

## **Hualapai Fish Rearing Facility –**

### **Questions/Answers:**

Kaplinski: How many fish can be produced in one year at full tilt?

Christensen: 50,000 lbs per pond over a 2-3 year basis.

Lovich: Do you line the ponds with clay liners or plastic liners?

Christensen: Plastic liners with 6 mil.

Davis: Who are you selling the fish to?

Christensen: We are donating fish to the Fish and Wildlife Service. They give them to us, we grow them, and then given them back. There is no contract, we do it for free.

Henderson: Any plans to release fish on the Hualapai lands?

Christensen: At this point no. We've talked about evaluating Lost Creek as a potential re-instruction site for razorback sucker but no studies have been completed and nothing has moved forward at this point.

Davis: You are intending to work with the MSCP?

Christensen: We would welcome the opportunity to engage with MSCP to produce fish.

Lovich: Do you know if the plastic you're using to line the ponds has been tested to make sure it doesn't have any adverse effects on fish in that respect?

Christensen: I do not but we received these liners from a company that is providing liners for fish ponds so I would imagine they wouldn't have a product that would harm the fish. In addition, we also cover the liners with a layer of dirt to minimize any interaction between the water and the liner.

Force: I want to understand the interaction between this facility and HBC particularly concerning the motion that was made at the last AMWG meeting so it might be a question for Sam or Bill. Yesterday when we were looking about that motion, we were looking specifically at the language that said doing the feasibility study and work on culture techniques. What is the intent of the culture techniques?

Persons: My interpretation in talking with Bruce, we're more concerned with having some fish in a safe place and this seems like a safe place. Our intention at this point is to not start a propagation program and put fish back in the river but we think it would be wise to learn how to grow these fish, how to take care of them. If necessary, learn how to get them to breed so that if we ever get into a situation where we have to produce fish, we know how to do it. That can take several years to develop those techniques. My read on HBC is that it can be really easy. You put them in a pond and they're probably going to spawn in about 2 or 3 years. We think we need to have some off station, or out of the river, in a safe place and know how to take care of them. Right now we're not doing that anywhere to my knowledge. We have fish at Willow Beach and that's the only place I know there is any HBC.

Force: It seems like it is stepping outside the HBC Comprehensive Plan. It was my understanding that a refugium was to the last step after some genetics studies were needed. Is that correct?

Force: That seems to be the contention on the project. There is a group that thinks we need to get those fish out of the river as an insurance policy for safe keeping and there is another group that seems to think there is a risk associated with that or perhaps they see other motives behind that. That's my read of the disagreement or the contention on the issue.

Force: I haven't heard the motives theory but have heard the risk theory and I guess part of the concern with going forward and pulling fish out before a lot more about the genetics, it's making us nervous because there has not been a review and we're wondering what the science advisors could say on this.

Christensen: If there was one messed up fish that got into the system, we could probably kill him.

Persons: The strategy is to pull out what I call ecological cheap fish, take out baby fish and YOY. If we do it properly, and properly means we get a representative sample of the fish in the system, we don't know for sure what that is right now, whether we can get them off in the Little Colorado River, do we have to go get fish from 30 mile, from the inter gorge, we don't know. There is a genetics study that may give us some guidance on that but everything we have right now suggests that if we take fish from the Little Colorado River, we will get fish that are representative of HBC in Grand Canyon. That's all we know right now. To my mind there is very little risk in taking those fish and holding them somewhere for safekeeping. The risk begins if we lose the fish in the river and we take this refugia population and use that to re-stock the river. I don't see that happening, short-term.

Kaplinski: And what's the risk involved with pulling out a batch from the LCR, rear them up until they're big enough to live in the mainstem, and throwing them back in to mix with the population?

Persons: To me, I see very little risk there but I would like to have that thoroughly reviewed before any fish go back into the river. You can influence the genetics of the fish in the river by selecting for certain characteristics in the hatchery setting that you might not want to do. I'll take it to an extreme. We might select fish from the hatchery that eat razorback sucker chow that we feed them and not select fish that eat natural food. We're going to lose fish in the hatchery. If we then took those fish that we selected for in a hatchery and put them in the river and swamped the fish in the river, we could have long-term effects on the genetics on the fish in the river. That's where the concern is. But just taking fish, I see very little risk. It's when you have to turn back round and put the fish in is where you're going to have trouble.

Force: If this is an insurance policy, then we might have to put them back in someday. It's not a very good insurance policy because we don't know enough about the genetics to know that we're not doing something specifically like that, is that right?

Persons: Right now we don't have anything. We have some fish at Willow Beach. 100 fish? I don't even know and we don't know the history of those fish. We don't know where they were collected.

