

**REPORT ON THE
CRAYFISHES OF ALABAMA:
LITERATURE AND MUSEUM DATABASE REVIEW, SPECIES LIST WITH
ABBREVIATED ANNOTATIONS AND PROPOSED CONSERVATION
STATUSES**

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INTRODUCTION

The aquatic biodiversity of Alabama is legendary. It is common knowledge that Alabama has more species of fishes, freshwater clams and gastropods as well as lesser known groups such as caddisflies than any other state in the union (Boschung and Mayden 2004). It is not surprising; therefore, that Alabama would also have a diverse crayfish fauna. In 1976 Raymond Bouchard provided a list of 58 Alabama crayfish species and estimated that the number would approach 75 species when the fauna had been thoroughly surveyed. Almost 30 years later not only has Bouchard's prediction come true, but that number is well exceeded. Bouchard's accurate prognostication was due to his intimate knowledge of crayfish taxonomy and biogeography. As was pointed out by Boschung and Mayden (2004), Alabama has a relatively mild, stable climate, but perhaps more importantly, glaciation did not reach as far south as Alabama, and therefore the physiography, geology and topology of the state have been relatively unchanged for millions of years.

In terms of crayfish evolution, one of the most important physiographic provinces in Alabama is the Cumberland Plateau (Ortmann 1931). It has been speculated (Ortmann 1905, 1931; Hobbs 1969) that it is the center of radiation for the crayfish genera *Cambarus* and *Orconectes*, both of which are important components (>50% of the species) of the Alabama fauna. The Cumberland Plateau is the second largest physiographic province in the state (Boschung and Mayden 2004), and influences most of the northern section of the state.

Certainly another important aspect of the evolution of aquatic organisms in Alabama is the diversity of river systems in the state. Three major basins drain Alabama: the Ohio River, Mobile River and the Apalachicola River. In addition, there are four relatively isolated Coastal Plain drainages: Pascagoula River, Perdido Bay, Pensacola Bay, and Choctawhatchee Bay (Boschung and Mayden 2004). The long term isolation (until the recent connection of the Tombigbee and Tennessee river systems) of the major basins and the coastal drainages, and hence the isolation of populations, undoubtedly provided for important evolutionary mechanisms to occur.

This study was undertaken with three main objectives in mind. The first objective was to develop a complete bibliography of the primary and gray literature on Alabama crayfishes. The second was to develop a complete up-to-date list of crayfish species known to occur in Alabama. The last objective was to provide abbreviated species accounts and to recommend a conservation status for each species.

METHODS

In order to prepare a comprehensive bibliography for the crayfishes of Alabama an intensive literature review was undertaken. All primary literature publications (journal articles, books and monographs, etc.) with reference to Alabama crayfishes were included. An effort was also made to review of the gray literature (i.e., state and federal agency reports, masters' theses, doctoral dissertations, etc.). This literature is sometimes difficult to obtain, and often requires detective work to even know of its existence. As such, the search of the gray literature is always an on-going process.

The development of the Alabama crayfish species checklist involved the compilation of all literature records and available electronic databases. The electronic databases that were available to us included: National Museum of Natural History, Smithsonian Institution, University of Alabama Museum of Natural History, Auburn University Natural History Museum and the Illinois Natural History Survey. The records from each of the databases were compared with published records for each species. Therefore, the final checklist presented in this report represents those that have been verified through literature records, and by vouchered specimens at the above listed institutions.

It should be realized that not all important museum holdings are represented. For example, the collections in the Tulane Museum of Zoology have not yet been accessed. The data from those collections have not yet been entered into an electronic database, and therefore would require actual visits to the museum to determine the Alabama holdings. The Tulane Museum is an important repository for Alabama crayfishes because of the work of Dr. Royal D. Suttkus and Dr. Joseph Fitzpatrick, Jr. Dr. Suttkus is an ichthyologist who for many years collected fishes and crayfishes in Alabama. All of these collections are in the Tulane Museum. Dr. Fitzpatrick was for many years at South Alabama University and during that time collected all over the southeast, but especially in Alabama. His collections were deposited both at Tulane and at the National Museum. It is therefore imperative that any future studies of the crayfishes of Alabama include extensive visits to the Tulane Museum of Zoology. In addition to Tulane, other museums still need to be surveyed for Alabama records. These include the Museum of Comparative Zoology at Harvard, the Carnegie Museum in Pittsburgh, and the Academy of Natural Sciences in Philadelphia.

The individual species accounts included known national and Alabama distributions, known habitat preferences and provisional conservation status. These data were the main focus of this study. The accounts do not include morphological and color descriptions of the species nor do they include notes on their biology. These require extensive field and museum work and will be added as our study of Alabama crayfishes progresses. The abbreviated species accounts were written primarily based on published literature (both primary and gray literature). All original published species descriptions were read, as were any publications that provided information on individual species or groups of species within a given geographic range (i.e., river system). The main source of distributional literature was Hobbs (1989).

The primary source for the national conservation status of individual species was Taylor, et al. (1996). In the species accounts this is referred to as "AFS." In order to determine

provisional Alabama conservation status for each species Taylor, et al. (1996) as well as Bouchard (1976) and Fitzpatrick (1990) were consulted. In addition, the records for each species in the electronic databases were also used. The final provisional conservation for each species was determined through a consensus of the authors. In the species accounts this is referred to as “Provisional A1.” It should be noted that for a high number of species, the assignment of accurate conservation priorities is severely hampered by limited distributional and demographic data.

The provisional Alabama conservation statuses were determined by using the stipulations and guidelines that were developed during a July, 2002 Wildlife Symposium held by the Alabama Wildlife and Freshwater Fisheries Division. These priority designations were defined as:

Extinct - taxa that historically occurred in Alabama, but are no longer alive anywhere within their former distribution.

Extirpated - taxa that historically occurred in Alabama, but are now absent; may be rediscovered in the state, or be reintroduced from populations existing outside the state.

Extirpated/Conservation Action Underway - taxa that historically occurred in Alabama, were absent for a period of time, and currently are being reintroduced, or have a plan for being reintroduced, into the state from populations outside the state.

Priority 1/Highest Conservation Concern - taxa critically imperiled and at risk of extinction/extirpation because of extreme rarity, restricted distribution, decreasing population trend/population viability problems, and specialized habitat needs/habitat vulnerability due to natural/human-caused factors. Immediate research and/or conservation action required.

Priority 2/High Conservation Concern - taxa imperiled because of three of four of the following: rarity; very limited, disjunct, or peripheral distribution; decreasing population trend/population viability problems; specialized habitat needs/habitat vulnerability due to natural/human-caused factors. Timely research and/or conservation action needed.

Priority 3/Moderate Conservation Concern - taxa with conservation problems because of insufficient data **or** because of two of four of the following: small populations; limited, disjunct, or peripheral distribution; decreasing population trend/population viability problems; specialized habitat needs/habitat vulnerability due to natural/human-caused factors. Research and/or conservation action recommended.

Priority 4/Low Conservation Concern - taxa that are secure, yet conservation concerns exist because of one of four of the following: relative abundance; limited, disjunct, or peripheral distribution; decreasing population trend/population viability problems; specialized habitat needs/increasing habitat vulnerability due to natural/human-caused factors. Research on specific problem suggested.

Priority 5/Lowest Conservation Concern - taxa that are demonstrably secure, with size of population stable/increasing, geographical distribution stable/expanding, population trend/ population viability stable/increasing, relatively limited habitat vulnerability due to natural/ human caused factors, **or** an unusual visitor to the state. No specific monitoring or conservation action needed.

