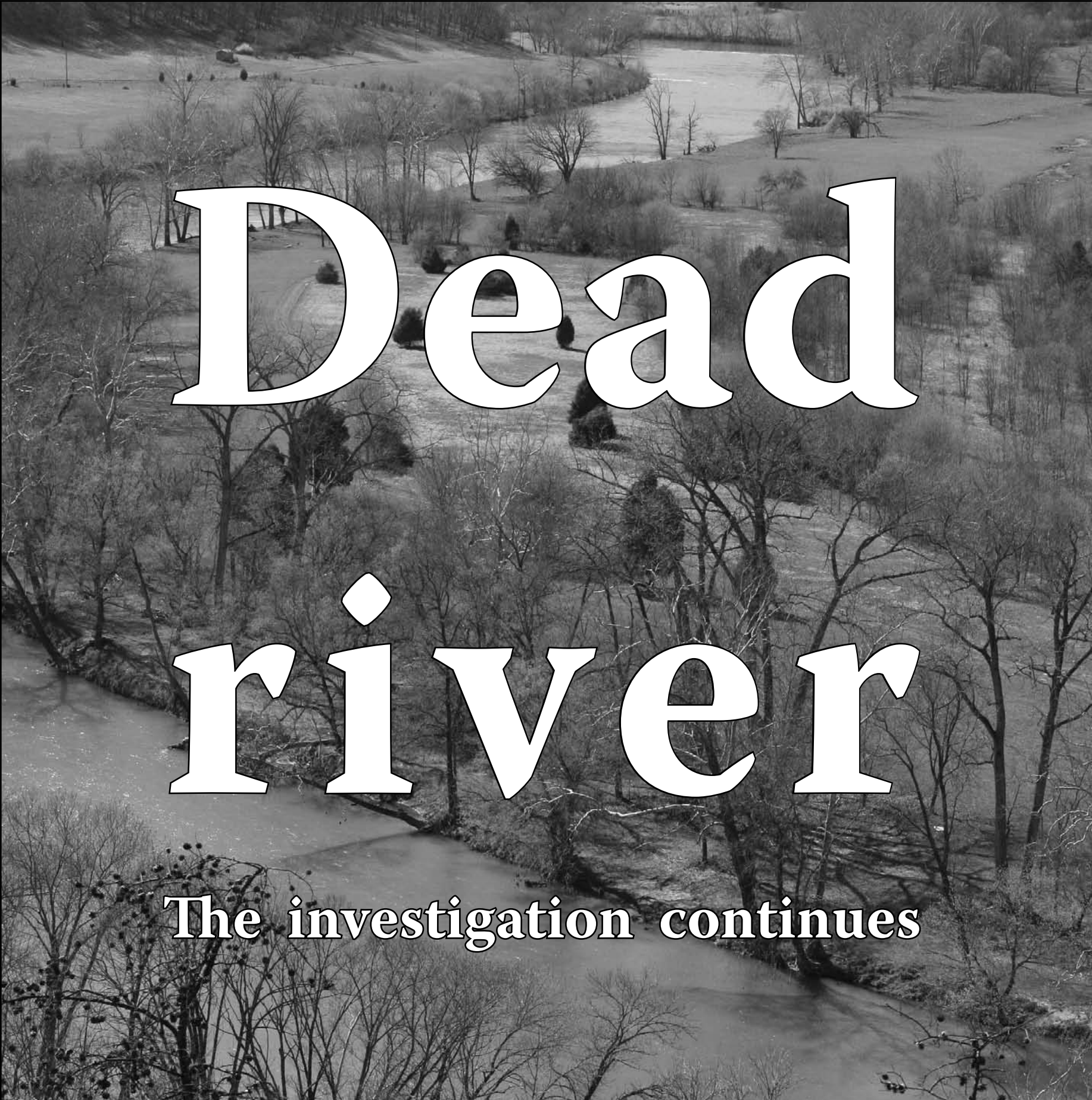


**Warren**

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# Dead river

**The investigation continues**



Roger Bianchini

**The type of lesion found on many of the dead and dying fish in the Shenandoah and its branches is clearly visible on the body of this sample awaiting dissection.**