Kubly: I think they were collected in the Little Colorado River. You just said that the fish in the LCR are uniform, that you wouldn't worry about taking fish out of one place in Grand Canyon because they're uniform.

Persons: No, I didn't say uniform. I said I think if we collect properly, we can get a representative sample of fish in the system. If we go to one location in the LCR and just pull out 50 fish, those could be 50 YOY fish from one male and one female and we don't want that.

Davis: That's typically not the way it is done. It's a repeated process you do year after year after year. If you only do it once, you run that risk but if you repeat this process, your chance of coming up with a select group is pretty small.

Persons: I would agree.

Kubly: The point I would make is that the HBC AHG laid out a comprehensive plan that the AMWG accepted. It had a lineage of activities within it. The first of which was the development of a genetics management plan. Following that was the securing of the genetics information for the Willow Beach population, followed by the Douglasses information, followed by the feasibility assessment that GCMRC referenced yesterday. When all that information was made available, the genetics refugium plan would be developed and out of that genetics refugium plan would come a decision of whether or not you would augment through captive propagation, augment by taking them out to another facility or augment by a process we call using in situ refugia, that is the tributaries in Grand Canyon. We have jump started. We have moved to one of those options without even going through all that gathering of information and development of plans that was agreed to in the comprehensive plan.

Persons: Some would argue there is more risk involved with that with putting fish in a hatchery.

Force: Well, the TWG recommended it and AMWG seemed to accept it and maybe what needs to happen is a revisit of the situation by AMWG next time. I would like to know that AMWG knew that they were stepping outside the comprehensive plan and that's okay with them.

Kubly: We're going to bring the HBC Comprehensive plan to them at their next meeting.

Persons: The comprehensive plan needs to be completed. Is it finished?

Force: There is at least a conceptual design that follows the steps that Dennis just talked about including the one where you're moving fish into natural settings. The refugium, as I understood it, was the very last step.

Stevens: The Wildlands Council is strongly in favor of getting this genetics plan done and for it to be delayed by staffing issues is not very encouraging. We want that genetics plan with that data in place so that everybody will be on board with what happened with these kinds of activities. Bill, I appreciate the ecological inexpensive costs of taking young fish out of the LCR and putting them in the pond like this, the amount of selection that goes on when some of those fish hit the river is tremendous, probably 1 in a million survives. It's a huge selective force. By taking a bunch of young fish out of the LCR before they have gone through that selective filter and adapted to life in a river which kills almost of them, putting them in a pond and rearing them means you very much stand a chance of changing the genetics of that population if in the worse case, those fish had to be used to repopulate. There's also the issue of which fish in the LCR remain in the LCR vs. those who move out into the mainstream. There are all sorts of complications with taking little fish out of the LCR and using them as a source then for future work.

Persons: To me what it boils down is the sense of urgency and I think Bruce and I and Sam feel a sense of urgency whereas there are other people think we can wait on this.

Stevens: I'm not recommending we delay any longer than necessary but that genetics plan is of the utmost importance for this whole process.

Persons: As long as the genetics plan addresses this issue. I don't know who is doing the genetics plan. It's not on our work schedule. It's on some mystery work schedule.

Knowles: We heard yesterday that there would be a draft by August.

Persons: For a genetics management plan or the Douglas report?

Henderson: Tom Czaplak said they are planning to start the genetics management plan by this summer.

Persons: That's my worry that we'll be 10 years down the road and still will not have anything.

Henderson: I asked Tom about this whole issue, the Hualapai facility, and taking fish out of the river and his position from a Region 6 perspective, was he wouldn't recommend doing that.

Davis: That's the position of the Upper Basin as well. They feel like the river population was their refuge. They have taken the position of doing any propagation for the HBC. That's the only one they're not doing anything for.

Kubly: How does this population so stand out in danger relative to other populations that have lower numbers and face the same?

Davis: I disagree with that policy but that's their position.

Harris: Just as an observation, I think it would be incredibly prudent to pull out some fish and put them in this hatchery facility or another one. There is a lot of stuff come along and you don't know exactly when this genetics management plan is going to be done. The other thing is that if you're talking about a pilot project for a warming structure on GCD, do you honestly know what's going to happen to that population. What happens when you get parasites coming in there? It seems like it really makes a lot of sense to pull some fish out. I don't think the ad hoc group thought about all of this in its totality and that we maybe do need to take it back to the AMWG, revisit it like Lisa suggested, but we've got an opportunity here. This isn't an insurance policy and I think you have to weigh the risks. Certainly you would like to do things in a very linear fashion, science-wise, and making the right decision but I'm not sure we have the luxury of the time to wait that long. It makes some sense to take some of these fish out, protect them in a place, move forward with the studies, make an informed decision at some point in time that you want to return them to the mainstream, but at least you've got a population that you're protecting now.