RESULTS

History of Astacology in Alabama

Until 1870, the crayfishes of Alabama went almost unnoticed. Hagen (1870) commented that “nearly the whole state remains unexplored.” He provided the first checklist of crayfishes from Alabama. It included 5 species: *Cambarus advena* (= *Procambarus hagenianus hagenianus*), *C. immunis* (= *Orconectes immunis*), *C. acutus* (= *P. acutus*), *C. lecontei* (= *P. lecontei*), and *C. versutus* (= *P. versutus*). Two of these species, *P. lecontei* and *P. versutus*, were the first Alabama crayfish species actually described from Alabama specimens. The specimens of both species were collected by Louis Agassiz on a trip to Mobile in the early 1850s.

A century after Hagen’s work, Bouchard (1976) provided a second attempt at a checklist of Alabama crayfishes. He listed 58 species for the state and estimated that approximately 75 will be known when the fauna has been completely surveyed. In addition, he was the first to attempt to determine the conservation status for the crayfishes of Alabama. He listed 14 species in need of protection. One was listed as threatened, while the remaining 13 were listed as species of special concern. From 1976 to present an additional 16 taxa (15 species and one subspecies) with Alabama distributions have been described.

Hobbs (1989), an illustrated checklist of American crayfishes, provided a list of 72 species from Alabama, with 2 species being listed as questionable. One of these two, *Fallicambarus hedgpethi*, has been put into synonymy with *Fallicambarus fodiens*, while the other, *Procambarus bivittatus*, is now considered to be a member of the state’s fauna.

Fitzpatrick (1990a), although not providing a checklist for the state, did recommend a conservation status for 41 species. Of these 41 species, 11 were considered to be rare, three were listed as threatened, while the remainder were given the status of special concern. Taylor, et al. (1996) was the first attempt to provide the conservation status of all known species of crayfishes from the United States and Canada. They listed 80 species as occurring in Alabama, and provided the conservation status for each of these species. Since 1996, *Cambarus veitchorum* and *Orconectes sheltae* are the only new species with Alabama distribution to have been described.

In addition to the above attempts to provide a complete listing the crayfish fauna of Alabama, numerous species have been described based on Alabama specimens. Table 1 provides a list with citations of the 32 species and one subspecies that have been described from Alabama specimens. Figure 1 provides the temporal distribution of new crayfish species descriptions with Alabama distributions from pre-1900 to present. The graph indicates two peak periods of new species publications. The first peak is pre-1900 period, during which time 29 species with Alabama distributions were described. The second peak period for new descriptions was from 1950 to the present.

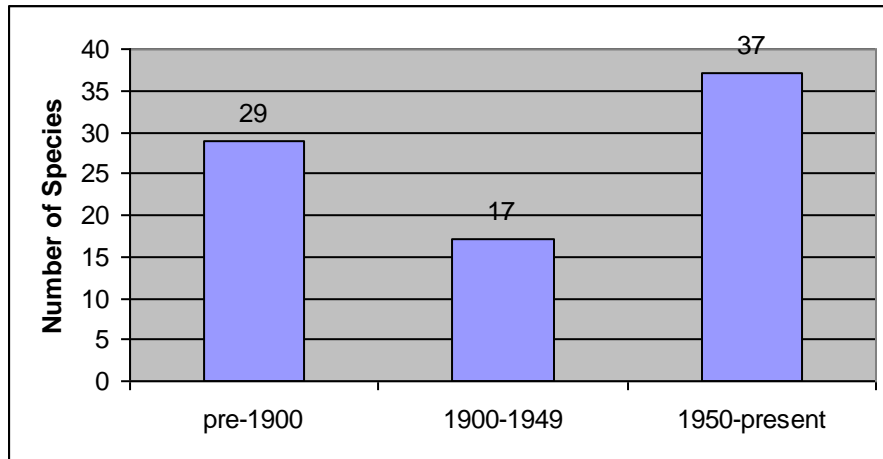


Figure 1. Number of Alabama crayfish species described pre-1900 to present.

Taxonomic Literature

During the first two periods shown on the Figure 1, the most productive individual with regard to Alabama species descriptions was Walter Faxon (Faxon 1884, 1885, 1890, 1898, and 1914). He described 16 of the presently known Alabama species. The period from 1950 to the present coincides with the prodigious work of Horton Hobbs, Jr. (Hobbs 1938, 1941, 1942, 1945, 1952, 1953, 1966, 1967, 1968a, 1968b, 1969, 1971, 1972a, 1972b, 1973, 1975, 1981, 1984, 1989; Bouchard and Hobbs 1976; Cooper and Hobbs 1980); Hobbs and Barr 1960; Hobbs and Hall 1969 and 1972; Hobbs and Hart 1959; Hobbs, Jr. and Hobbs, III 1990; Hobbs et al. 1977; Hobbs and Walton 1957, 1959 and 1960). He described or co-authored descriptions of 32 of the species that are known to reside in Alabama, almost 40% of the fauna. Faxon and Hobbs together described almost 60% of the known Alabama crayfish fauna.

Other authors who have contributed greatly to the current knowledge of Alabama crayfishes include the following individuals. Raymond Bouchard provided new species descriptions, descriptions of new subgenera, provisional conservation status as well as distributional and biogeographic data on Alabama crayfishes (Bouchard, 1972, 1974a, 1974b, 1974c, 1976, 1978; Bouchard and Hobbs 1976; Bouchard and Bouchard 1995). The work of John and Martha Cooper provided descriptions of new species, as well as new knowledge about the biology of cave crayfishes in Alabama (Cooper 1975; Cooper and Cooper 1976, 1977, 1997a, 1997b; Cooper and Hobbs 1980). Joseph F. Fitzpatrick, Jr. also provided new species descriptions, revisions of genera with descriptions of new subgenera, provisional conservation status, and distributional and biogeographic data on Alabama crayfishes (Fitzpatrick 1977, 1978a, 1978b, 1983, 1987a, 1987b, 1990a, 1990b, 1991, 1992, 1996; Fitzpatrick and Laning 1976; Fitzpatrick and Payne 1968). Fitzpatrick was arguably the most active North American crayfish expert in the past 30 years, with the exception of Horton Hobbs, Jr.

Many other species with Alabama distributions were described by a variety of workers over the past 200 years (Black 1968; Bundy 1877; Cope 1872, 1881; Cottle 1863; Creaser 1933; Erichson 1846; Fabricius 1798; Hall 1959; Hay 1899, 1902; LeConte 1856; Penn and Marlow 1959; Rhoades 1941, 1944; and Walls 1972). Since 1990 only four new species and one new

subspecies with Alabama distributions have been described (Cooper and Cooper 1997a, 1997b; Fitzpatrick 1990, 1992; and Hobbs and Hobbs 1990). This could very well mean that we are approaching an end to the descriptions of new species with Alabama ranges. However, examination of the available museum crayfish databases does not necessarily indicate this to be true (see Possible New Species section below).

Non-Taxonomic Literature

In addition to new species descriptions and revisions of genera and subgenera, a number of biological, ecological and/or inventory type studies have been done on Alabama crayfishes. Ortmann (1931) provided early distribution records for crayfishes occurring in the southern Appalachians and Cumberland Plateau of northern Alabama. What is currently known about Alabama cave crayfishes is the result of work done by Cope (1881), Hay (1902), Rhoades (1941), J.E. and M.R. Cooper (e.g., Cooper 1975; Cooper and Cooper 1976, 1977, 1997a, and 1997b), Hobbs, Jr. and Barr (1972), Hobbs, Jr., et al. (1977), Hobbs, III (1992), Hobbs, III and Bagley (1989), McGregor et al. (1997) and Rheams et al. (1992 and 1994) all of whom studied the caves in northern Alabama. In their inventory work Buchanan (1992) [Cahaba River], Harris, et al. (1987) [Warrior Coal Basin], McGregor et al. (1999) [Alabama and lower Tombigbee rivers], Ratcliffe and DeVries 2004 [Tallapoosa River], and Yarbrough (1973) [Tallapoosa and Chattahoochee rivers] all provided additional biological and distributional information on crayfishes in their study areas. Buchanan (1992) has done the only study that has focused on burrowing species of crayfishes in Alabama.

