December 19, 2006

Memorandum

To: Assistant Regional Director – Ecological Services, FWS, Atlanta, GA

From: acting Field Supervisor, Ecological Services Arkansas Field Office, FWS, Conway, AR Margaret Harney

Subject: Intraservice Biological and Conference Opinions: Application for an Enhancement of Survival Permit Associated with a combined programmatic Safe Harbor Agreement and Candidate Conservation Agreement with Assurances for the endangered Speckled Pocketbook (*Lampsilis streckeri*) and candidate yellowcheek darter (*Etheostoma moorei*) in the Upper Little Red River watershed, Arkansas.

This document transmits the U. S. Fish and Wildlife Service's (Service) Biological and Conference Opinions based on our review of the application for an enhancement of survival permit (ESP) associated with a combined programmatic Safe Harbor Agreement (SHA) and Candidate Conservation Agreement with Assurances (CCAA) entitled, Joint Programmatic Safe Harbor Agreement and Programmatic Candidate Conservation Agreement with Assurances for the Speckled Pocketbook and Yellowcheek Darter in the upper Little Red River Watershed, Arkansas (Agreement) and its effects on the covered species, in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The Service received the ESP application from The Arkansas Game and Fish Commission (AGFC), The Nature Conservancy's Arkansas Field Office (TNC), Natural Resources Conservation Service (NRCS), and the Service's Arkansas Field Office (AFO) on November 29, 2005, and initiated consultation on September 21, 2006.

The speckled pocketbook mussel (SPB) is currently listed as endangered pursuant to the Act and the yellowcheek darter (YCD) is a candidate species for federal listing. Collectively, these species are referred to as the "covered species" for purposes of these opinions and for implementation of the Agreement and ESP. The ESP is associated with the Agreement and will address incidental take of SPB and YCD (should the latter species become listed during the term of the CCAA). SHAs and CCAAs provide effective mechanisms for the conservation of rare or imperiled species while providing assurances and protections to landowners willing to undertake voluntary habitat improvement projects on their land.

This Biological and Conference Opinion is based on information provided in the Agreement prepared by the AGFC, TNC, NRCS and AFO (Parties) that was available to the public during the 30 day public comment period beginning on September 8, 2006, and the Service's final National Environmental Policy Act (NEPA) decision documents as well as information from ichthyologists, malacologists, research scientists, information obtained from scientific and commercial literature, field investigations, and other sources. All of the aforementioned

documents are incorporated herein. A complete administrative record of this opinion/conference is on file in the Service's Conway, Arkansas Ecological Services Field Office.

CONSULTATION/CONFERENCE HISTORY

On January 13, 2005, a multi-agency team comprised of state and federal agencies and non-governmental organizations met and decided to develop the *Conservation Strategy for the Speckled Pocketbook and Yellowcheek Darter* (Strategy) to aid in the implementation and identification of proactive land conservation measures, standards, and guidelines for the covered species. This was the first step in a watershed level approach to restore stream habitats in the entire upper Little Red River watershed for both YCD and SPB. At this same meeting, the team made a decision to move forward with development of a programmatic SHA for SPB and a CCAA for YCD.

On February 15, 2005, a subgroup of the multi-agency team met to begin working to finalize the draft Strategy. The subgroup met again on April 6, 2005 and finalized the Strategy[1].

The first drafts of the programmatic SHA and the CCAA were presented to the multi-agency team for review in March 2005. A second SHA/CCAA development meeting was held in Conway, Arkansas in April 2005. Final drafts of the SHA and CCAA were submitted to the Parties in July 2005. All necessary signatures were obtained by November 2005 and a transmittal package was sent to the Service's Southeast Regional Office on November 29, 2005. The AFO and Region 4 Safe Harbor/Candidate Conservation Coordinator worked together during the first half of 2006 to incorporate solicitor comments. It was decided during this time that the documents should be combined as one to expedite solicitor review and processing. On September 8, 2006, the combined SHA and CCAA was published in the Federal Register announcing a 30 day public comment period. The Service's Southeast Region Office initiated formal consultation with the AFO on September 21, 2006.

[1] Significant overlap exists between the range, life history requirements, and level of conservation threats to both the covered species. As a result, the Strategy was developed to address both species, and it is the expectation of the Parties to the Agreement that the implementation of the conservation measures of the Agreement will provide a benefit to both species. Because of the regulatory differences between the SHA and CCAA programs, two separate actions are necessary to fully implement the regulatory program despite the biological similarities and outcomes for both species.

BIOLOGICAL/CONFERENCE OPINION

DESCRIPTION OF PROPOSED ACTION

The Parties seek the Service's approval of the Agreement and the issuance of an ESP (valid for 35 years) pursuant to section 10(a)(1)(A) of the Act and the Service's implementing regulations in parts 13 and 17 of title 50 of the Code of Federal Regulations (CFR). The Parties to the Agreement propose to offer technical and other assistance to eligible non-federal landowners interested in voluntarily implementing and/or maintaining identified conservation actions on their property that are expected to improve the statuses of either or both of the covered species and/or their habitat. The Parties expect that sufficient interest exists among landowners within the watershed such that the Agreement will achieve the respective regulatory standards of both the Safe Harbor and Candidate Conservation Agreement with Assurances programs. Specifically, both the SHA standard[2] for the endangered speckled pocketbook and the CCAA standard[3] for the candidate yellowcheek darter are expected to be achieved through application of a similar set of conservation and management actions on these lands when the landowner enrolls under the Agreement through a Property Owner Management Agreement (POMA).

The property eligible for enrollment under the Agreement consists of all non-federal property in the upper Little Red River watershed (558,615 acres). Under the Agreement, non-federal landowners (Cooperators) adjacent to the Archey, Middle, South, and Devils (including Turkey and Beech Forks) Forks would make habitat available to the covered species and assist with habitat conservation for a (minimum) period of 10 years or the remainder of the 30-year term of the Agreement, whichever is the longer duration. Cooperators within the watershed, but not adjacent to one of the forks, will manage their property in a manner which utilizes best management practices that reduce sediment and pollutant runoff thereby enhancing water quality and habitat (water and stream bed) for the covered species.