# Task force explores discovery of metals in fish

*Samples from dead and dying fish being analyzed for chemical changes*



**Shenandoah Riverkeeper Jeff Kelble, right, watches Va. Dept. of Game and Inland Fisheries biologists Steve Reeser and Matt Henerson (white T-shirt) and Va. Department of Environmental Quality regional biologist Ted Turner, seated, taking organ samples from diseased red-breasted sunfish taken near Gooney Run at the entrance to the South Fork of the Shenandoah River the morning of May 3. Kelble's collection of living, diseased fish taken earlier that morning were already on their way to Virginia Tech University in Blacksburg for laboratory analysis.**

By Roger Bianchini  
Warren County Report

This month members of the state's River Kill Task Force continued to collect water samples as well as dead and dying fish from the branches and main

stem of the Shenandoah River as efforts to pinpoint causes of seasonal fish kills and other aquatic life abnormalities press forward.

The kills were first reported in the spring of 2004 and have hopped from one branch to

the other, as well as the main stem of the Shenandoah. Most devastated have been the river's population of smallmouth bass and red-breasted sunfish.

On May 3, Shenandoah Riverkeeper Jeff Kelble and state biologists gathered in Andy Guest

State Park to discuss samples they had taken that day. Kelble's samples of "sick" smallmouth bass were already on their way to the Veterinary Lab at Virginia Tech University in Blacksburg for analysis.

The state biologists, Steve Re-

eser and Matt Henderson of the Virginia Department of Game and Inland Fisheries and Ted Turner of the Virginia Department of Environmental Quality talked about their work as they dissected samples of primarily dead sunfish they had collected



**This fish advisory sign is posted near rest rooms in the Andy Guest State Park on the bank of the South Fork of the Shenandoah River in southern Warren County.**

that day.

As Turner and Henderson did some cutting, Reeser explained that among the organ samples being taken were a calcified structure called the otolith, which grows in pairs behind the eyes of fish throughout their lifetime.

Reeser made an analogy between the otolith structure and the rings in tree trunks and said the hope is to track changes in

the fish samples' internal chemistry that can be pinpointed along a pretty precise timeline.

"We have samples dating back to the late '80s, so we want to track the chemical changes as well as the time the chemistry we find was absorbed into the fish systems," Reeser said. He added that samples would also be taken from muscle tissue and internal organs and that samples from diseased fish would be



**Shenandoah Riverkeeper Jeff Kelble talks with Steve Reeser and Matt Henderson, not pictured, as DEQ biologist Ted Turner works on fish sample.**

compared to that of fish currently showing no signs of disease or environmental stress.

Reeser said samples of fish from the Shenandoah River would be compared to those

from fish taken from other rivers, including the Cow Pasture, where distressed fish have been found, and from the upper New River.

"We kind of missed the boat in 2005," Reeser said of missed sample opportunities throughout that year's kill. "So, we're ahead of the game this time," Reeser said of tracing the evolving condition of fish in this year's kill dating back to early April.

Reeser said that while the sunfish and bass collected on May 3 had "looked bad," that suckers and carp looked fine. "The sunfish were among the

most prevalent in the river but we've seen a drastic dropoff, in some areas they are hard to find now."

Kelble said he personally has begun researching chemicals elements, including arsenic, copper, phosphorous and selenium, their effects on aquatic organisms and the laws governing their disposal. "There have been some metal elements discovered in the fish and it's raised some alarm bells, so I began exploring those avenues and we'll see where it goes," the Shenandoah Riverkeeper said.