In terms of the conservation of Alabama crayfishes, the works of Bouchard (1976), Fitzpatrick (1990), and Taylor et al. (1996) have already been discussed above. Fitzpatrick (1991) provided a report on the current status of *Cambarus miltus* in the state, while Hartfield (1991) indicated, based on current knowledge, that no action regarding the federal listing of *C. miltus* was necessary. Hartfield (1992) indicated, based on current information, that no action on the possible federal listing of *Procambarus lagniappe* was necessary. Butler (2002a and 2002b) provided comprehensive reviews of the conservation of crayfish species in the southern Appalachian and the lower Tennessee Cumberland ecosystems. These reviews included discussions about the fauna, the zoogeography and the conservation status of numerous Alabama crayfish species, as well as identifying high priority stream systems.

Alabama Crayfish Fauna

Table 2 provides a taxonomic checklist of the crayfish species currently known from Alabama. The list is presented in alphabetical order by subfamily, genus and species. Also provided are the authors of the species and the date of the original description. The citations can be found in the bibliography at the end of this report.

The list contains 81 nominal species and one species [*Cambarus (Tubericambarus)* sp. A] that is currently being described. All crayfishes living in Alabama belong to the family Cambaridae. Within Cambaridae there are two subfamilies, Cambarellinae and Cambarinae. Representatives of both subfamilies reside in Alabama.

The subfamily Cambarellinae has a single genus, *Cambarellus* of which three species are known from Alabama. The remaining 79 species belong to the subfamily Cambarinae. In Alabama the Cambarinae are comprised of six genera: *Cambarus*, *Fallicambarus*, *Faxonella*, *Hobbseus*, *Orconectes*, and *Procambarus*. The genus *Cambarus*, one of the largest crayfish genera in Alabama consists of 10 subgenera and 26 species. All species of the genus *Fallicambarus* in Alabama belong to the subgenus *Creaserinus* of which there are five. The genus *Faxonella* is represented by a single species as is the genus *Hobbseus*. The genus *Orconectes*, also one of the largest crayfish genera in Alabama, consists of seven subgenera and 18 species. The genus *Procambarus*, is the largest genus in Alabama with six subgenera and 28 species.

Table 3 provides a listing of eight species that have in some way been reported from the state, however, we feel, that for the reasons given, it is questionable if they actually reside in the state. All of these dubious records were found while searching the available databases. In order to determine with certainty the status of these species in Alabama, the actual specimens need to be examined in the respective museums.

Table 4 provides a listing of all known crayfish species that reside in Alabama, and their current distribution in the state by river system. The Tennessee River system has the greatest diversity of crayfishes with 36 species (44% of the known Alabama fauna) of which 16 are known only from this system, followed by the Tombigbee and Alabama rivers each with 29 and 30 species respectively. The river systems with the lowest crayfish diversity are the Perdido River system with three known species, followed by the Choctawhatchee River system with nine known species. *Procambarus versutus* has been recorded from 12 of the 13 drainages in the state, which indicates it is the most widespread species in the state. It is followed by *Procambarus spiculifer* which is known from 11 drainages, while three species (*Cambarus latimanus*, *C. diogenes* and *C. acanthura*) are known from 10 drainages. Thirty-four species (41% of the known Alabama fauna) are known only from a single drainage system.

Two species, *Cambarus* sp. A and *Procambarus zonangulus*, have a question mark in the drainage totals of Table 4 because the distribution of each of these species is very uncertain. *Cambarus* sp. A is an undescribed species that is easily confused with other closely related species so that museum records need to be examined in order to determine the distribution of this species in Alabama. *Procambarus zonangulus* is closely related to *P. acutus* and it is probable that the identification of these two species has been confused. Examination of museum specimens is required to determine the exact distribution of each of these species in the state.

Figure 2 shows the number of crayfish species by major drainage unit. The Mobile Bay Basin has the largest number of species with 54 or 66% of the known Alabama species. This is followed by the Tennessee River system (Ohio River Basin) with 36 or 44% of the known species. The Chattahoochee River system (Apalachicola River Basin) has the lowest diversity with 13 or 16% of the known species.

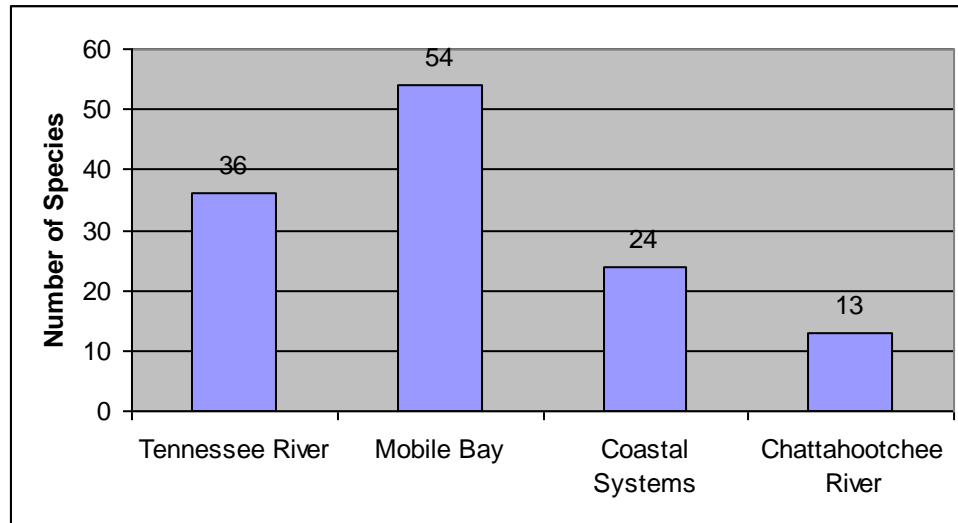


Figure 2. Number of crayfish species by major drainage unit.

Possible New Species

As has already been pointed out, there is one new species, *Cambarus* sp. A, that is currently being described by others. It is a widespread species that ranges into Alabama (Jezerinac 1993). In addition to this species, it is likely that there may be other undescribed species in the state. For example, in the database records of the NMNH there are one *Cambarellus*, three *Cambarus*, and nine *Orconectes* manuscript species names listed. This indicates that H. H. Hobbs, Jr. or others thought that these specimens probably represented undescribed species. In addition, in the Auburn University Museum database at least two *Cambarus* taxa are presented as being undescribed, and in the University of Alabama Museum collections at least five taxa (three *Orconectes* and two *Procambarus*) are given as being new to science. The crayfish workers who thought these forms were undescribed species, for the most part, were Drs. Hobbs and Fitzpatrick, both of whom were very familiar with the Alabama fauna. It is possible that some of these have already been described under other names, and the museum records have not been up-dated to reflect that. It is possible that some of these may represent variations of already described species. It is also possible that, in fact, some of these are new species. In all cases listed above, intensive museum work followed by fieldwork needs to be done to determine the validity of these so called new species. What is clear from these database records is that there is a great need for additional taxonomic evaluation of museum collections.

SPECIES ACCOUNTS

Subfamily Cambarellinae

Cambarellus diminutus Hobbs 1945; Least Crayfish

Distribution. North America: Mobile County, Alabama; George and Jackson counties, Mississippi (Hobbs 1989). Alabama: Known from eight database records, all from Mobile and Washington counties in the Mobile Basin.