The purpose and conservation goal of the Agreement is to provide a mechanism for implementing the Strategy through some level of monitoring and management of either of the covered species and to encourage voluntary habitat maintenance by landowners, or Cooperators, who enroll under the Agreement. The net effect of the Agreement will be to increase the amount of habitat available to the covered species, improve water quality conditions (benefiting both of these aquatic species), and increase the ability of the Parties to monitor the species' response to the habitat and water quality improvements. Lastly, the purpose of the Agreement is to provide regulatory assurances to Cooperators, who choose to voluntarily enroll under the Agreement.

By enrolling under either or both components of the Agreement, the Cooperator will voluntarily implement conservation measures to biologically benefit the covered species (e.g., either the speckled pocketbook under the SHA, the yellowcheek darter under the CCAA, or both) over the term of the Cooperator's POMA, which is stepped down from either or both components of the Agreement.

[2] The Final Safe Harbor Policy is found at 64 FR 32717 and is also explained in Part 4 of the Agreement.
[3] The Final CCAA Policy is found at 64 FR 32726 and is also explained in Part 4 of the Agreement.

Under each POMA, a Cooperator will agree to perform the following conservation actions: 1) control livestock access to streams through fencing and alternative water sources, 2) protect, enhance, or restore terrestrial habitats through easements, riparian buffer establishment and maintenance, installation of erosion control measures, and foregoing detrimental land use practices, 3) protect, enhance, or restore aquatic habitats through easements, stream de-channelization, installation of instream habitat features, streambank stabilization, and road crossing stabilization, 4) species reintroductions, and 5) biological monitoring and any additional conservation measures deemed necessary and appropriate by Parties to the Agreement. The purpose of undertaking these conservation actions is to achieve the standard(s) of one or both components of the Agreement.

Net Conservation Benefits for SPB (SHA Standard)

Net conservation benefit means "the cumulative benefits of the management activities identified in a SHA that provide for an increase in a species' population and/or enhancement, restoration, or maintenance of the species suitable habitat within enrolled property(ies), taking into account the length of the Agreement and any off-setting adverse effects attributable to the incidental taking allowed by the ESP". Net conservation benefits must be sufficient to contribute, either directly or indirectly, to the recovery of the covered species (USFWS 1999a).

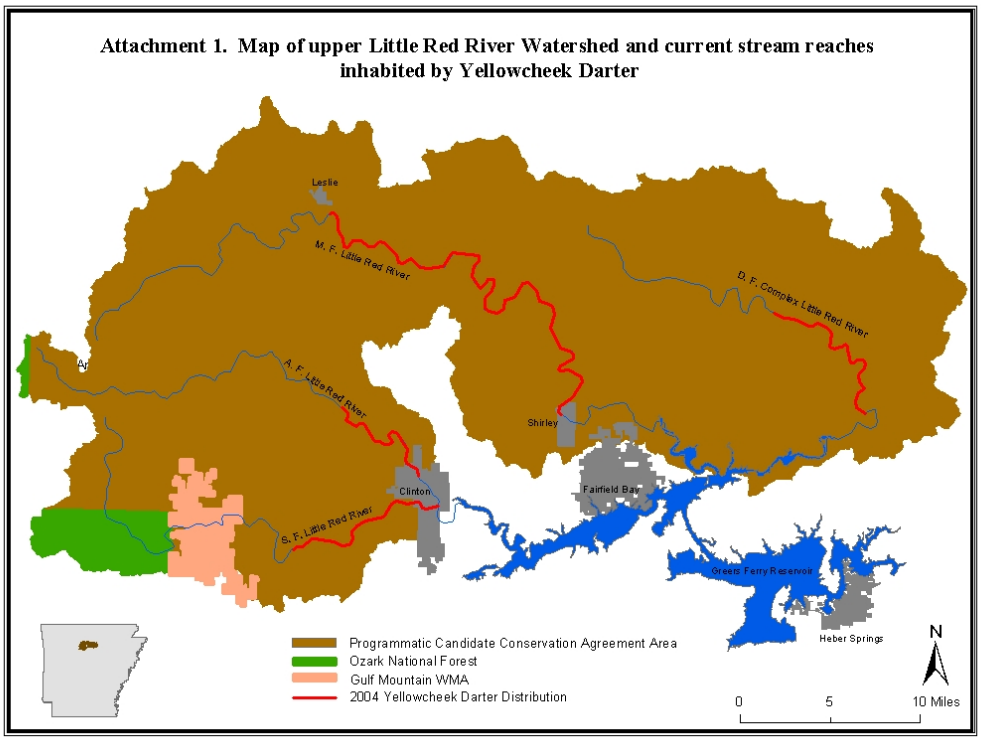
Preclude the Need to List YCD as Threatened or Endangered (CCAA Standard)

