.

Jim Thull [01:44:03] Yeah. And you just don't hear about it as much.

Dick Vincent [01:44:05] No. People, about ten years attention span, for people. Biologists included. And then you want to move on to something else. And I don't think we should forget it. I finally got old and quit. But I think it's out there, I think it causes losses. It probably not as a population level. But it's something to worry about. The Missouri is another one that fooled us, big time. Fooled me, because the common knowledge in Missouri, was that the spawning was all done in tributaries, then it went into the Missouri, and made that fishery. Well, it turned out as these tributaries got infected, it wasn't the tribu- didn't matter. There were plenty of them being produced in the river. Which didn't have Whirling, again too warm. Wrong temp, thermal regime, and so the spawn in the river was more than enough to keep it going. From a lay viewpoint is, you call wolf and the wolf wasn't here. Well, we didn't really know who the wolf was, and if the tributaries were going to go down, and you're going to be out, you were going to be out. But fortunately, there was enough diversity and that was not true. The Madison's the reverse of that. The spawning, or the infection, was in the river, not the tributaries. But the tributaries aren't used.

Jim Thull [01:45:31] That's interesting.

Dick Vincent [01:45:38] Oh, I just think. I just hope that everyone... Holds it in a special place to them. In other words, don't believe it's there forever without you helping. Because we can destroy things overnight, as humans. And always be aware that, if you're going to partake in the sport, also support it. Because that's the only reason we got where we're at. If anglers said, "We don't want you doing this stuff." It wouldn't happen. Anglers're the ones that created the opportunity. And support it. And I can't say enough about those, during the stocking years, that probably had to put up with more crap than I had to put up with. I could at least go home, you know. So that was not an easy thing to stand up to. And then that goes for all these other issues. It's easier to go, "I don't hear this, I don't know about it." And use, what I always termed, The LaLa Effect. I don't want to hear this. And, unfortunately, I see that more often than I would like. If you don't know anything, it can't be bad. But there's nothing like knowledge, it just opens it up. You may not like what you recently thought, or believed, but that's OK.