Habitat. Ditches, pools in sluggish streams (Hobbs, 1989)

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Cambarellus lesliei* Fitzpatrick and Laning 1976**

Distribution. North America: Baldwin, Mobile and Washington counties Alabama; George County Mississippi (Hobbs 1989). Alabama: Known from 17 database records, from Baldwin, Mobile and Washington counties in the Mobile Bay, Tombigbee and Alabama river systems.

Habitat. Streams and pools (Hobbs 1989).

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Cambarellus shufeldtii* (Faxon 1884); Cajun Dwarf Crayfish**

Distribution. North America: Alabama, Arkansas, southern Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee (Hobbs 1989). Alabama: Known from nine database records, all from Mobile County in the Mobile Basin.

Habitat. Ditches, marshes, swamps, lakes, ponds, and sluggish streams (Hobbs 1989).

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

Subfamily Cambarinae

***Cambarus acanthura* Hobbs 1981**

Distribution. North America: Alabama, Georgia and Tennessee (Hobbs 1989). Alabama: Tennessee, Tombigbee, Blackwater, Alabama, Cahaba, Coosa, Pascagoula, Perdido, Escambia, and Chattahoochee river systems.

Habitat. Primary and secondary burrower (Hobbs 1989)

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus bartonii cavatus* (Fabricius 1798); Appalachian Brook Crayfish**

Distribution. North America: New Brunswick, Canada west to Kentucky and Tennessee, south to Alabama, Georgia and South Carolina and east to the Atlantic Ocean (Hobbs 1989).
Alabama: Known only from two database records from the Chattahoochee River system.

Habitat. First and second order streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus coosae* Hobbs 1981**

Distribution. North America: Restricted to the Coosa River system in Georgia and Tennessee and south into Alabama (Hobbs 1989). Alabama: Mobile, Alabama, Cahaba, and Coosa river systems.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus cracens* Bouchard and Hobbs 1976**

Distribution. North America: Known only from Alabama (Hobbs 1989). Alabama: Described from the Tennessee River system; questionable database records from the Blackwater, Coosa and Tallapoosa river systems.

Habitat. Streams under rocks.

Conservation Status. AFS Endangered; Provisional AL Priority 3.

***Cambarus diogenes* Girard 1852; Devil Crawfish**

Distribution. North America: Extremely widespread; from the Rockies to southern Canada to New Jersey and throughout the Mississippi River basin (Hobbs 1989). Alabama: Known from all river systems in Alabama, except the Cahaba, Pascagoula and Perdido river systems.

Habitat. Secondary and primary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus distans* Rhoades 1944; Boxclaw Crayfish**

Distribution. North America: Cumberland and Tennessee river systems in Alabama, Georgia, Kentucky and Tennessee (Hobbs 1989). Alabama: Known only from three database records from the Tennessee River system.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus englishi* Hobbs and Hall 1972**

Distribution. North America: Endemic to the Tallapoosa River system in Alabama and Georgia (Hobbs 1989). Alabama: Restricted to the Tallapoosa River system, and known from 16 database records.

Habitat. Streams under rocks.

Conservation Status. AFS Special Concern; Provisional AL Priority 4.

***Cambarus girardianus* Faxon 1884**

Distribution. North America: Tennessee River system in Alabama, Georgia, Mississippi, and Tennessee; specimens from the Coosa River system in Alabama may be referable to this species (Hobbs 1989). Alabama: Known from the Tennessee River system; database records also from the Mobile, Cahaba and Coosa river systems, however, these records may represent an undescribed taxon.

Habitat. Streams under rocks.

Conservation Status. ASF Currently Stable; Provisional AL Priority 3.

***Cambarus graysoni* Faxon 1914; Twospot Crayfish**

Distribution. North America: Nashville Basin, Highland Rim and western edge of the Cumberland Plateau in Alabama, Kentucky and Tennessee. Alabama: Known only from six database records from the Tennessee River system.

Habitat. Streams under rocks; secondary burrower.

Conservation Status. ASF Currently Stable; Provisional AL Priority 4.

***Cambarus halli* Hobbs 1968**

Distribution. North America: Thought to have been endemic to the Tallapoosa River system in Alabama and Georgia (Hobbs 1989). Alabama: Known from the Tallapoosa River system; questionable database records exist from the Tennessee, Alabama, Cahaba and Coosa river systems.

Habitat. Streams under rocks.

Conservation Status. ASF Special Concern; Provisional AL Priority 3.

***Cambarus hamulatus* (Cope 1881)**

Distribution. North America: Tennessee River system, Alabama. Alabama: Known from 20 database records from Blount, Jackson and Marshall counties. Thought to have been restricted to caves in the Tennessee River system in Alabama; one questionable database record from the Blackwater River system.

Habitat. Subterranean streams.

Conservation Status. ASF Currently Stable; Provisional AL Priority 3.

***Cambarus howardi* Hobbs and Hall 1969**

Distribution. North America: Chattahoochee River system in Alabama and Georgia. Alabama: Known only from nine database records from the Chattahoochee River system.

Habitat. Streams under rocks.

Conservation Status. AFS Special Concern; Provisional AL Priority 3.

***Cambarus jonesi* Hobbs and Barr 1960; Alabama Cave Crayfish**

Distribution. North America: Caves in the Tennessee River system in Alabama (Hobbs 1989). Alabama: Known only from eight database records from caves in the Tennessee River system between Florence and Guntersville (Hobbs 1989).

Habitat. Subterranean streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus latimanus* LeConte 1856**

Distribution. North America: Alabama, Florida, Georgia and North Carolina (Hobbs 1989). Alabama: Reported from all river systems, except the Mobile, Pascagoula and Perdido river systems.

Habitat. Streams under rocks; secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus longirostris* Faxon 1885**

Distribution. North America: Tennessee River system in Georgia, Tennessee and North Carolina and introduced into South Carolina (Hobbs 1989); also known from Alabama. Alabama: Known from a total of 18 database records from the Tennessee River system in northern Alabama, and from the Coosa River system. There may be taxonomic issues with this taxon.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus ludovicianus* Faxon 1884; Painted Devil Crayfish**

Distribution. North America: Mississippi River system in Arkansas, Louisiana, Mississippi, and Tennessee, also known from eastern Texas (Hobbs 1989); in addition it has been reported from Alabama (Taylor et al. 1996) and Kentucky (Taylor and Schuster 2004). Alabama: Known from nine database records from the Tombigbee, Alabama and Mobile river systems in Greene, Montgomery, Pickens and Washington counties.

Habitat. Secondary and primary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus manningi* Hobbs 1981**

Distribution. North America: Endemic to the Coosa River system in Alabama, Georgia and Tennessee. Alabama: Known from 11 database records from the Coosa River system.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Cambarus miltus* Fitzpatrick 1978; Rusty Grave Digger**

Distribution. North America: Alabama and Florida (Taylor et al. 1996). Alabama: Known only from six database records from near the type locality in Baldwin County. Alabama Heritage Program has two records from Covington County. It is unknown who identified these specimens. They also indicate records from Corn Branch and Negro Creek in Baldwin County from work done by Fitzpatrick (1991). Fitzpatrick considered these possible records, since no form I males were collected to certify identification.

Habitat. Primary burrower.

Conservation Status. AFS Threatened; Provisional AL Priority 2.

***Cambarus obstipus* Hall 1959**

Distribution. North America: Thought to have been endemic to the Black Warrior River system in Alabama (Hobbs 1989). Alabama: Black Warrior River system; in addition, database records exist for the Tombigbee, Alabama, and Cahaba river systems.

Habitat. Streams under rocks.