*E-mail: sunrajah@yahoo.com*



**Matt Henderson of the Va. Dept of Game and Inland Fisheries searches for an otolith, a calcified structure found behind the eyes of all fish, from which samples of heavy metal accumulations in dead fish can be measured.**



**There is an environmental storm beneath the calm waters of the Shenandoah River as evidenced by large numbers of dead, dying and mutated fish discovered annually over the past four years.**

## Riverkeeper

# The Shenandoah Riverkeeper discusses the river

*Seasonal runoffs, contaminants, immunity issues linked to annual kills*

By Roger Bianchini  
Warren County Report

Following is a transcript of my May 3 interview with Shenandoah Riverkeeper Jeff Kelble. Jeff had been on the river that day and returned to Andy Guest Park after the interview to compare notes with state biologists also working with the Virginia River Kill Task Force, who had also collected fish samples that morning.

Roger Bianchini: I'm here on Thursday, May 3rd, with a special guest, Jeff Kelble, of the Shenandoah River Keepers. And Jeff, thanks for taking some time out of your busy schedule, I know you were on the river today. Why don't you give us a little update about why you were on the river and just where we are in understanding some of the issues that have caused the fish kills over the last three and a half years, due to just various environmental factors?

Jeff Kelble: Well, thanks for having me, be happy to discuss all that. This morning I was collecting sick fish from the Shenandoah State Park area, so known as Andy Guest State Park. And we were interested in collecting live fish today and delivering them alive to the labs down at

Virginia Tech. Some of the fish pathologists at Virginia Tech were going to do some bacterial and virus screening and some histopathological work. We had no trouble collecting sick fish, unfortunately, mostly red breast sun fish today is what I found.

RB: Is it important for you to get fish while they're still alive and suffering, as far as reaching conclusions about why they're sick as opposed to doing autopsies?

JK: Yeah. The autopsies on dead fish are - we're coming to find out are not very effective. We've learned a lot and made plenty of mistakes along the way and we're determined this year, because regrettably we're having another fish kill, we're determined this year not to make the same mistakes made in past years. Some of the mistakes we made in past years, we were good at collecting up dead bodies, but we didn't find enough sick fish who were in the throws of the problems that they were experiencing. And there's plenty available now, so we collected up what we could and there's lots of folks who want to look at them. There's folks at US Geological Survey and the EPA, we have university scientists at Virginia Tech and Virginia Commonwealth University, as well as



James Madison University here locally, Cornell University is doing some viral screening. So we've got a convergence of some very bright scientists now who want to look at our fish. And we have a fairly, a pretty good idea of what's killing our fish and specifically, but what we need to understand is why and we can move into that or I can talk a little bit more about what I saw in the river this morning.

RB: So, there is a little more understanding of the combination of variables that are coming together that caused these problems in recent years?

JK: Yes. There are many things

that are unclear, but among the things that are clear and that we have consensus on among the scientists, is that we're dealing with an immunity issue; that our fish have compromised immunity. There are certain - quite a few things that can cause that. Our belief right now is that we're looking at a contaminant issue of some kind. Maybe from among the suite of emerging contaminants, some of the endocrine disrupting chemicals, some of the chemicals that mask estrogen - or mask hormonal -

RB: I know that's been a rising issue, is things that are going through waste water chemicals that people are taking - not just

people but agricultural chemicals in the cattle -

JK: Yeah.

RB: - growth hormones -

JK: Personal care products, antibacterial soaps; these can all have an effect - in low levels in the watershed in the rivers, they can get into the fish and they do get into the fish and they can be recognized by fish as having hormonal properties that would mimic what the fish's natural hormone system appear in their bodies. And that can cause problems with immunity; it can also cause problems with intersex. Our fish are - most all



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# Riverkeeper

of the fish that we collect - most all of the centrarchidae or the perch family, meaning the small-mouth bass and the red breasted sunfish are intersex, meaning they have - the males have eggs or immature eggs developing in their testicles and -

RB: Now is that a problem that's cropped up since the kills were spotted?

JK: It's unclear. You know, we seem to find it where we look for it. And so far we've been looking at it in the watershed

and some places just outside of the watershed. But we find that in areas with higher populations and with more intense agriculture, we have a higher prevalence - meaning a higher percentage of the fish are intersex and we also have a higher

severity - meaning the number of eggs or the concentration of eggs is higher in those types of scenarios. So likely with intersex we may be looking at a number of things causing it or effecting the levels in our fish.

ing contaminants. So that may require a different round or some separate treatments that technology that I'm not quite an expert on - or I'm not an expert on at all really.