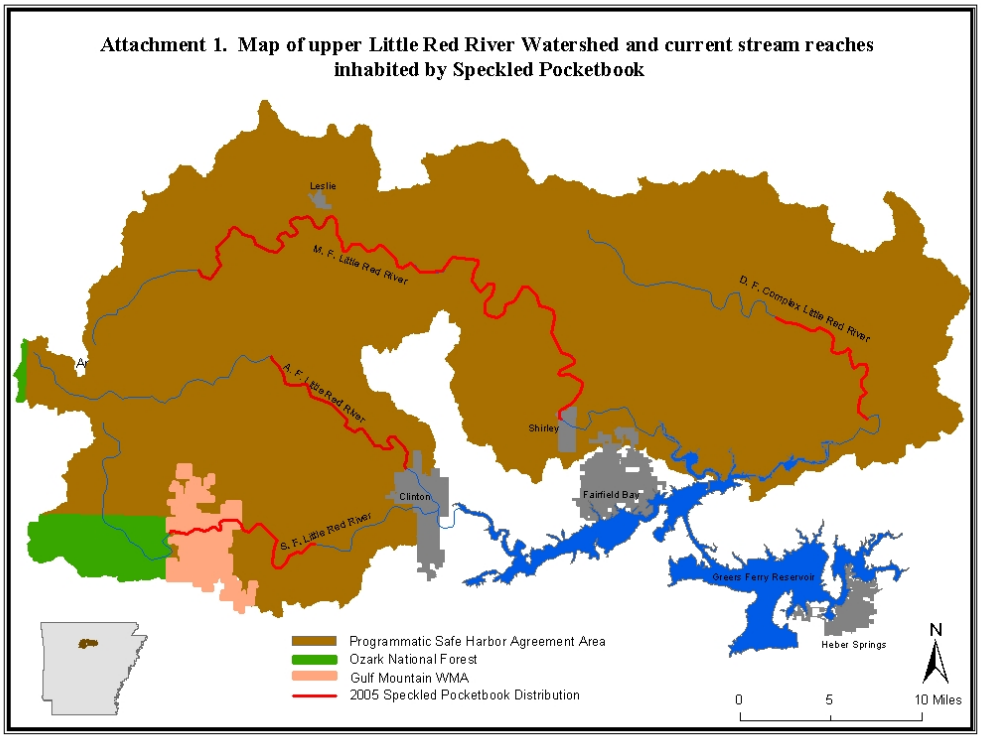
When evaluating a proposed CCAA, the Service must determine that the benefits of conservation measures to be implemented by a property owner under a CCAA, when combined with those benefits that would be achieved if the conservation measures were also to be implemented on other necessary properties, would preclude or remove any need to list the species (USFWS 1999b). In developing a CCAA, a non-Federal property owner thus needs to only address those threats, or the proportion of those threats, that he or she can control on the property enrolled in the CCAA. Property owners can do this by protecting, managing, and/or enhancing existing populations and habitats, restoring degraded habitat, creating new habitat, augmenting existing populations, restoring historic populations, or undertaking other activities on the enrolled property that remove threats to the covered species or otherwise improve the species' status. In some cases, having a property owner agree not to undertake an activity that would harm the species may be sufficient to meet the CCAA standard.

DESCRIPTION OF THE ACTION AREA

The upper Little Red River watershed, which lies within Cleburne, Pope, Searcy, Stone, and Van Buren counties in north central Arkansas, is the action area. At approximately 558,615 acres, the watershed supports a diversity of stream habitats, some of which may be suitable for the covered species (Figures 1 and 2). Both species are known currently or historically to occur in the four headwater tributaries of the Little Red River: Middle, South, Archey and Turkey/Beech/Devils forks. The Middle Fork is the largest Little Red River tributary. Elevation of the streambed declines an average 2.8 m/km over the length of the stream (McDaniel 1984). The South Fork is

Figures 1 and 2





the second largest tributary, with elevation declines of 1.7 m/km. The Archey Fork declines an average 1.4 m/km. Turkey, Beech and Devils forks are confluent streams with Turkey Fork representing the uppermost segment and Devils Fork the lowest. This watershed has the steepest gradient, declining an average 3.0 m/km (McDaniel 1984). The watersheds of these headwater streams are steep, with relatively impermeable soils that contribute to the rapid changes in water levels during and following precipitation events.

Land use in the form of urban development is prevalent (cities of Shirley and Fairfield Bay) in the Middle Fork downstream of Arkansas Highway 16. The largest tracts of pasture land occur north and west of Leslie, AR in the upper watershed. The Middle Fork is accessible at numerous road crossings widely scattered along the stream. The primary land uses in the middle portion of the watershed is silviculture and pasture. The highest percentage of pasture land in the four watersheds occurs in this watershed.

The land use in the South Fork watershed can be divided into two distinct regions. The area extending upriver from approximately five river miles upstream of Arkansas Highway 95 is mainly in public ownership (Ozark-St. Francis National Forest and state owned Gulf Mountain Wildlife Management Area [WMA]). Some private land ownership exists within the national forest and WMA, which generally has been cleared for pasture. The majority of pasture land in the watershed is concentrated in the lower third of the watershed, downstream of the public holdings, and within the South Fork floodplain. These areas are heavily grazed by cattle and used for hay production. Urban development comprises less than one percent of the watershed, but has resulted in channelization of the lower one mile for flood control. Additionally, two wastewater treatment plants directly or indirectly contribute municipal waste to the stream.

Silviculture is the dominant land use in the Archey Fork watershed. Pasture land comprises a small percentage of the total acreage, but is primarily restricted to intermittent tributaries and intermittent reaches of the Archey Fork in the middle reach. Urban development comprises less than one percent of the total acreage, but channelization of the lower 1.5 miles for flood control has altered suitable habitat for SPB and YCD. Gravel mining operations have existed historically within and near the city limits. Public access to the Archey Fork is limited to one road crossing north of Copeland, AR and U. S. Highway 65 in Clinton.

Topography adjacent to the Turkey/Beech/Devils Fork complex is very steep and rugged. For this reason, most pasture land is restricted to mountain tops and near road access such as Arkansas Highways 263, 225, 16, 9, and 25. This is the only watershed with no city limits in the watershed boundary. Most major tributaries drain from the north through forested areas.

STATUS OF THE SPECIES

Based on the best available commercial and scientific information, the Parties have no information to suggest that any listed, proposed, or candidate species, other than SPB and YCD, may be affected by the proposed action described above.

Speckled Pocketbook (*Lampsilis streckeri*)

Species Description

The SPB is a medium-sized (3.2 inches in length) freshwater mussel with a thin, dark-yellow or brown shell with chevron-like spots and chain-like rays (Frierson 1927, Harris and Gordon 1990). The shells exhibit sexual dimorphism (males and females differ), with females becoming broader and more evenly rounded posteriorly. The species was federally listed as endangered on February 28, 1989.

Habitat and Distribution

The SPB occurs in coarse sand and sand/gravel bottoms with a constant flow of water. A secondary habitat type occurs in pools with crevices between large rocks and boulders which have some accumulation of sand/gravel (Clarke 1987, Harris 1993, Winterringer 2003). The SPB is endemic to the Little Red River basin in north central Arkansas. The species' historic range included the main stem Little Red River and the four forks (Archey Fork, Middle Fork, South Fork, and Turkey/Beech/Devils Fork complex; U. S. Fish and Wildlife Service 1991). A portion of the historic range was inundated by the construction of Greers Ferry Reservoir. Channel alterations in the Archey and South Forks (Harris *et al.* 1997; Davidson and Wine 2004) have further reduced suitable habitat for this species. The current known range is restricted to the Middle Fork Little Red River from the influence of Greers Ferry Reservoir upstream to the confluence of Little Red Creek (63 river miles), the South Fork Little Red River extending upstream of Arkansas Highway 95 to near the western boundary of Gulf Mountain Wildlife Management Area and the Ozark National Forest (14 river miles), the Archey Fork from approximately one mile upstream of Arkansas Highway 65 to the confluence of Castleberry Creek (16 river miles), the lower Turkey Fork (2 river miles), Beech Fork (11 river miles) and Big Creek (10 river miles).