Conservation Status. AFS Special Concern; Provisional AL Priority 5.

***Cambarus rusticiformis* Rhoades 1944; Depression Crayfish**

Distribution. North America: Cumberland and Green rivers in Kentucky and Tennessee and Ohio River in southern Illinois (Hobbs 1989); one record from the Tennessee River system in Alabama. Alabama: Known only from a single record from the Paint Rock River drainage within the Tennessee River system.

Habitat. Streams in depressions under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Cambarus scotti* Hobbs 1981**

Distribution. North America: Endemic to the upper Coosa River system in Alabama and the Chattooga River system in Georgia (Hobbs 1989). Alabama: Known only from nine database records all from the upper Coosa River system (Chattooga River).

Habitat. Streams under rocks.

Conservation Status. AFS Threatened; Provisional AL Priority 4.

***Cambarus striatus* Hay 1902; Ambiguous Crayfish**

Distribution. North America: Florida, Georgia, South Carolina westward to Mississippi and north to Kentucky (Hobbs 1989). Alabama: Known from the Tennessee, Mobile, Tombigbee, Black Warrior, Cahaba, Coosa, Tallapoosa, Escambia, and Chattahoochee river systems.

Habitat. Streams under rocks; also can be primary or secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus tenebrosus* Hay 1902; Cavespring Crayfish**

Distribution. North America: From Illinois south to Alabama (Hobbs 1989). Alabama: Known only from the Tennessee River system.

Habitat. Cool water springs and streams under rocks; often found in caves.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Cambarus unestami* Hobbs and Hall 1969**

Distribution. North America: Tennessee River system in Georgia and Alabama; also known from the Little River system of the upper Coosa River in Georgia (Hobbs 1989). Alabama: Known only from two database records from the Tennessee River system in Jackson County, Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Cambarus veitchorum* Cooper and Cooper 1997a; White Spring Cave Crayfish**

Distribution. North America: Only known from Alabama. Alabama: Endemic to White Spring Cave, Tennessee River system, Limestone County, Alabama (Cooper and Cooper 1997a).

Habitat. Subterranean streams.

Provisional Conservation Status. AFS None; Provisional AL Priority 1.

Cambarus sp. A

Distribution. North America: Jezerinac (1993) indicated that this undescribed species ranged from southern Michigan, western Ohio, Indiana, most of Illinois, western Kentucky west to eastern Missouri and south to the Gulf of Mexico in Mississippi, Alabama and far western Florida. Alabama: It is unclear what the exact distribution of this species is in Alabama.

Habitat. Secondary and primary burrower.

Conservatin Status. AFS None; Provisional AL Priority 3.

***Fallicambarus burrisi* Fitzpatrick 1987**

Distribution. North America: Chickasawhay and Escatawpa river systems in Alabama and Mississippi. Alabama: Known only from two database records from the Escatawpa River system in southwestern Alabama.

Habitat. Primary burrower in *Sarracenia* bogs.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Fallicambarus byersi* (Hobbs 1941); Lavender Burrowing Crayfish**

Distribution. North America: Okaloosa County, Florida, west to Bay St. Louis, Hancock County Mississippi. Alabama: Known from 17 database records from the Tombigbee, Alabama, Pascagoula, and Escatawpa river systems.

Habitat. Primary Burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Fallicambarus danielae* Hobbs 1975**

Distribution. North America: Known only southern Mississippi and southwestern Alabama. Alabama: Known from only four database records from the Mobile and Pascagoula river systems.

Habitat. Primary burrower.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Fallicambarus fodiens* (Cottle 1863); Digger Crayfish**

Distribution. North America: Southern Ontario, Michigan, Ohio, Indiana, and Illinois south to Arkansas, Mississippi, and Alabama (Hobbs 1989). Alabama: Known from 17 database records from the Tennessee, Tombigbee and Alabama river systems.

Habitat. Primary and secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Fallicambarus oryktes* (Penn and Marlow 1959)**

Distribution. North America: Southern Louisiana to southern Alabama (Hobbs 1989). Alabama: Known only from three database records from Baldwin and Mobile counties.

Habitat. Primary burrower

Conservation Status. AFS Special Concern; Provisional AL Priority 3.

***Faxonella clypeata* (Hay 1899); Ditch Fencing Crayfish**

Distribution. North America: Oklahoma and Texas east to Florida and north to South Carolina. Alabama: Known from 17 database records from the Mobile, Tombigbee, Alabama, Tallapoosa, Pascagoula, Escatawpa, Choctawhatchee, and Chattahoochee river systems (Hobbs 1989).

Habitat. Slow streams, marshes, swamps and ditches; tertiary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Hobbseus prominens* (Hobbs 1966a)**

Distribution. North America: Mobile River Basin in Alabama; northern Mississippi (Hobbs 1989). Alabama: Known from 18 database records from the Tombigbee, Black Warrior, Alabama and Cahaba river systems.

Habitat. Secondary burrower in both lentic and lotic environments (Hobbs 1989).

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Orconectes alabamensis* (Faxon 1884)**

Distribution. North America: Tennessee River system in western Tennessee and northern Alabama. Alabama: Restricted to the Shoal Creek system in Lauderdale County, Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Special Concern; Provisional AL Priority 4.

***Orconectes australis australis* (Rhoades 1941b)**

Distribution. North America: Caves in southeastern Kentucky to western Tennessee and northern Alabama (Hobbs 1989). Alabama: Known only from caves in the Tennessee River system in Jackson and Madison counties (Hobbs 1989).

Habitat. Subterranean streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 2.

***Orconectes chickasawae* Cooper and Hobbs 1980**

Distribution. North America: Hobbs (1989) reported it only from the western tributaries of the Tombigbee River in Mississippi. Alabama: There is a single record of the species in the Illinois Natural History Survey database from the Tombigbee River system; another more questionable record from the University of Alabama database is from the Cahaba River system.

Habitat. Lentic and slow lotic environments (Hobbs 1989).

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Orconectes compressus* (Faxon 1884); Slender Crayfish**

Distribution. North America: Tennessee River system in Alabama, Mississippi and western Tennessee; Cumberland River system in Kentucky and Tennessee; Barren River system in Kentucky and Tennessee. Alabama: Known only from tributaries to the Tennessee River system in northern Alabama.

Habitat. Streams under rocks and gravel.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Orconectes cooperi* Cooper and Hobbs 1980**

Distribution. North America: Endemic to the Flint River system in northern Alabama and western Tennessee (Hobbs 1989). Alabama: Flint River system in Madison County, Alabama.

Habitat. Streams.

Conservation Status. AFS Endangered; Provisional AL Priority 4.

***Orconectes erichsonianus* (Faxon 1898)**

Distribution. North America: Tennessee, Elk and Coosa river systems in northern Alabama, northwestern Georgia, eastern Tennessee, and southwestern Virginia (Hobbs 1989). Alabama: Known from the Tennessee, Mobile, Black Warrior, Alabama, Cahaba, Coosa and Tallapoosa river systems.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Orconectes forceps* (Faxon 1884)**

Distribution. North America: Tennessee River system from southwestern Virginia to Wayne County, Tennessee (Hobbs 1989), and northern Alabama. Alabama: Known from the tributaries of the Tennessee River; one questionable record from the University of Alabama database from the Mobile River system.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Orconectes holti* Cooper and Hobbs 1980**

Distribution. North America: Alabama River system, Alabama. Alabama: Known only from tributaries of the Alabama River in Dallas, Lowndes, Montgomery, Perry, and Wilcox counties, Alabama (Hobbs 1989).

Habitat. Streams.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Orconectes jonesi* Fitzpatrick 1992**

Distribution. North America: Sucarnoochee River system of Alabama and Mississippi. Alabama: Sucarnoochee River drainage in Sumter County.