RB: Is there also an issue with septic systems and septic when they go bad start leaking into the ground water?

JK: Yeah. In the Shenandoah Valley we do have a lot of failing septic and it's particularly damaging in the type of geology we have, where we have rock structure that's very porous. The limestone rock structure, which are the gray rocks that you see sticking out of all of our farm fields, they have channels in them that allow water to exchange between the surface and the ground. And so failing septic systems get into our - very quickly can get into our drinking water and then to our river systems. So there's this interplay here so - and we don't by and large do a very good job of pumping out our septic and treating failing septic systems.

RB: We want to encourage people to keep up with their septic.

JK: Yeah.

RB: Just don't let it go until your house starts stinking.

JK: Yeah, if your house stinks you've got a major problem. But if your grass is real green over where your septic is you're leaking nitrogen and all the contaminants that we've discussed already, it's leaking right into the ground water and into our river. That's problematic.

RB: I know discussing with local politicians here in Warren County, we've had an increase in, and all through the Valley, an immigration from Northern Virginia, where you have city

## Regional jail committee presses on *Page County exploring all options, final site undetermined*

By Roger Bianchini  
Warren County Report

There were no announcements following a closed session of the Regional Jail Committee on May 8 during which potential sites were discussed.

While an ultimate site for the proposed facility remains in limbo, there was good news of a sort in the fact that Page County Administrator Mark Belton was in attendance at the meeting at the Warren County Government Center. Following the loss of one potential regional jail site in Luray due to flood plain issues it was reported Page might withdraw from the quartet of counties exploring the regional jail concept in the Northern Shenandoah Valley. The Luray Town Council rejected a rezoning proposal brought forth by the Page County supervisors at a site in a Luray industrial park due to concerns over potential flooding.

"They're looking very hard at local alternatives to see if that makes more sense," Belton said of the Page County Board of Supervisors. "We have an awful lot of debt we're getting ready to put on our plate right now - new high schools, a new county office building and a new jail as well. So, depending on what the regional concept would look like, where it would be, what other local jails could remain open as part of the regional jail - it all plays into the factor of costs. The bottom line will be costs then we'll see

what they want to do. But they have not made a decision as to whether they are in the group or out of the group at all at this point."

Three counties must remain involved for the regional jail concept to proceed. Warren and Rappahannock Counties seem firmly committed, as does Shenandoah County, which began the regional jail study. Shenandoah County Sheriff Tim Carter has expressed some public reservations about what operational adjustments his department would face should the jail be placed out of his county. A potential Warren County site submitted to the state to meet a March 1 deadline remains problematic due to a prior contract arrangement on a possible gas-fired electrical generating facility, CPV-Warren, that has been permitted by state and federal officials. While CPV-Warren is still shopping for investors and wholesale power purchasers due to higher costs associated with the cleaner, more environmentally friendly gas-fired process, CPV is pursuing an extension of its emissions permits acquired last year after extensive negotiations with federal, state and local officials.

"CPV controls the option and it looks like they are moving forward with their plan. So, it does not like that site is going to be a viable option at this point in time," Warren County Administrator Doug Stanley said after on May 8. Barring the collapse of the CPV project due to expired

permits, the preferred Warren County jail site, while good on paper, may have just been a stop-gap deadline proposal. At least one potential site in Shenandoah County now appears to be on the table, though it has yet to be officially confirmed.

In the end it will be logistics, operational details and costs - not to mention availability - that will determine the shape and location of the proposal put forth by a coming November final deadline. Until then project architect Moseley is constrained to generalities, rather than a specific plan to fit a prescribed site.

"We're still trying to identify an alternative site that works according to the criteria we've established," Stanley said following the March 8 meeting. Among those criteria is easy access to major road systems, utility hookups and as central a location to all four jurisdictions as possible.