Reproduction

The reproductive cycle of SPB is similar to that of other native freshwater mussels. Males release sperm into the water column; the sperm are then taken in by the females through their siphons during feeding and respiration. The females retain the fertilized eggs in their gills until the larvae (glochidia) fully develop. The mussel glochidia are released into the water, and within a few hours/days, must attach to the appropriate species of fish, which they parasitize for a short time while they develop into juvenile mussels.

The SPB is gravid during August with the release of glochidia in late February through early June. Winterringer (2003) tested 22 fish species for their potential suitability as fish host. Glochidia successfully transformed on sunfishes from the Middle Fork Little Red River (Centrarchidae), with greatest success occurring with the green sunfish (*Lepomis cyanellus*).

Population Status

Recent surveys in 2004 and 2005 rediscovered extant populations of speckled pocketbook in the Archey, Beech, South, and Turkey Forks of the Little Red River. A previously undocumented extant population of SPB was discovered in Big Creek, a northern tributary of the Little Red River downstream of Greers Ferry Reservoir. These populations collectively represent four additional populations and a substantial increase in abundance range wide (Davidson and Wine 2004, Davidson 2005, Davidson *in review*). Prior to these surveys, the Middle Fork was believed to be the only extant population range wide. Winterringer (2003) extended the known range within the Middle Fork 43 river miles upstream to near Leslie, Arkansas. Davidson and Wine (2004) documented speckled pocketbooks several river miles upstream of Leslie, Arkansas. Based on similar habitat occurrences in Archey, Beech, South, and Turkey Forks, it is reasonable to assume that the range within the Middle Fork extends upstream to near the confluence of Little Red Creek (10 river miles upstream from Winterringer 2003 occurrence records).

All extant populations appear to be stable. Populations in Archey and Middle Forks have documented recruitment and are considered viable. Viability is questionable in the remaining extant populations due to low numbers and lack of evidence verifying recent recruitment. Due primarily to the discovery of four extant populations, the overall population trend since listing is increasing. Comprehensive studies of population sizes and dynamics are not available at this time.

Recovery and Management

As mentioned earlier in this document, the *Strategy for the Speckled Pocketbook and Yellowcheek Darter* was developed by a multi-agency team of state and federal agencies and nongovernmental organizations (Service 2005). The Strategy outlines a plan to protect existing SPB populations and to restore and/or enhance suitable habitat within the species' range upstream of Greers Ferry Reservoir for natural population expansion or in preparation for possible reintroduction. The Strategy proposed to undertake the following conservation actions: development and implementation of a programmatic SHA, development of a database and GIS coverage of survey sites and occurrences, long term population and water quality monitoring, surveys for unknown occurrences and suitable restoration sites, habitat enhancement, restoration, and maintenance, propagation, reintroduction and augmentation, public outreach, and annual meetings of the multi-agency group to modify conservation actions as needed. Several conservation actions are currently being implemented such as water quality monitoring at 11 stations, recent SPB surveys, stream bank restoration, and public outreach. The goal of the Strategy is to protect and recover SPB.

The recovery objective of the Speckled Pocketbook Recovery Plan is to reclassify the species from endangered to threatened status (Service 1991). Recovery criteria for achieving the objective include: 1) four additional populations are discovered or reestablished, 2) all five populations are viable and the habitat is fully protected; and, 3) viable populations levels are maintained for a period of at least 20 years. As stated earlier, additional populations have been

rediscovered though viability of some of the new populations has not yet been ascertained.

In an effort to protect and restore habitat of the covered species in the upper Little Red River watershed (historic range), the Service along with state and federal agencies and non-governmental organizations decided to undertake the development and implementation of a programmatic SHA. The development and implementation of this agreement facilitates (i.e., provides assurances) private landowner cooperation, not otherwise provided by the recovery plan, in implementing habitat conservation practices to protect and restore SPB populations and habitat. Additionally, the safe harbor component of the programmatic agreement ensures that a collaborative approach to restore and conserve habitat for the species in this watershed will occur, thus minimizing potential conflicting recommendations associated with recovery of the species.

Analysis of the species/critical habitat likely to be affected

SPB potentially will be affected by implementation of the conservation measures and practices of the Agreement. No critical habitat has been designated for SPB; therefore, none will be affected.

Yellowcheek Darter (*Etheostoma moorei*)

Species Description

The YCD is a small compressed fish with a body shape like that of *Etheostoma rufilineatum* and *E. camarum.* It may obtain a maximum standard length of ca. 64 mm. The greatest body width is close behind the head. The increased body depth of *E. moorei* gives it a much stouter look than that of other darter species. *E. moorei* exhibits sexual dichromism. The male is brightly colored both in late April and October. The head is bluish gray. A small dark spot is located behind and just below the center of the eye. A pre-orbital dark bar continues forward beyond the tip of the premaxillary and includes a small amount of the lower lip. The cheek is yellowish in appearance. The body is brownish, darker above and crossed by about 13 slightly oblique dark bars. In the male, the color of the lower side and belly is lighter than that of the sides of the body. The belly is light brown. The female is brown and nearly the entire body bears scattered light spots. A few red-orange spots are seen on the side of freshly preserved females just posterior to the tip of the pectoral fin. In most other respects, the female bears resemblance to the male. A comprehensive species description may be found in Raney & Suttkus (1964). The yellowcheek darter was listed as a candidate species for listing in 2001.