Habitat. Streams.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Orconectes lancifer* (Hagen 1870), Shrimp Crayfish**

Distribution. North America: Gulf coastal plain and Mississippi River embayment from eastern Texas to Mississippi north to Missouri, Kentucky and Illinois (Hobbs 1989); and Alabama. Alabama: Database records from the National Museum of Natural History from the Alabama River system.

Habitat. Slow streams and lotic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Orconectes mirus* (Ortmann 1931)**

Distribution. North America: Northern tributaries of the Tennessee River in western Tennessee and northern Alabama. Alabama: Tennessee River system in northern Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Orconectes mississippiensis* (Faxon 1884)**

Distribution. North America: Tributaries of the Tombigbee River in Mississippi (Hobbs 1989), and Alabama. Alabama: Database records indicate it occurs in the Tombigbee and Black Warrior river systems, with one questionable Illinois Natural History Survey record from the Tennessee River system.

Habitat. Streams.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Orconectes perfectus* Walls 1972**

Distribution. North America: Tombigbee and lower Alabama river systems in Alabama and Mississippi (Hobbs 1989). Alabama: Tombigbee, Black Warrior and Alabama river systems.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Orconectes placidus* (Hagen 1870); Bigclaw Crayfish**

Distribution. North America: Lower Ohio, Cumberland, Duck and Tennessee river systems in northern Alabama, Illinois, Kentucky and Tennessee. Alabama: Known only from the Tennessee River system in northern Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Orconectes putnami* (Faxon 1884)**

Distribution. North America: Taylor (2000) defined the range as being disjunct with populations in the middle and upper Green River system and middle and upper Cumberland River system in Kentucky and Tennessee, in the western Highland Rim of the Tennessee River system of western Tennessee and northern Alabama. Alabama: Known only from the Tennessee River system in northern Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 4.

***Orconectes sheltae* Cooper and Cooper 1997b**

Distribution. North America: Endemic to Shelta Cave, Alabama. Alabama: Known only from Shelta Cave, Madison County, Alabama.

Habitat. Subterranean streams.

Conservation Status. AFS None; Provisional AL Priority 2.

***Orconectes spinosus* (Bundy 1877)**

Distribution. North America: Taylor (2000) defined the range as being restricted to the upper Coosa River system. His distribution map included localities in Georgia and Tennessee. Alabama: According to an Illinois Natural History Survey record it also is found in the upper Coosa River system in Alabama.

Habitat. Streams under rocks.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Orconectes validus* (Faxon 1914)**

Distribution. North America: Tennessee and Black Warrior systems in northern Alabama and western Tennessee (Hobbs 1989). Alabama: Known from the Tennessee, Tombigbee, Black Warrior and Alabama river systems.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus acutissimus* (Girard 1852)**

Distribution. North America: Chattahoochee River system in Georgia west to the Tombigbee River system in Mississippi (Hobbs 1989). Alabama: Known from all river systems in the state with the exception of the Mobile, Perdido, Choctawhatchee, and Chattahoochee river systems.

Habitat. Slow streams, pools and roadside ditches.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus acutus acutus* (Girard 1852); White River Crawfish**

Distribution. North America: From Maine to the Florida panhandle west to Texas, and north to Minnesota (Hobbs 1989). Alabama: Known from all river systems in the state with the exception of the Cahaba, Tallapoosa, Perdido and Chattahoochee river systems.

Habitat. Slow streams and lentic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus bivittatus* Hobbs 1942; Ribbon Crayfish**

Distribution. North America: From the Escambia River system in Florida west to the Pearl River in Mississippi and Louisiana (Hobbs 1989). Alabama: Known from the Mobile, Tombigbee and Alabama river systems.

Habitat. Streams and sloughs.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus capillatus* Hobbs 1971**

Distribution. North America: Escambia River system in Alabama and Florida (Hobbs 1989). Alabama: Known only from the Escambia River system.

Habitat. Lentic environments; secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus clarkii* (Girard 1852); Red Swamp Crawfish**

Distribution. North America: Widespread from northern Mexico east to the panhandle of Florida, and north to Illinois and Ohio (Hobbs 1989). Alabama: Known from the Tennessee, Mobile, Black Warrior, Cahaba, Coosa, Tallapoosa, and Escambia river systems.

Habitat. Lentic and lotic environments; tertiary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus clemmeri* Hobbs 1975**

Distribution. North America: Pearl River system in southern Mississippi east to the Escatawpa River system in southern Alabama (Hobbs 1989). Alabama: Known from the Escatawpa River system (Pascagoula River); University of Alabama and Illinois Natural History Survey databases also include records from the Mobile and Escambia river systems.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus escambiensis* Hobbs 1942**

Distribution. North America: Perdido River system in Florida and the Escambia River system in Alabama (Hobbs 1989). Alabama: Restricted to the Big Escambia Creek drainage in the Escambia River system, near Flomaton, Escambia County, Alabama.

Habitat. Temporarily flooded woodlands and floodplains; secondary burrower.

Conservation Status. AFS Endangered; Provisional AL Priority 3.

***Procambarus evermanni* (Faxon 1890)**

Distribution. North America: Escambia River system in Alabama and Yellow River system in Florida west to the Pearl River system in Mississippi. Alabama: Known from Escambia County; additional database records include the Mobile and Alabama river systems.

Habitat. Slow streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus hagenianus hagenianus* (Faxon 1884); Southeastern Prairie Crayfish**

Distribution. North America: According to Fitzpatrick (1978b) this subspecies is in the Tombigbee river system in Lowndes, Noxubee and Oktibbeha counties in Mississippi, and Marengo, Pickens and Sumter counties in Alabama. Alabama: Known only from the Tombigbee River system in Marengo, Pickens and Sumter counties.

Habitat. Primary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus hayi* (Faxon 1884)**

Distribution. North America: Tombigbee River system in Alabama, Tallahatchie River system in Mississippi, and the Hatchie River system in Tennessee (Hobbs 1989). Alabama: Known only from the Tombigbee River system.

Habitat. Slow streams and lentic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus hubbelli* (Hobbs 1938)**

Distribution. North America: Choctawhatchee and Yellow River systems in Alabama and Florida (Hobbs 1989). Alabama: Known only from the Yellow River system.

Habitat. Lentic environments; secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus hybus* Hobbs and Walton 1957**

Distribution. North America: Lower Alabama and Tombigbee river systems in Alabama and Mississippi, and the Yalabusha River system in Mississippi (Hobbs 1989). Alabama: Known from the Tombigbee, Black Warrior and Alabama river systems.

Habitat. Lentic environments; secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus lagniappe* Black 1968; Lagniappe Crayfish**

Distribution. North America: Tombigbee River system in Mississippi (Hobbs 1989), and in Alabama. Alabama: Known only from Sucarnoochee River system of the Tombigbee River, Sumter County, Alabama (Hartfield 1992).

Habitat. Streams.

Conservation Status. AFS Threatened; Provisional AL Priority 3.

***Procambarus lecontei* (Hagen 1870); Mobile Crayfish**

Distribution. North America: Pascagoula and Mobile river systems in Alabama and Mississippi (Hobbs 1989). Alabama: Known from the Mobile, lower Tombigbee and Pascagoula river systems.

Habitat. Streams.

Conservation Status. AFS Special Concern; Provisional AL Priority 4.

***Procambarus lewisi* Hobbs and Walton 1959**

Distribution. North America: Known from Barbour, Bulloch, Lowndes, Macon, Montgomery, and Russell counties Alabama (Hobbs 1989). Alabama: Collections are known from the Alabama and Choctawhatchee river systems.