"Number one, Page and Warren are in the middle of the four counties, so proximity-wise those two work better," Stanley observed. "Obviously we have been working through those two counties on potential sites. But we'll continue to look for sites until we have a site that's been identified, approved by the host jurisdiction and we're continuing to evaluate alternatives. So, if you have a piece of property let us know," Stanley concluded with a smile.

RB: This isn't a new phenomenon; these chemicals have been leaking into our system through wastewater treatment plants that are decades old that were never designed to filter out that kind of thing.

JK: Few are designed to handle or have any effect on them.

RB: Now locally, politically I've heard some griping about some of the mandates about upgrading waste water throughout the Chesapeake Bay Watershed, but how necessary is that? I mean, is it going to be money well spent for the State and the communities?

JK: Its money very well spent. It will have a direct effect on this river. It will also have a direct effect, if you do use the Chesapeake Bay, on the Chesapeake Bay system. And you know we've - I've heard a lot of complaints and there are - our rates are going up where I live too, and I try to explain to people that we really have gotten off quite easy. We've actually have been operating failing facilities for a long time and have needed to invest the infrastructure a long time. So we've had bargain basement costs for our treatment and now it's coming to what it should be really.

RB: Yep.

JK: And it's painful, everybody's going to feel pain in that treatment, but regrettably these systems - or few of these systems, maybe with just a couple of exceptions, and probably none in this valley are going to address any of these emerg-

# Riverkeeper

and suburban folks looking for their country dream house on a few acres who aren't really used to dealing with their own septic systems and they may not have the understanding in their \$400,000 house, that, oh I've got to check this every year to -

JK: They might not even know. Right. Most people aren't cognizant of it and that's real common. And it's also - it's a dollars issue. It's expensive, if you have failing septic to treat it and so there's a whole host of issues. We don't have ordinances that require pump out. Many counties in the State have ordinances that require pump out during resale of a property, and Shenandoah County's considering that.

RB: I know there's been some discussion in Warren County about working with realtors and

the government in alerting people to what they have to do with their system and there's always a little reluctance to mandate new laws, but you know that's also being discussed too.

JK: Yeah, it seems most people can accept that when you sell a house that generally people are making money on the transaction and that's when it's best to try and extract some money for the pump out, have that be a requirement of sale. And I think people would just become used to it. But it's very unpopular in some circles.

RB: Right.

JK: - much to the subject to the whim - political whimsy or whatever.

RB: That whim comes and goes.

JK: Yeah.

(Break)

RB: We were talking a little bit before the break about issues off the river that contribute, but you've been on the river today and I want to focus on what you found today, what you've been finding, and you know what you know about the situation.

JK: Yeah, let me just start by characterizing what's happened maybe in the past three weeks. We started receiving some reports, one on the North River some on the South Fork Shenandoah, one on the North Fork Shenandoah; of small sporadic pockets of fish kills. Small-mouth bass and red breast and we'd go out and verify and we would find some small number of sick fish - this was during the initial warm up period, late

March, early April.

RB: Has that been similar each of the last three of four years; about the same time?

JK: Yeah, it seems to be when our waters warm up into the 60s and there's - we can discuss maybe what the means. We're not positive, but we have some ideas of what the means. But they also seem to correlate very closely with run off events from heavy rain storms or rain storms in the Valley.

But this year this seemed to escalate about a week and a half ago. We started getting the reports I had setup as a member of Virginia's Fish Kill Task Force, which we can discuss too, I was responsible for getting all the fisherman and the river users coordinated to be out on the river, to be looking for issues as they emerge and they did a

great job. We started getting reports, we think, right when it started to happen and this is where we missed out in the past, we missed that initiating event. And that's going to be a big piece of determining what's wrong is; what is initiating this? What are the precursors, the environmental conditions, the water chemistry?

And we have some very advanced monitoring equipment in the river right now at a lot of locations that are monitoring the river chemistry and what contaminants are in it. We're going to be able to build very advanced contaminant profiles and beyond just the normal suite of the things that you test for, like oxygen levels and phosphorous and nitrogen and ammonia. You know, these are going to be into some of these endocrine disrupting chemicals.

