

DECISION PAPER

DATE: July 30, 2012

TO: Eric Gardner, Nongame Chief
Kirk Young, Fisheries Chief
Ron Sieg, Region II Supervisor

FROM: R. Scott Rogers, Reg II Fisheries Program Manager

ISSUE: Pesticide Treatment Planning and Procedures Manual (PTPPM) Internal Review and Approval – Fossil Creek Treatment 2012

OBJECTIVE: PTPPM Stage 1 – Piscicide Project Internal Review and Approval for the piscicide treatment of Fossil Creek this calendar year (2012)

PROJECT SUPERVISORS – R. Scott Rogers, Administrative Project Lead
R. Scott Rogers, Lead Applicator and Project Oversight

PROJECT LOCATION – Fossil Creek, the 4.8 km reach between the temporary barrier located near Sally May Wash and the original fish barrier located in the Mazatzal Wilderness (treatment reach). Fossil Creek lies on the border between the Tonto and Coconino National Forests. The treatment area also includes five stock tanks located on the Coconino National Forest that lie within the upper Fossil Creek watershed. If young of the year smallmouth bass (*Micropterus dolomieu*) are discovered upstream of the proposed treatment reach, we will likely have to expand the treatment reach up to the waterfall (natural fish barrier) at Irving; resulting in a 9.65 km treatment reach.

SITE NAME	TOWNSHIP	RANGE	SEC.	UTM (meters) / GPS COORDINATES	
				(Northing / Lat.)	(Easting / Long.)
Irving Falls	12 N	7 E	29	34°24.186' N	111°37.070' W
Fossil Creek Temporary Barrier	12 N	7E	31	34°23.244' N	111°39.375' W
Fossil Creek Permanent Barrier	11 N	7 E	29	34°21.203' N,	111°39.933' W
Soldier Mesa Tank	13 N	9 E	15	34°30.456' N,	111°29.599' W
Sand Rock Draw Tank	13 N	8 E	16	34°31.027' N,	111°30.495' W
Sand Rock Tank	13 N	8 E	18	34°30.807' N,	111°31.823' W
Macks Tank No.1	13 N	8 E	11	34°31.526' N,	111°34.907' W
Macks Tanks No. 2	13 N	8 E	14	34°30.966' N,	111°35.661' W

PROPOSED TIMELINE - The proposed rotenone treatment of Fossil Creek is preliminarily scheduled for the week of September 10-14 (first application), September 17-21 (second application), and if needed, September 24-28, 2012 (third or backup week for inclement

weather). Post-treatment monitoring will be conducted by the Department and partners following each rotenone application. The proposed treatment is dependent on completion of repairs to the original fish barrier, completion of Section 18 analysis of the 2004 Environmental Assessment (EA) by Coconino National Forest, and completion of fish surveys upstream of the proposed treatment area. A crew will conduct multiple surveys above the proposed treated area prior to the treatment and will focus on detection of smallmouth bass young of the year (YOY). If smallmouth bass YOY are detected, it is likely that the treatment will be delayed until 2013.

PURPOSE OF TREATMENT – To remove smallmouth bass from the 5 kilometer reach in Fossil Creek between the temporary barrier at Sally May Wash to the permanent barrier within the Mazatzal Wilderness.

Prior to barrier construction and renovation in 2004, Fossil Creek was inhabited by variety of native fish species including roundtail chub (*Gila robusta*), headwater chub (*Gila nigra*), speckled dace (*Rhinichthys osculus*), longfin dace (*Agosia chrysogaster*), desert sucker (*Catostomus clarki*), and Sonora sucker (*Catostomus insignis*). Both roundtail chub and headwater chub are species of special concern for the state of Arizona. Non-native fish species, green sunfish (*Lepomis cyanellus*) and smallmouth bass also inhabited lower Fossil Creek since at least the 1960's and negatively impacted the native fish and frog assemblages in that portion of the stream. In order to remove this threat, a barrier was constructed to prevent the upstream movement of non-native fish from the Verde River and a chemical renovation was conducted in 2004. Prior to the piscicide application, native fish were salvaged in the treatment area. The fish piscicide Antimycin A (Fintrol) was used to eradicate the unwanted fish species from the creek. In response to the renovation, fish barrier, and reintroduction of native fish to this area, native fish populations in Fossil Creek dramatically increased. The original renovation was considered a success and subsequently four endangered species including Gila topminnow (*Poeciliopsis occidentalis*), loach minnow (*Tiaroga cobitis*), spikedace (*Meda fulgida*), and razorback sucker (*Xyrauchen texanus*) were stocked into Fossil Creek. Fossil Creek has been one of the most publicized and successful native fish restoration projects in Arizona.