Habitat. Slow streams and ditches.

Conservation Status. AFS Special Concern; Provisional AL Priority 3.

***Procambarus lophotus* Hobbs and Walton 1960**

Distribution. North America: Alabama River system in Alabama and Georgia, and the Tennessee River system in Georgia and Tennessee (Hobbs 1989). Alabama: Records are known from the Tennessee, Tombigbee, Black Warrior, Alabama, Coosa, Tallapoosa, Escambia and Choctawhatchee river systems.

Habitat. Lentic and lotic environments; tertiary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus marthae* Hobbs 1975**

Distribution. North America: Known from the Alabama River system in Alabama (Hobbs 1989). Alabama: Records are known from the Black Warrior, Cahaba and Alabama river systems.

Habitat. Lentic and slow moving lotic environments.

Conservation Status. AFS Special Concern; Provisional AL Priority 3.

***Procambarus okaloosae* Hobbs 1942**

Distribution. North America: Perdido, Escambia and Yellow river systems in Alabama and Florida. Alabama: Known from the Escambia and Yellow river systems.

Habitat. Lentic and lotic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus paeninsulanus* (Faxon 1914)**

Distribution. North America: Southern Georgia, Florida (Hobbs 1989), and southeastern Alabama. Alabama: Known from the Chattahoochee River system.

Habitat. Lentic and lotic environment, and rarely in caves; tertiary burrower (Hobbs 1989).

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus pecki* Hobbs 1967; Phantom Cave Crayfish**

Distribution. North America: Tennessee River system in northern Alabama. Alabama: Known from caves in Colbert, Lauderdale and Morgan counties.

Habitat. Subterranean streams.

Conservation Status. AFS Endangered; Provisional AL Priority 2.

***Procambarus shermani* Hobbs 1942**

Distribution. North America: Escambia River system in Florida west to the Pearl River system in Mississippi (Hobbs 1989). Alabama: Known from the Mobile, Tombigbee, Alabama and Pascagoula river systems.

Habitat. Streams and sloughs; secondary burrower.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus spiculifer* (LeConte 1856)**

Distribution. North America: Georgia south to Florida, and west to the Mobile and Alabama River systems in Alabama (Hobbs 1989). Alabama: Known from every river system in Alabama, with the exception of the Tennessee and Escatawpa river systems.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus suttkusi* Hobbs 1953**

Distribution. North America: Choctawhatchee River system in Alabama and Florida (Hobbs 1989), and Chattahoochee River system in Alabama. Alabama: Known from the Choctawhatchee and Chattahoochee river systems.

Habitat. Streams.

Conservation Status. AFS Special Concern; Provisional AL Priority 3.

***Procambarus verrucosus* Hobbs 1952**

Distribution. North America: Southeastern Alabama between the Alabama and Chattahoochee river systems (Hobbs 1989). Alabama: Known from the Alabama, Tallapoosa, Escambia and Chattahoochee river systems.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus versutus* (Hagen 1870)**

Distribution. North America: Mobile River system east to the Chattahoochee River system in Alabama, Florida and Georgia (Hobbs 1989). Alabama: Known from every river system in Alabama, with the exception of the Tennessee River system.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 5.

***Procambarus viaeviridis* (Faxon 1914)**

Distribution. North America: Southern Illinois south to Arkansas and Louisiana, and east to Alabama (Hobbs 1989). Alabama: Reported only from the Tennessee River system in northern Alabama.

Habitat. Slow streams and lentic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus vioscai paynei* Fitzpatrick 1990**

Distribution. North America: East of the Mississippi River from the Wolfe River in Tennessee to the Tombigbee River system in Alabama, south and west to the Pascagoula, Bogue Chitto and

Homochitto river systems in Mississippi (Fitzpatrick 1990). Alabama: Reported from the Tombigbee and Black Warrior river systems.

Habitat. Streams.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

***Procambarus zonangulus* Hobbs and Hobbs 1990**

Distribution. North America: The exact range of this species is not clearly understood. Hobbs and Hobbs (1990) in their description of this species reported it only from southeastern Texas. Taylor et al. (1996) reported it from Alabama, Louisiana, Mississippi and Texas. Alabama: It is unclear what the exact distribution of this species is in Alabama.

Habitat. Slow streams and lentic environments.

Conservation Status. AFS Currently Stable; Provisional AL Priority 3.

BIBLIOGRAPHY

- Black, J. B. 1968. A new crawfish of the genus *Procambarus* from Mississippi (Decapoda, Astacidae). *Tulane Studies in Zoology and Botany* 15: 5-9.
- Bouchard, R. W. 1972. A contribution to the knowledge of Tennessee crayfish. Dissertation, University of Tennessee, Knoxville, Tennessee.
- Bouchard, R. W. 1974a. Geography and Ecology of Crayfishes of the Cumberland Plateau and Cumberland Mountains, Kentucky, Virginia, Tennessee, Georgia and Alabama. Part I. The Genera *Procambarus* and *Orconectes*. Proceedings of the Second International Crayfish Symposium, Louisiana State University, Baton Rouge, LA., pages 563-584.
- Bouchard, R. W. 1974b. Geography and Ecology of Crayfishes of the Cumberland Plateau and Cumberland Mountains, Kentucky, Virginia, Tennessee, Georgia, and Alabama. Part II. The Genera *Fallicambarus* and *Cambarus*. Proceedings of the Second International Crayfish Symposium, Louisiana State University, Baton Rouge, LA., pages 585-605.
- Bouchard, R. W. 1974c. Crayfishes of the Nashville Basin, Tennessee, Alabama and Kentucky (Decapoda, Astacidae). *The Association of Southeastern Biologists Bulletin*. 21: 41.
- Bouchard, R. W. 1976. Crayfishes and Shrimps. In H. Boschung, ed., *Endangered and threatened plants and animals of Alabama*. Bulletin of the Alabama Museum of Natural History 2: pp.13-21.
- Bouchard, R. W. 1978. Taxonomy, ecology, and phylogeny of the subgenus *Depressicambarus*, with the description of a new species from Florida and redescriptions of *Cambarus graysoni*, *Cambarus latimanus* and *Cambarus striatus* (Decapoda: Cambaridae). *Bulletin of the Alabama Museum of Natural History* 3: 27-60.
- Bouchard, R. W. and H. H. Hobbs, Jr. 1976. A new subgenus and two new species of crayfishes of the genus *Cambarus* (Decapoda: Cambaridae) from the southeastern United States. *Smithsonian Contributions to Zoology* 224: 1-15.
- Bouchard, R. W. and J. W. Bouchard. 1995. Two new species and subgenera (*Cambarus* and *Orconectes*) of crayfishes (Decapoda: Cambaridae) from the eastern United States. *Notulae Nocturnae* 471: 1-21.
- Buchanan, J. V. 1992. The burrowing crayfishes (Decapoda: Cambaridae) of the Cahaba River system. M.S. Thesis, University of South Alabama. 185 pages.
- Bundy, W. F. 1877. On the Cambari of northern Indiana. *Proceedings of the Academy of Natural Sciences of Philadelphia* 29: 171-174.
- Butler, R. S. 2002a. Crayfishes of the southern Appalachian ecosystem, with emphasis on the imperiled fauna. U.S. Fish and Wildlife Service, Asheville, NC.,