So we started getting heavier

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## Riverkeeper

fish kills, we started seeing a lot of sick fish, they turned very dark in color and they would move up into very shallow water, inches of water in (indiscernible) along sandy banks, clay banks and they seemed to be waiting to die. You could see fungus patches on them, looked like little cotton balls on their sides.

RB: Was this localized incident, or did you find it in different places along the main stem and both forks? I know that there were issues initially, oh it was in this fork and then it jumped to the other fork the next year.

JK: Yeah. In past years - in 2004 as far as we could tell we had a

real severe event on the North Fork Shenandoah, we lost about 80 percent of our mature smallmouth bass. We lost a higher percentage of all of the red breast sunfish, which is out native sunfish. They took the largest hit, they're not talked about very much, but they're nearly eliminated in some areas. There's pockets of them that seem to be doing okay, but we're not sure why that is, we have theories.

Then in 2005 we had problems on the South Fork. We had a similar kill of similar severity, again about 80 percent of the mature smallmouth - that means smallmouth over about 9 or 10 inches. The young of year at that point seem not to be effected

and we have a lot of young of year from good reproduction the year before. Last year we had some pockets of fish kills, very isolated . . . we thought maybe we were going to see the end of it. We also had a very dry season without any run off. This year we've had significant rain events and it seems that about a week after our rains events - and we often also experience warming of the water and we were getting our fish kills.

And this year it's - and I personally verified 22 sites on the South Fork and about 9 on the North Fork Shenandoah. And it's at every single one of them at different levels of severity, but this is about 97 miles of South

Fork and its 90 miles or so of North Fork Shenandoah. And the reports on the main stem are that we have lesions but we don't have mortality yet.

RB: Should people who fish the river, sport fishing and actually do eat fish - I know there are warnings in different parts of the river that are maintained; how concerned should people be if they're fishing a part of the river where it is okay, generally speaking to eat your catch? Should people -

JK: That means basically the North Fork and we knew that if you're eating fish out of the South Fork or the main stem of the Shenandoah particularly if you are female of child bearing age or a child, then you need to really seriously reconsider that, because of the PCP and mercury contamination of the river. But in the areas where the state has okayed the consumption, I don't know what -

RB: If you don't see a sick fish -

JK: I don't know what to say. You know, I'm not eating them. I don't know that it's a good practice. If you need them for subsistence that would be another issue, but if you're just enjoying a meal you might want to - you'd better cook it well. You know, many of these fish have bacterial infections, we know of several bacterias - strains that are in them that can cause mortality in the fish. There's a bacteria called aremonous somonacido (sic) which is generally a trout bacteria that is - we know to be killing some of the smallmouth and we also have flexibacter columnaris which is a soil bacteria which gets in our river runoff events which we haven't found much of this year, but in past years we found it and they're not really suitable for consumption. So I wouldn't eat fish, but people still have the

right that like to.

RB: Would you say cook it well, make sure it has no signs of disease on it?

JK: Yeah, that's the first step certainly. Let's move on beyond that, I just hope people aren't eating these fish. There's such mortality that we're going to lose a large percentage of their fish this year and I think angling, we encouraged it so that we could detect the fish kill early, I'm now sort of discouraging it.

Now, there's a bight side of this, to some degree, in that our smallmouth bass are reproducing right now. In one small section of the river down near the park - or I'm not going to say where, but about a mile from the state park went through about 75 yards of river and found 22 nesting sites where we had single male smallmouth protecting eggs on the beds and I verified that there were eggs. So these fish are reproducing.

RB: So the will to survive genetically is there.

JK: It's there. A few of these fish I could see the lesions on them just looking at them from above the surface, you know the white patches of fungus, but they're going to continue to reproduce which is a good thing and helps to continue the fishery.

(Break)

RB: Jeff, let's talk a little bit about the Shenandoah River and the valley that bears its name. Are there unique characteristics that are bringing things to a head here? Like say we have a distinct geology in the area?