In 2011 smallmouth bass were found upstream of the constructed fish barrier, which was compromised by a flood during January 2010. Barrier function was restored in spring 2012. Smallmouth bass are known to prey on native fish and have extirpated several native fish populations in Arizona streams and rivers. We propose to remove all non-native smallmouth bass and other fish in the target area with the chemical piscicide Rotenone.

RETREATMENT WITH EXISTING APPROVAL PROCESS – Yes.

A retreatment is necessary because smallmouth bass invaded the lower portion of the native fish management section of Fossil Creek. In 2011 smallmouth bass were discovered above the permanent barrier but below Sally May Wash. A temporary barrier was constructed in 2011 to prevent further upstream movement of smallmouth bass. The smallmouth bass are piscivorous and threaten the native fish populations in Fossil Creek, including repatriated populations of endangered spikedace, loach minnow, and Gila topminnow, and populations of non-listed native species including headwater chub, roundtail chub, desert sucker, Sonora sucker, longfin dace and speckled dace.

In 2004 Fossil Creek became a refuge for native fish after a Bureau of Reclamation (BOR) funded fish barrier was constructed in the lower portion of the stream, the stream was chemically treated to remove nonnative fishes, salvaged native fish were returned to the stream, and full flows were returned to the stream after the Irving Power Plant was decommissioned (Weedman et al. 2005). The 2004 treatment was a success, and the stream was free of nonnative fishes until smallmouth bass were discovered above the fish barrier in 2011. It is unknown exactly how smallmouth bass invaded Fossil Creek above the barrier, but the most likely explanation is that they were able to move upstream past the barrier after a flooding event in January 2010 moved rocks below the barrier allowing fish to move upstream. However, in 2012 a number of large-sized smallmouth bass were detected in a localized area upstream of the temporary barrier; all but one of the observed fish were removed. Origin of these fish is unknown, but could include illegal stocking, colonization prior to temporary barrier construction or immigration through the temporary barrier. Since smallmouth bass reinvaded Fossil Creek, relatively few have been detected, but their numbers will increase if they are not eradicated. Given that the 2004 treatment was successful at eradication of nonnative fishes, the proposed treatment of should successfully eradicate smallmouth bass from the targeted portion of stream. The proposed treatment for 2011 will be technically simpler than the 2004 treatment because it will cover a shorter portion of stream.

If a large-scale flood event damages the fish barrier, or if nonnative piscivorous fish are illegally stocked, retreatment may become necessary to protect the native fish assemblage.

An EA was completed prior to the fisheries renovation in 2004 and is still sufficient to cover the re-treatment proposed for 2012. The original EA was written for the use of Fintrol (antimycin), which was the chemical used during the original renovation of Fossil Creek in 2004. However, Fintrol is no longer available so rotenone (CFT Legumine) will be used instead. A Section 18 analysis, a supplement to the original EA, will show that the effects of Fintrol disclosed in the original EA are similar to those that would occur from using rotenone. The Section 18 is currently being conducted by the Forest Service with technical support from the U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (Department) and will analyze the impacts of rotenone and its similarity to Fintrol.

A Minimum Requirements Decision Guide (MRDG, formerly known as minimum tool requirement) is necessary in order to use mechanized equipment (KMNO4 auger and generator etc.) necessary during this renovation because Fossil Creek resides in the Mazatzal Wilderness. This document was completed by the Coconino and Tonto National Forests and was signed by its Regional Forester (signed May 31, 2012). This document is currently out for the mandatory public review (open for comment until Aug 8, 2012).

EMERGENCY RAPID RESPONSE TREATMENT – Yes, based on the criteria below.

Alternative control practices are not feasible.