Habitat and Distribution

The YCD is one of only two members of the subgenus *Nothonotus* known to occur west of the Mississippi River (Wood 1996). It is an endemic fish species found only in the four headwater streams of the Little Red River (Middle Fork, South Fork, Archey Fork, and Turkey/Beech/Devils Fork complex) above Greers Ferry Reservoir in north central Arkansas (Robison and Harp 1981). The YCD prefers high gradient riffles, with boulder/cobble/gravel bottoms, and clear water with high oxygen content and are rarely found in pools or slow moving

water (McDaniel 1984; Wine *et al*. 2000). The YCD lives approximately four to five years and prefers black fly larvae, but also consumes mayflies, stoneflies, and other aquatic insect species.

The Middle Fork population occurs from near the U. S. Highway 65 crossing at Leslie, Arkansas to near the Arkansas Highway 9 crossing at Shirley, Arkansas. The South Fork population occurs from near the Arkansas Highway 95 crossing near Scotland, Arkansas to near the Arkansas Highway 65 crossing at Clinton, Arkansas. The Archey Fork population occurs from its confluence with Castleberry Creek to near the U. S. Hwy 65 Bridge at Clinton, Arkansas. The Turkey/Beech Devils fork population is now believed to be confined to the lower five miles of the Beech Fork.

Reproduction

Spawning occurs in late May through June in cobble or gravel riffles (McDaniel 1984; Wine and Blumenshine 2002). During spawning, female YCD bury themselves in fine gravel/sand substrates (often behind large cobble or boulders) with only their heads and caudal fin exposed. A male YCD will position himself above the buried female and fertilize her eggs as she releases them in a vibrating motion (Wine and Blumenshine 2002). Clutch sizes and nest defense behavior are unknown.

Population Status

The YCD was first collected in 1959 from the Devils Fork Little Red River and was eventually described using 228 specimens from three tributaries of the Little Red River: Middle, South and Devils forks (Raney and Suttkus 1964). Much of the known range of this species was destroyed in 1964 due to inundation caused by the Greers Ferry Dam (Robison and Buchanan 1988). Raney and Suttkus (1964) suggested that the remaining upstream reaches of the four headwater streams would serve as YCD sanctuaries. Indeed, a status survey 15 years later found that YCD was the most abundant riffle fish within its endemic range (Robison and Harp 1981). Robison and Harp (1981) estimated population sizes at 36,000 for Middle Fork, 14,000 for South Fork, 5,000 for Archey Fork and 5,000 for the Turkey Fork, with all four drainages collectively supporting a population of ca. 60,000 individuals. The authors acknowledged that estimates for the Middle, Archey, and Turkey Forks were less accurate than for the South Fork due to less intensive sampling. However, during a later study of population genetics of YCD, researchers observed that YCDs had become extremely difficult to capture (Mitchell 1999, Mitchell *et al*. 2002). In one typical example, only one YCD was produced by four researchers kick seining for four hours in Beech Fork. Similar results were seen at other sites within the historic range of the species where they were once the most abundant riffle species. A subsequent status survey of YCD populations demonstrated a decline in population sizes over the last twenty years (from 60,000 to less than 10,000 ± 5,000 individuals; Wine *et al*. 2000).

Weston and Johnson (2005) estimated YCD populations within the Middle Fork to be between 15,000 and 40,000 individuals, and between 13,000 and 17,000 individuals in the South Fork. Such increases would indicate remarkable adaptability to changing environmental conditions. However, it should be noted that estimates were based upon mark/recapture estimates using the

Jolly-Seber method which requires high numbers of recaptured specimens for accurate estimations. Recaptures were extremely low during that study (24 out of 409 specimens); therefore, population estimates were highly variable and confidence in the resulting estimates is low. It was also noted that YCD appears to be a relatively non-mobile species, with 19 of 22 recaptured darters found within nine meters of their original capture position after periods of several months.

Recovery and Management

As mentioned earlier in this document, the *Strategy for the Speckled Pocketbook and Yellowcheek Darter* was developed by a multi-agency team of state and federal agencies and nongovernmental organizations (Service 2005). The Strategy outlines a plan to protect existing YCD populations and to restore and/or enhance suitable habitat within the species' range upstream of Greers Ferry Reservoir in preparation for possible reintroduction. The Strategy proposes to undertake the following conservation actions: development and implementation of a programmatic CCAA, development of a database and GIS coverage of survey sites and occurrences for the species, long term population and water quality monitoring, surveys for unknown occurrences and suitable restoration sites, habitat enhancement, restoration, and maintenance, propagation, reintroduction and augmentation, public outreach, and annual meetings of the multi-agency group to modify conservation actions as needed. Several conservation actions are currently being implemented such as water quality monitoring at 11 stations, propagation of YCD, stream bank restoration, and public outreach. Additionally, a proposal by TNC was funded in fiscal year 2006 to help implement the CCAA.

The YCD will be considered secure when the upper sites within each fork of the Little Red River headwaters are sufficiently repopulated, when population sizes are more comparable to those derived by Robison and Harp (1981; 60,000), and when the habitat is no longer threatened by land use practices that could degrade the quality of the habitat. Implementation of proactive land conservation measures, standards, and guidelines will help to ensure that viable populations are maintained. Protection should cover a large enough area, including public and private lands, that activities in the watershed no longer adversely affect the streams. The goal of the Strategy is to preclude the need to list YCD as threatened or endangered.

ENVIRONMENTAL BASELINE

The environmental baseline is defined as the effects of past and ongoing human induced and natural factors leading to the status of the species, its habitat, and ecosystem, within the project area. The environmental baseline is a snapshot of SPB and YCD status at this time.

Status of the species within the action area

Both the SPB and YCD are endemic to the upper Little Red River watershed, which is considered to be the action area for the Agreement and the ESP. As a result, information for this section of the joint biological and conference opinion has been previously discussed within this document. The only exception is the recently discovered extant population of SPB in Big Creek

located below Greers Ferry Dam, which will not be affected by actions analyzed in this biological opinion.