JK: It's a great question. This is the - sort of at the crux thinking in the Fish Kill Task Force. And the Fish Kill Task Force was setup in 2005 after our second major kill and its co-chaired by

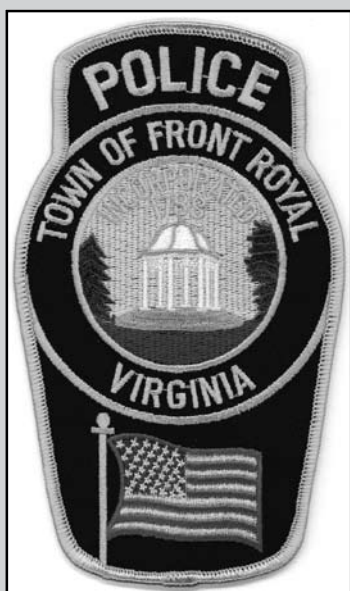
## New police Harley hits the streets

From a release:

Chief Ronald A. Williamson of the Front Royal Police Department announced that the Department has taken a new step forward in its goal to increase traffic enforcement within our Town. The Department has recently acquired a 2007 Harley Davidson motorcycle which will be hitting the streets in an effort to address the most-noted traffic violations. These violations include speeding, aggressive driving and failure to obey traffic signs and/or lights. The Department hopes that this motorcycle will be an important community policing tool that will be easily accessible to the public.

The motorcycle will be manned by Traffic Enforcement Officer Donald Orye. Officer Orye was named as the Department's first Traffic Enforcement Officer in July 2006, following the approval of the position by the Town Council. Officer Orye has been with the Department since August 2005 after serving five years with the Luray, Virginia Police Department.

ment. This position requires the officer to utilize the motorcycle in handling traffic enforcement. During periods of inclement



weather, Officer Orye will continue to carry out his duties in an unmarked patrol vehicle.

Officer Orye has received training in advance Accident Investigation and Reconstruction, Commercial Motor Vehicle regulations, as well as being a certified Radar and Lidar Oper-

ator. Officer Orye will continue to receive training in motorcycle patrol techniques as well as other areas of traffic safety. His ability to enforce the traffic laws has already resulted in a marked increase in traffic arrests. The ultimate goal, which is to make our community safer, is to work toward voluntary compliance by the public to obey traffic laws.

Due to its stealth and maneuverability, the traffic enforcement motorcycle is ideal for speed enforcement. This motorcycle will also be used for parades, traffic control, funeral processions and other events which require the ability to maneuver. Citizen's complaints will be addressed with respect to problem areas and other traffic safety issues. Overall, the use of motorcycles by numerous law enforcement agencies in the Commonwealth of Virginia, have proven to be extremely beneficial in ensuring safer streets in their communities. We hope to bring the same benefits to our community. In July 2007, the Department will assign a second officer to the Traffic Enforcement Unit.

# Riverkeeper

Don Kain of the Department of Environmental Quality and Stephen Reeser from the Department of Game and Inland Fisheries.

RB: All names that are in my file on the Shenandoah River.

JK: Yeah. That's right, recently we added Dr. Greg Armen (sic) and Dr. Don Orth (sic), who are the scientific co-chairs, they're heading the direction of the scientific study. And all along from the very beginning our question was, why are we having kills in the Shenandoah River system and not in - and also in the South Branch of the Potomac, which is just over the Allegheny range on the other side of the West

Virginia line.

RB: Now, are they facing a similar geology to us, over there?

JK: Somewhat similar. They don't really have the limestone geology that we have, but there's other things that we can get to. But all along we've asked ourselves, why would we be having these kills here and we're not having them in the Rappahannock watershed or even in the lower Potomac, you know, where this water goes. And that's really pointed to a contaminant and you know the question of what's unique about this valley.

RB: A contaminant that would be here but not in these other

places?

JK: Maybe diluted or not in those other watersheds. And right now I think we're going to try and isolate maybe some contaminants that might cause immunity problems and intersex.