Peterson: Question for Glen: Does the Service have protocol or criteria on how hatcheries are operated in order to ensure that parasite or diseases aren't introduced to the fish or brought back to the mainstem? Do those types of protocols be applied to this fish hatchery?

Knowles: We do have a policy. It's called the policy regarding controlled propagation of species listed under the ESA. It came out in Sept. 2000. It's pretty specific. It does provide a

lot of information about the kinds of things we would like to see used in that kind of a scenario as well as some criteria that should be looked at in terms of coming to that step in the management of this species. I can't say for sure if we've applied that policy to the Hualapai facility or not. I can tell you that they do have a permit from us to hold and rear HBC so in one sense technically we have made that decision. I think it's also important to point out that the first criteria in this policy with regards to evaluating whether or not controlled propagation is necessary, states that controlled propagation should be used as a recovery strategy only when other measures employed to maintain the listed species status in the wild. In my mind, the big river fish that really qualify in terms of that criteria would be razorback suckers and bonytail chub. Taking fish and hold them in a refugia situation to safeguard is a lower level propagation and may be warranted. The question is really one for the AMWG in terms of policy.

Lovich: One other point that bears mentioning there is a lot of concern about genetic issues and those are reasonable concerns to have but the whole issue of selection, whether it is natural selection or sexual selection, that operates on population not individuals so for selection to take place within the context of this experiment, it has to do so over several generations and I don't know how rapidly various genetic sequences evolve in things like HBC and the behaviors that might be of concern with reintroducing them back into the wild. It's highly unlikely the selection would occur on the order of timing.

Kubly: Maybe we can illustrate some of the questions that have to be addressed with a simple one to you Kerry. Bill had mentioned keeping the fish for 2-3 years at which time they become reproductive. What would be done with the offspring?

Christensen: I would imagine that would be determined through the planning process.

Kubly: So no one said at this point in time, even though it's known that reproduction will likely occur what would be done with the offspring? It's suggestive that a good deal of planning needs to be done before this action is taken. Let's go back to the feasibility assessment that is identified in the motion. When is it going to be completed? We have to have that assessment to adhere to the motion that was made by AMWG because that's the feasibility assessment. I also assume that we'll look at these protocols from FWS has and ascertain whether the facility lives up to those protocols because that is what the FWS has dictated through their policy.

Christensen: It's my understanding that's what the money is to be used for, that type of evaluation.

Kubly: Right, I agree. I don't think anybody is fighting the expenditure of those dollars. That certainly isn't where I'm coming from. I'm coming from let's drive to adhere to the process that was laid out in the comprehensive plan, make well thought out and well measured decisions in the process.

Lovich: The feasibility report has gone through one level of review currently and we requested that FWS provide additional revision of it with a target completion date for August 2004. This is according to the latest I have from Steve.

Kubly: So we could theoretically have a report on that feasibility assessment for the AMWG meeting as well. That would be great timing.

Davis: This facility has been built to raise fish for a 2-year period. How big a parcel do you put in HBC and they become adults and you would have to have bigger facilities. Is the facility

designed for a window of rearing for 2-3 years and then fish are to be taken out or was the idea this would be a permanent refuge?

Kubly: I think we have to be talking about the Willow Beach population at the same time.

Persons: That's one of the reasons we want to look into culture methods to answer those questions. How many fish can we grow? How many fish can we keep in a half-acre pond at that elevation? At that temperature? What kind of survival rate do we have? What kind of feeding regime do we need to put them on? What can we do to keep them from spawning so that we don't have a lot of F1's that .. the fish might produce either for research or they get \_\_\_\_.

Davis: The Wahweap facility from Utah... and \_\_\_\_ are all answering these questions.

Persons: It's almost site specific because if we go to the Hualapai reservation at 5900 feet where the average water temperature is 61 degrees, we're going to have slower growth. We're going to have different holding capacity, different rearing capacity, every hatchery is a little bit different in what you can do. That's why we were saying we want to move forward with looking at culture techniques and see how many fish we can grow.

Stevens: All these issues are really important. Making sure we have a genetics management plan. Keeping a population protected in a refugium so that we have backup is a great idea. If we're trying to use that facility as a research facility and trying to look at spawning issues, these are fish that probably spawn over peat gravel, sometimes in flowing water, there is very likelihood that any of those young fish will survive because it is such a cannibalistic season. We're sitting on our duff. We've spent \$100 million on these fish and there is not one grain of evidence showing that we've actually improved conditions for this fish. Let's get our butts in gear and get these fisheries built in a timely fashion and not wait for months and years for reports that we should've had a decade ago.

Henderson: This might be a need to ask the HBC AHG to review this issue prior to the submission of this final plan to the AMWG in August.