To date, the Service has been actively pursuing public outreach when possible in the upper Little Red River watershed in anticipation of implementing the Agreement. In addition to development and implementation of the Agreement and a minimal amount of outreach, other conservation actions that have been implemented in the watershed include:

1. One Partners for Fish and Wildlife habitat restoration project on the South Fork Little Red River;

2. Implementation of widely scattered Farm Bill Program projects to enhance wildlife habitat and minimize erosion and sedimentation in streams;

3. Design and construction by AGFC of at least one stream bank stabilization project in addition to the Partners for Fish and Wildlife project;

4. Funding by the Service to TNC to aid in implementation of the Agreement during 2007-08 through:

    a. development of an upper Little Red River SHA and CCAA video for outreach that explains conservation practices and the importance of protecting and restoring habitat for these two species;

    b. development of a standardized GIS project and database;

    c. designing cooperator signs and awards; and

    d. providing funds to Greers Ferry National Fish Hatchery to setup a captive rearing facility for the YCD;

5. Long-term SPB population monitoring;

6. Development of multi-agency and NGO consensus-based best management practices for natural gas development activities in the Fayetteville Shale for minimizing and avoiding environmental and threatened and endangered species; and

7. Water quality monitoring at 11 locations on the four forks.

The most important conservation action remaining is protection and restoration of instream habitat (including water quality and quantity) throughout the watershed at a sufficient level to sustain and/or expand existing populations and when necessary reintroduce populations into stream reaches where the species have been extirpated.

Factors affecting the species environment within the action area

Based upon current knowledge and a recent threats assessment (Davidson and Wine 2004; Davidson 2005) conducted by the Service, gravel mining, unrestricted cattle access into streams, water withdrawal for agricultural and recreational purposes (e.g. golf courses), lack of adequate riparian buffers, construction and maintenance of state and county roads, and non-point source pollution arising from a broad array of activities appear to be degrading suitable habitat for SPB and YCD. Eroding stream banks are depositing sediment in downstream reaches resulting in a reduction of habitat quantity and/or quality. Thirty-five eroding stream bank sections have been identified in the Middle Fork, 14 in South Fork, six in Archey Fork, and one in Beech Fork. Unrestricted cattle access in the Archey, Middle, and South Forks also threatens to degrade water quality and habitat (Davidson and Wine 2004; Davidson 2005). Channelization of the lower Archey and South Forks has degraded habitat downstream and upstream of the action area and the construction of Greers Ferry Reservoir in 1964 resulted in permanent loss of habitat due to inundation and cold water releases from the dam.

In the Middle and South Forks, low population estimates and stochastic extirpations of YCD correspond to increased threats such as unrestricted cattle access, eroding streambanks, and unrestricted gravel mining. This is especially evident in upper portions of these streams which are much more susceptible to low water levels in late summer months. However, similar declines in YCD population sizes have been documented in Archey and Turkey/Devils/Beech Forks where effects of cattle access, eroding streambanks, and gravel mining are relatively discountable.

Drought is also a potential problem for both species. Riffle habitats have periodically dried during the past decade, reducing habitat availability. Drought may be exacerbated by man-made changes to the stream channel for flood control (i.e. channelization) and other purposes. Stress caused by low stream flows during drought years may increase susceptibility to disease in SPB and YCD populations. Low water levels also increase predation by birds and mammals (Schlosser 1990). Muskrats and turtles are known to prey on SPB. Numerous dead SPB with bite marks have been reported from the Middle Fork.

Since Davidson and Wine (2004) and Davidson (2005) threats assessment, a new and potentially major threat is evolving in the upper Little Red River watershed. The Fayetteville Shale is an unconventional natural gas reservoir located on the Arkansas side of the Arkoma Basin encompassing nearly a quarter of the state and the entire upper Little Red River watershed. It is unknown at this time how significant an impact exploration and production will have on both species and their habitats. Approximately 600 to 800 new gas wells are expected to be drilled by the end of 2008. Copious amounts of water are required for fracturing the shale during the well drilling process and could lead to dewatering or decreased base flows in the upper Little Red River watershed depending upon the source of water used for this activity. Additional concerns include habitat fragmentation, increased sedimentation, pollutant runoff, and spills.

EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, effects of the action are direct and indirect impacts of the proposed federal action on the species and critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. The SPB is the only listed species and YCD the only candidate species known to be directly or indirectly affected by this action. Critical habitat has not been designated for the SPB.

The direct and indirect effects of the proposed action include: the implementation of the conservation measures as described in the Agreement that are expected to restore, enhance, and/or maintain habitat to benefit the covered species; the acknowledgment that the conservation measures may end (e.g., the return to baseline feature of the Safe Harbor program or return to existing conditions of the Candidate Conservation Agreement with Assurances); and the regulatory assurances as described in the Agreement.

Baseline Conditions for SHA and Existing Conditions for CCAA

Baseline conditions for a SHA are defined as "habitat characteristics and are determined by area of the enrolled property that sustains seasonal or permanent use by the covered species at the time each POMA is executed between the Parties, Service, and the Cooperator". Existing conditions for a CCAA are similar to baseline conditions for a SHA in that they are a description of the area of the enrolled property that sustains seasonal or permanent use by the covered species at the time each POMA is executed; however, in some instances a return to existing conditions under a CCAA may not be possible while still upholding the CCAA standard (i.e. to preclude the need to list YCD as threatened or endangered). This discrepancy exists due to the fact that the SHA standard (to provide a net conservation benefit to SPB) is still achieved despite a return to baseline conditions. For a complete description of the SHA and CCAA policies and terms, see USFWS (1999a,b).

Each Cooperator will execute a POMA, which will be signed by a Party or Parties to the Agreement. The POMA will specify the baseline and/or existing conditions for the particular property that is to be enrolled. For the purposes of this Agreement, baseline and existing conditions will be calculated in exactly the same manner. The baseline condition and/or existing conditions for each eligible Cooperator entering into a POMA will be based on riparian habitat (width, length, type of vegetation, degree of canopy and ground cover, fenced or not fenced), current or recommended land use practices (best management practices), and any then existing agreements on the property. Additionally, the extent of bare ground and exposed erodible soils adjacent to riparian zones will be used to determine baseline and/or existing conditions on enrolled properties since such habitats may significantly affect sediment transport into streams. The amount of occupied suitable habitat (instream area) or number of individuals (population estimate ± standard error) could fluctuate naturally or through no fault of the Cooperator and, therefore, will not be used to establish baseline and/or existing conditions for purposes of implementation of either the SHA or CCAA components of this Agreement. Moreover, Cooperators have no control over natural changes to instream habitat or to changes that may be caused or exacerbated by activities on properties upstream or downstream of their enrolled

properties. The Parties expect that through the implementation of conservation measures that protect, enhance, or restore riparian habitat and stream banks and best management practices on enrolled properties, instream habitat will be protected, enhanced, or restored through the duration of the Agreement.