And so we went through many different hypothesis and ideas about what might be killing the fish from methane to development, to some ad practices, to different types of sewer treatments. You name it we went through them all and we were trying to isolate some of the things that are unique. The Shenandoah Valley, whether we like it or not, is becoming a satellite of D.C.; it's becoming a commuter center, people are coming out here and still commuting into the city and so development has increased. And that's been good and it's been bad. It's got - you know it's a double edge sword.

We have a high intensity of agriculture, which is the lifeblood of the Valley and some of those industries have grown and we were looking at changes in those practices to see if we could tease out something that might have changed to initiate something like this. We've looked at the - you know we're looking at the suite of new pharmaceutical products.

So the trick is finding out what is unique. We don't have fish kills everywhere in the State. Really we're isolated to the Shenandoah Valley in the South Branch and maybe I'll come back in a couple weeks and discuss something's that are developing now and the direction of the task force. We feel like we're isolating something's that may be risky to the fish, things we're finding in the water and the in the Valley. And it's not appropriate to discuss them right now, but when the scientific studies have been developed and when the universities get proposals about studying them, I think it would

be fair game to talk about.

RB: Now, when conclusions are reached at like that, how far are we from coming up with some solutions to ease the environmental pressures on the fish population?

JK: Well, I don't think we're going to come up with one thing, I think we're going to come up with several contributing factors to this, that seems clear. There maybe one is more heavily weighted than another. But the problem with these things is we may find that there's a legacy issue. Where we could stop the introduction of these things - something into our environment - a contaminant into our environment, but like DDT back in the 60s and 70s, it could take a lot of years for that to work it's way out of the system.

RB: Yeah. The problem didn't surface and then you saw the fish kills immediately, it's something that's been building up.

JK: That's likely, I can't say it for sure or not. We certainly would have to have a change of some kind to initiate these things, because they're initiated. And it's quite clear that we've had fish kills for a long time in this valley. We've looked through newspaper articles and we looked through old files that the Department of Environmental Quality and there's a lot of sort of unnoticed fish kills that have occurred, which were always attributed to spring stress from spawning and it just really isn't appropriate. These fish don't go through the acuity of stress that would imply and we don't see this kind of mortality in other river systems. And so we think that we may have had kind of low-grade kills for a while, just not being noticed by the public. And now there's a lot of focus on it and it's easier - now that we know what to look

for, it's easier to diagnose. The average angler's not seeing the problems. The average angler is going down in the middle of the river and catching fish which are still in the river and they're not looking on the banks . . . they're not really looking closely and finding these things. It does take some examination and these fish are not floating when they die, they're sinking to the bottom. They're not easy to find, so we're losing fish over several months, very small percentage each week, but it's accumulating and turning into quite a few fish. So stay tuned maybe we'll come back and we'll have a juicy discussion on what we're finding in the task force.

RB: How often do you go out a week? I mean, are you out everyday?

JK: I've been out 200 hours in the last 15 days, so it's a lot.

RB: So I wasn't joking when I said you were taking some time out from your busy schedule.

JK: It's sun up to sun down. We're trying to make sure we don't miss any opportunities to learn what we can while these fish kills are occurring.

RB: But the task force is moving forward, we may be on the edge of some scientific answers?

JK: Well, we're going to certainly be able to either say that certain things that we've been suspicious about are or are not of concern and that will get us one step or several steps closer to the answers. It's the best way to go about it.

RB: Well this is our Valley, this is our river, we should all be concerned about it and Jeff we'll look forward to having you back some time.

(End of interview)

## Calligraphic Meditations on Nature

From a release:

The Front Royal Women's Resource Center announces Calligraphic Meditations on Nature with Billie Michelle Benegar, a workshop introducing the basic principles of Asian Calligraphy with traditional materials, including rice paper and sumi ink. Presented in the beautiful natural setting of The Library

at Blandy Experimental Farm, The State Arboretum of Virginia, Thursday, May 31, 2007, 10:00 am. to 2:30 pm. Cost \$75 to members/\$85 to the public, materials included. Maximum of 15 participants. To register call the Women's Resource Center at 636-7007 or remit directly to the FRWRC c/o 10 Buck Mountain Rd.. Bentonville, VA 22610



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