Smallmouth bass could be controlled but not eradicated by mechanical means. Chemical piscicides are the only means to ensure eradication.

Involves invasion of a nonnative species new to state or specific area.

The situation will cause significant economic loss.

Close to a million dollars had been spent restoring Fossil Creek to a native fish only stream, and allowing smallmouth bass to proliferate will negate all of those efforts. The conservation value of the stream will decline and correspondingly the status of resident native fish species and reintroduced federally listed species. Therefore, it is likely that several unlisted species will be more likely to be listed, and several endangered species will not be improved by this action leading to increased economic impacts.

The situation will present significant risks to an ecosystem or wildlife.

Smallmouth bass are very efficient piscivores and will eventually alter the fish assemblage so that most if not all of the native fish species are eliminated. Such a situation exists in Fossil Creek downstream of the barrier where nonnative fishes greatly dominate the fish assemblage.

TARGET SPECIES FOR REMOVAL – Smallmouth bass and any other nonnative fishes

CONFLICTS WITH MANAGEMENT OBJECTIVES, ETC – None

SENSITIVE SPECIES POTENTIALLY IMPACTED – Fossil Creek is home to a variety of native fish species including roundtail chub (*Gila robusta*), headwater chub (*Gila nigra*), speckled dace (*Rhinichthys osculus*), desert sucker (*Catostomus clarkii*), and Sonora sucker (*Catostomus insignis*). Between 2007 and 2011 one non-listed native fish species (longfin dace *Agosia chrysogaster*), and four endangered species (spikedace *Meda fulgida*, loach minnow *Tiaroga cobitis*, razorback sucker *Xyrauchen texanus*, and Gila topminnow *Poeciliopsis occidentalis*) were stocked multiple times into Fossil Creek as part of the second phase of the Fossil Creek native fish restoration project. As of the end of 2011, it appeared that longfin dace and Gila topminnow had established populations in Fossil Creek, but it was still unclear if spikedace and loach minnow had, and the razorback sucker repatriation appeared to have failed.

Gila topminnow, loach minnow, and spikedace are ESA-listed as endangered. Roundtail and headwater chub are ESA candidates and they are conserved under a signed conservation agreement.

FISH REMOVAL ALTERNATIVES CONSIDERED – Mechanical removal has been attempted in other stream systems with a general lack of success (no species have been eliminated through mechanical removal). Cost of mechanical removal is high with a low probability of success due to the complex and remote nature of the stream. Mechanical removal using nets, traps, angling and spear-guns was attempted by the Department in September and October of 2011 and was not successful. A snorkel survey upstream of the permanent barrier on June 6, 2012 found large numbers of YOY smallmouth bass in the reach proposed for treatment with rotenone. The use of rotenone as a piscicide is the only effective technique for the removal of smallmouth bass.

PISCICIDE TO BE USED AND METHOD OF APPLICATION - Liquid emulsifiable rotenone (CFT Legumine 5% or Prenfish 5%) will be used for the chemical treatment of Fossil Creek. Methods of application will likely include: drip buckets/barrels, mini-drip bottles, backpack sprayers, sand/gel mixture (Rotenone Fish Toxicant Powder) for spring vents, and neutralization with potassium permanganate using dry feed hoppers and augers.

LAND OWNERSHIP – Fossil creek lies on the boundary between the Coconino and Tonto National Forests. The treatment reach is located within the Mazatzal Wilderness.

CURRENT USE OF WATER – Fossil Creek, from its headwaters at the confluence of Sandrock and Calf Pen Canyons above Fossil Springs to its confluence with the Verde River (approximately 27.60 river kilometers) is classified as an Outstanding Arizona Water. This area is heavily used for recreation because of its proximity to Maricopa County and the availability of beautiful swimming holes. No domestic or irrigation use of the water occurs within the project area. One of the unique attributes of Fossil Creek is that prior to the invasion of smallmouth bass, Fossil Creek was the largest and one of only a few streams in Arizona with a pure native fish assemblage. Fossil Creek is managed by the Department as a native fishery.