Actions associated with implementation of the Agreement will occur within habitats currently inhabited by the covered species. The issuance of an ESP will authorize the take of both species by the Parties and enrolled landowners (Cooperators) above the baseline for the enrolled property and incidental to otherwise lawful and approved activities associated with implementation of the Agreement and land use or practice.

POMAs are expected to provide a net conservation benefit to SPB and/or preclude the need to list YCD via implementation of the conservation actions and practices described in the "Description of Proposed Action" section. Further, we expect a positive response at the landscape level for each of the covered species, due to the cumulative and sequential impact accrued through successive years of landowner enrollment (e.g., as more acreage is enrolled and more conservation actions are deployed throughout the action area).

For as long as management activities are carried out, or the habitat they create persists, enrolled lands will benefit the conservation of the covered species. With this cooperative effort, the management of landowner's property for the covered species is assured for the foreseeable future. Therefore, the cumulative impact of the Agreement will provide a net conservation benefit to SPB and/or preclude the need to list YCD.

The actions proposed under the Agreement are of limited duration making the benefits appear temporary. However, the habitat maintained through commitments created by the POMAs will not necessarily cease to exist upon expiration or termination of the POMAs. Enrolled landowners may choose not to bring enrolled properties back to baseline at the point of termination, or at any other time in the future. If new landowners continue to enroll under the Agreements over an extended period, the net effect will be an increasing matrix of lands being maintained for conservation of the targeted species, with a net conservation benefit.

Return to Baseline Conditions for SHA

Although a rare occurrence to date, it is possible that some landowners may opt out of their POMAs at some point in the future. If this occurs, there would likely be incidental take of SPB and YCD as habitat quality degrades due to unfavorable land use practices and subsequent stream impacts. However, habitat would not degrade instantaneously and it is likely that "opt out" lands would still provide a net benefit to SPB and YCD well beyond the cancellation date. In the event that habitat on "opt out" lands becomes unsuitable for either species, an effort would be made to relocate specimens of SPB and YCD to suitable habitat within enrolled lands.

As stated earlier in this document, a return to baseline conditions under the SHA could result in Cooperator inability to achieve the CCAA standard of precluding the need to list YCD as threatened or endangered. This should be rare and in the event of such an occurrence, all options

would be discussed thoroughly with the Cooperator.

In addition to the beneficial effects of implementing the Agreement, the Service considered the direct and indirect adverse effects to SPB and YCD. Direct effects encompass the immediate effects of an action to the species. Indirect effects are caused by or result from the proposed action, occur at a later time, and are reasonably certain to occur. For the subject Agreement and ESP, direct effects would include stream or stream bank alterations from restoration work which may temporarily increase sedimentation and runoff in streams, direct mortality to SPB and YCD as a result of equipment in streams, and electrofishing or other survey methods which may harm or harass both species. Any potential deleterious effects to SPB and YCD would be more than offset through use of management practices for any proposed conservation activity and adherence to conditions outlined in the Agreement.

The Service must also consider the potential effects of actions that are interrelated and interdependent to the proposed ESP. An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. The Service has determined that there are no interrelated or interdependent actions apart from the action under consideration.

The Service has determined the level and frequency of adverse effects to SPB and YCD will be minor relative to the conservation benefits to the species, particularly in light of the existing baseline. Additionally, the magnitude of negative effects associated with the implementation of conservation actions described in the Agreement would not have a long term adverse effect on the conservation and recovery of either species.

Effects of Landowner Assurances

Collaborative stewardship involving the proactive management of covered species is the best way to achieve the ultimate goal of the Act (recovery of imperiled species). The recovery of certain species can benefit from short-term and mid-term enhancement, restoration, and/or maintenance of terrestrial and aquatic habitats on private property. Regulatory assurances as provided in the Act and as described in the Agreement will provide a means to garner non-federal property owners' support for species conservation on their lands.

The Agreement furthers the purposes of the Act, specifically the conservation of covered species and their habitats, by encouraging non-federal landowners to undertake voluntary management activities to benefit covered species. By providing landowner assurances, the Service is ensuring that voluntary conservation actions on private property for listed species covered by the SHA and/or CCAA components of the Agreement will not further restrict uses of a landowner's property, even if covered species have become more numerous or now occupy covered lands as a result of the property owner's management activities. SHAs and CCAAs encourage landowners to manage their properties for the benefit of listed and candidate species, and thereby provide a net conservation benefit to or help preclude the need to list species as discussed above.

The assurances facilitate the ability of the cooperating landowners to exercise a return to baseline option under the SHA element and "lock-in" the conservation measures under the CCAA element. In either instance, incidental take authorization for enrolled landowners, subject to the requirements of the conditions as specified in the Agreement and ESP, is foreseen. The net effect of the use of these assurances is that, under the worst case scenario – that is, all participating landowners choose to exercise their right to terminate their respective POMAs, the species and habitat conditions for both of the covered species would be no worse than they were at the first year of implementation of the POMA. We do not expect, however, the majority of landowners to either end their enrollment or exercise these assurances. This conclusion is based on the empirical evidence of administering SHA and CCAA programs for other species in the southeast. In the last 11 years, the Service has enrolled the properties of over 240 landowners encompassing almost 590,000 acres and 50 river miles. In only two instances have landowners exited the program and in both instances no effect to the covered species occurred (e.g, the baseline was zero and no species or habitat were lost).

In the best case situation, the Agreement will produce continual conservation benefits over a 560,000 acre watershed to the covered species by creating, protecting, and restoring instream habitat (including water quality and quantity) at a sufficient level to sustain and/or expand existing populations of the covered species.

Thus, the effect of offering landowner assurances provides a wholly beneficial effect to the covered species. If not for the assurances, landowners likely would not be willing to accept the additional burden and possible land use restrictions that may accompany the implementation of conservation practices that promote recovery of these species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, private, or other non-federal entity activities on endangered and threatened species and their critical habitat that are reasonably certain to occur in the action area. Future federal actions unrelated to the proposed action are not considered in this section because they are subject to consultation pursuant to section 7 of the ESA. Numerous non-federal actions that could affect listed species are reasonably certain to occur within the action area. Foreseeable future state and local actions would include road construction and maintenance, sewage treatment, and urbanization associated with city growth. Private actions reasonably certain to occur include silvicultural practices, cattle and poultry production, natural gas development and production in the Fayetteville Shale, gravel mining, and other commercial and residential development within the watersheds. Each of these future activities could contribute to cumulative effects on listed species or their habitat in the action area through fragmentation, habitat alteration, water quality degradation, sedimentation, etc. However, conservation benefits provided by the proposed action would only serve to minimize the impacts of ongoing cumulative effects from aforementioned activities.

Water quality and quantity degradation caused by activities mentioned in the previous paragraph in the action area will likely continue. Natural gas development activities (i.e., well pad

construction and drilling and infrastructure construction such as roads, pipelines, etc) in the Fayetteville Shale will continue to experience substantial growth for the next five to ten years. It is difficult, if not impossible, to determine the long-term cumulative impacts from these activities. The Service is currently working with state and federal agencies and stakeholders (i.e., gas and gas transmission line companies) to develop a multi-agency and NGO consensus-based set of best management practices to minimize and avoid potential impacts to the environment and to threatened and endangered species in the Fayetteville Shale area.

The Service feels that these activities in conjunction with the proposed action and current work to develop acceptable practices to minimize and avoid impacts from natural gas activities are not likely to significantly affect the continued survival of the SPB or YCD. Furthermore, it is likely that any future road and bridge construction or other major construction project in the vicinity of the proposed project would have a federal component and require separate Section 7 consultation.

CONCLUSION

After reviewing the current status of SPB, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the SHA component of the proposed Agreement and issuance of an ESP to the Parties as well as the Cooperators' POMAs and Certificates of Inclusion for the implementation of the referenced Agreement are not likely to jeopardize the continued existence of SPB. No critical habitat has been designated for this species; therefore, none will be affected.

After reviewing the current status of YCD, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion that the CCAA component of the proposed Agreement and issuance of an ESP to the Parties as well as the Cooperators' POMAs and Certificates of Inclusion for the implementation of the referenced Agreement are not likely to jeopardize the continued existence of YCD.

The voluntary conservation actions described in the Agreement would contribute to the conservation and recovery goals for both species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation under section 4(d) of the Act prohibit take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the

terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Because YCD is a candidate species, the prohibitions against take of a species found in section 9 of the Act would not apply to YCD until it has been federally listed as threatened or endangered. However, the Service advises implementing the following reasonable and prudent measures for lands inhabited by YCD but not SPB (for which these measures are non-discretionary). If the conference opinion for YCD is later adopted as a biological opinion following a listing or critical habitat designation for the species, these measures, with their implementing terms and conditions, will be non-discretionary for YCD.

As to SPB, the measures described below are non-discretionary, and must be undertaken by the Parties and Cooperators so that they become binding conditions of any grant, contract, or ESP issued to parties conducting activities under the auspice of the Agreement, as appropriate, for the exemption in section 7(o)(2) to apply. The Parties have a continuing duty to regulate the activity covered by this incidental take statement. If the Parties (1) fail to assume and implement the terms and conditions or (2) fail to require contractors or other parties conducting work on behalf of the Parties or Cooperators to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the ESP, contract, or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Parties must monitor and report land use trends, habitat conditions, and POMAs to the Service as specified in this biological/conference opinion.

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The precise number of SPB and YCD subject to incidental take cannot be enumerated because of the demographic and environmental stochasticity and uncertainty that underlie predictions of the precise number that inhabit enrolled lands before, during, and after enrollment in the Agreement. As a result, the baseline and/or existing conditions on a prospective enrolled property are defined in terms of habitat. Incidental take of SPB and YCD would occur in the form of harm, harassment, and/or mortality as a result of a return to baseline and/or existing conditions following expiration or termination of the Agreement, and as a result of implementation of certain aspects of the Agreement previously discussed. The Service does not authorize any incidental take resulting from activities which reduce available habitat below the agreed upon baseline conditions and which subsequently take SPB or YCD (should it become listed).

EFFECT OF THE TAKE

Based on the significant conservation benefits to SPB and YCD through implementing the Agreement, the Service has determined that the level of anticipated incidental take is not likely to result in jeopardy to either species.

REASONABLE AND PRUDENT MEASURES/TERMS AND CONDITIONS

The Agreement clearly identifies responsibilities and voluntary management actions to enhance and restore habitat benefiting the recovery of SPB and YCD. All beneficial management, reporting, and notification measures described in the Agreement are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this incidental take statement pursuant to 50 CFR §402.14(i) to minimize impacts of incidental take of SPB and YCD, upon listing, when implementing the Agreement and/or returning the property to baseline conditions.

CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. No conservation recommendations are provided at this time.

REINITIATION NOTICE

This concludes the formal consultation concerning SPB for the issuance of an ESP associated with the referenced Agreement, in the upper Little Red River watershed, Arkansas. As provided in 50 CFR Sec. 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species that was not considered in this biological opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

This also concludes the conference concerning YCD for the issuance of an ESP associated with the referenced Agreement, in the upper Little Red River watershed, Arkansas. Parties and Cooperators may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if YCD is listed in the future. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion for the proposed action and no further section 7 consultation will be necessary.

Upon listing of YCD as endangered or threatened and/or designation of critical habitat for YCD and any subsequent adoption of this conference opinion, the Service shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information

reveals effects of the proposed action that may affect listed species or critical habitat in a manner not considered in this conference opinion; (3) the proposed action is subsequently modified in a manner that causes an effect to listed species not considered in this conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the proposed action.

The incidental take statement provided in this conference opinion will not become effective as to YCD until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of YCD or its habitat has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect any such take. No take of YCD or its habitat may occur between the listing of YCD and the adoption of the conference opinion through formal consultation or the completion of a subsequent formal consultation.

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