INTERESTED PARTIES AFFECTED BY THE PROJECT – Land management authority of the treatment area is shared by the Tonto National Forest and the Coconino National Forest. Since listed species reside in this river, the USFWS and US Bureau of Reclamation (Reclamation), are two of our important cooperators on this project. Reclamation has funded the reintroduction efforts for the listed fishes and the installation and repair of fish barriers in Fossil creek under the Gila River Basin Native Fishes Conservation Program. Numerous stakeholder groups and fishing clubs including the Fossil Creek Stakeholder Group, the Native fish Conservation Team and the Northern Arizona Flycasters share interest in this resource.

DOWNSTREAM AREAS POTENTIALLY AFFECTED BY THE PROJECT – Fossil Creek flows into the Verde River approximately 12 kilometers downstream of the treatment area.

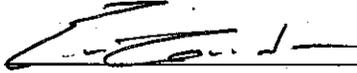
SUPPORTING GROUPS – Northern Arizona University, Native Fish Conservation Team, Fossil Creek Stakeholders Team and Northern Arizona Flycasters.

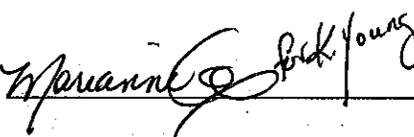
OPPOSING GROUPS AND INDIVIDUALS – None that the Department has been made aware of.

SUPPORTING REGULATORY AGENCIES AFFECTED - USFWS, Coconino National Forest, and Tonto National Forest.

CHANCE OF SUCCESS AND NUMBER OF TREATMENTS/YEARS REQUIRED – High chance of successful eradication smallmouth bass in treatment area if conducted under ideal conditions with at least a double treatment (two applications back-to-back in September). This is contingent on YOY smallmouth bass not being present above the treatment area. Crews will continue to survey the area immediately upstream of the proposed treatment area for smallmouth bass. We propose delaying the treatment for 1 year (2013) if YOY smallmouth bass are detected upstream of the treatment area because the currently proposed treatment area will have to be expanded if smallmouth bass are detected.

REQUEST - I request initial approval (Stage 1) of the project that will allow PTPPM planning to continue to Stage 2: Preliminary Planning and Public Involvement.

Approved [] by Eric Gardner  Date: 8/27/12

Approved [] by Kirk Young  Date: 8/21/12 *attached email from Kirk Young*

Approved [] by Ron Sieg  Date: 8/14/12

Marianne Cox

From: Kirk Young
Sent: Friday, August 10, 2012 3:34 PM
To: Scott Rogers; Eric Gardner
Cc: Ron Sieg; Julie Carter; Chuck Benedict; Marianne Cox; Tony Robinson; Larry Riley
Subject: FW: Final, Final stage one decision paper
Attachments: DECISION PAPER-FOSSIL treatment 2012 internal approval memo Final,Final.docx

My couple of comments in the doc. Unless Ron or Eric have concerns, I am good with approval once edited.

We will have to send a commission/exec staff briefing forward once we approve Stage I (as with Stage II). Scott – can you put one together and work thru FOD or you want us to run it?

Kirk

Kirk Young
Fisheries Branch Chief
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix AZ, 85086-5000
623-236-7259

Unplug and Get Outdoors...

From: Scott Rogers
Sent: Wednesday, August 01, 2012 10:34 AM
To: Kirk Young; Eric Gardner; Ron Sieg
Cc: Chuck Benedict; Tony Robinson; Marc Dahlberg; Julie Carter; Marianne Cox
Subject: Final, Final stage one decision paper

After some discussions with folks yesterday and further edits. This revised decision paper gives us more flexibility for future fossil treatments. This is the direction that we will be going with our upcoming planning. We have bass on site and will be collecting fossil water and chub tomorrow. We have obtained CFT Lugumine from region I and will be doing bioassays in our warehouse on Friday.

Thank you and contact me if you have questions

><));> ><));> ><));> ><));>
R. Scott Rogers
Fisheries Program Manager, Region II
Arizona Game and Fish Department
3500 S. Lake Mary rd.
Flagstaff, AZ 86001
srogers@azgfd.gov
(928) 214-1245
><));> ><));> ><));> ><));>

It has always been my private conviction that any man who pits his intelligence against a fish and loses has it coming. ~John Steinbeck

Click [here](#) to buy your hunting or fishing license online