- Butler, R. S. 2002b. Crayfishes of the lower Tennessee Cumberland ecosystem, with emphasis on the imperiled fauna. U.S. Fish and Wildlife Service, Asheville, NC.
- Cooper, J. E. 1967. Animals in Alabama caves. In J. Veitch. The caves of Alabama. Huntsville Grotto, National Speleological Society, Huntsville: 14-16.
- Cooper, J. E. 1968. Shelta Cave, a biological marvel. National Speleological Society News 26: 33-35.
- Cooper, J. E. 1974. Biological studies in Shelta Cave, Alabama. Proceedings of the 5th International Congress of Speleology. Stuttgart (1969), Bd. 4: B1/1-8.
- Cooper, J. E. 1975. Ecological and behavioral studies in Shelta Cave, Alabama, with emphasis on decapod crustaceans. Ph.D. Dissertation, University of Kentucky, Lexington.
- Cooper, J. E., and M. R. Cooper. 1968. Comments on Alabama cave biology. Huntsville Grotto Newsletter 7: 37-41.
- Cooper, J. E., and M. R. Cooper. 1971. Studies of the aquatic ecology of Shelta Cave, Huntsville, Alabama. Association of Southeastern Biologists Bulletin 18: 30.
- Cooper, J. E., and M. R. Cooper. 1977. Comparative activity patterns and movements of Shelta Cave crayfishes. Association of Southeastern Biologists Bulletin 24:44.
- Cooper, J. E., and M. R. Cooper. 1997a. A new species of troglobitic crayfish of the genus *Cambarus* subgenus *Aviticambarus* (Decapoda: Cambaridae), endemic to White Spring Cave, Alabama. Proceedings of the Biological Society of Washington 110:608-616.
- Cooper, J. E., and M. R. Cooper. 1997b. New troglobitic crayfish of the genus *Orconectes* subgenus *Orconectes* (Decapoda: Cambaridae), endemic to Shelta Cave, Huntsville, Alabama. Journal of Cave and Karst Studies 59:119-127.
- Cooper, M. R., and J. E. Cooper. 1976. Growth and longevity in cave crayfishes. Association of Southeastern Biologists Bulletin 23:52.
- Cooper, M. R., and H. H. Jr. Hobbs. 1980. New and little-known crayfishes of the *virilis* section of genus *Orconectes* (Decapoda: Cambaridae) from the Southeastern United States. Smithsonian Contributions to Zoology 320: 1-44.
- Cope, E. D. 1872. On the Wyandotte Cave and its fauna. American Naturalist 6: 406-422.
- Cope, E. D. 1881. *Orconectes hamulatus*. Pages 216-219. In E. D. Cope and A. S. Packard, Jr. The fauna of the Nickajack Cave. American Naturalist 15.

- Cottle, T. J. 1863. On the two species of *Astacus* found in upper Canada. Canadian Journal of Industry, Science, and Arts, new series 45: 216-219.
- Creaser, E. P. 1933. Descriptions of some new and poorly known species of North American crayfishes. Occasional Papers of the Museum of Zoology, University of Michigan 275: 21 pages.
- Dyer, K. L. 1982. Stream Water Quality in the Coal Region of Alabama and Georgia. General Technical Report NE-73, Northeastern Forest Experiment Station. U.S. Department of Agriculture, Forest Service.
- Erichson, W. F. 1846. Uebersicht der arten der gattung *Astacus*. Archiv fur Naturgeschichte (Berlin) 12: 86-103.
- Fabricius, J. C. 1798. *Supplementum entomologiae systematicae*. 572 pages. Hafniae: Proft et Storch.
- Faxon, W. 1884. Descriptions of new species of *Cambarus*, to which is added a synonymical list of the known species of *Cambarus* and *Astacus*. Proceedings of the American Academy of Arts and Sciences 20: 107-158.
- Faxon, W. 1885. A revision of the Astacidae, Part I: The genera *Cambarus* and *Astacus*. Memoirs of the Museum of Comparative Zoology at Harvard College 10: 186 pages.
- Faxon, W. 1890. Notes on North American Astacidae. Proceedings of the United States National Museum 20: 643-694. Proceedings of the United States National Museum 12: 619-634.
- Faxon, W. 1898. Observations on the Astacidae in the United States National Museum and in the Museum of Comparative Zoology, with descriptions of new species. Proceedings of the United States National Museum 20: 643-694.
- Faxon, W. 1914. Notes on the crayfishes in the United States Museum and the Museum of Comparative Zoology with descriptions of new species and subspecies to which is appended a catalogue of the known species and subspecies. Memoirs of the Museum of Comparative Zoology at Harvard College 40: 351-427.
- Fitzpatrick, J. F., Jr. 1977. A new crawfish of the genus *Hobbseus* from northeast Mississippi, with notes on the origin of the genus (Decapoda, Cambaridae). Proceedings of the Biological Society of Washington 90: 367-374.
- Fitzpatrick, J. F., Jr. 1978a. A new burrowing crawfish of the genus *Cambarus* from southwest Alabama (Decapoda, Cambaridae). Proceedings of Biological Society of Washington 91: 748-755.
- Fitzpatrick, J. F., Jr. 1978b. Systematics of the crawfishes of the Hagenianus Group of the

- Genus *Procambarus*, Subgenus *Girardiella* (Decapoda, Cambaridae). *Tulane Studies in Zoology and Botany* 203: 57-97.
- Fitzpatrick, J. F., Jr. 1983. A revision of the dwarf crawfishes (Cambaridae, Cambarellinae). *Journal of Crustacean Biology* 3: 266-277.
- Fitzpatrick, J. F., Jr. 1987a. The subgenera of the crawfish genus *Orconectes* (Decapoda: Cambaridae). *Proceedings of the Biological Society of Washington* 100: 44-74.
- Fitzpatrick, J. F., Jr. 1987b. *Fallicambarus (Creaserinus) burrisi* and *F. (C.) gordonii*, two new burrowing crawfishes associated with pitcher plant bogs in Mississippi and Alabama. *Proceedings of the Biological Society of Washington* 100: 433-446.
- Fitzpatrick, J. F., Jr. 1990a. Decapoda. Pages 77-80 in S. C. Harris, ed. Preliminary considerations on rare and endangered invertebrates in Alabama. *Journal of Alabama Academy of Sciences* 61: 64-92.
- Fitzpatrick, J. F., Jr. 1990b. *Procambarus (Pennides) vioscai paynei*, a new subspecies of crawfish from east of the Mississippi River (Decapoda, Cambaridae). *American Midland Naturalist* 123: 259-267.
- Fitzpatrick, J. F., Jr. 1991. Determination of the current status of the rare crawfish *Cambarus (Lacunicambarus) miltus* Fitzpatrick. Report to U. S. Fish and Wildlife Service, Jackson, Mississippi. 6 pages, 3 Appendices.
- Fitzpatrick, J. F., Jr. 1992. A new crawfish of the genus *Orconectes* from east-central Mississippi and adjacent Alabama (Decapoda: Cambaridae). *Proceedings of the Biological Society of Washington* 105: 780-787.
- Fitzpatrick, J. F., Jr. 1996. The Cahaba River of Alabama: A microcosm of impact studies? *Freshwater Crayfish* 11: 87-98.
- Fitzpatrick, J. F., Jr., and B. A. Laning. 1976. A new dwarf crawfish (Decapoda: Cambaridae: Cambarellinae) from Southwest Alabama and adjacent Mississippi. *Proceedings of the Biological Society of Washington* 89: 137-146.
- Fitzpatrick, J. F., Jr., and J. F. Payne. 1968. A new genus and species of crawfish from the southeastern United States (Decapoda, Astacidae). *Proceedings of the Biological Society of Washington* 81: 373-382.
- Fowler, H. W. 1912. The Crustacea of New Jersey. Pages 29-650. In Annual Report of the New Jersey State Museum for 1911.
- Girard, C. 1852. A revision of the North American Astaci, with observations on their habits and geographical distribution. *Proceedings of the Academy of Natural Sciences of Philadelphia* 6: 87-91.

- Hagen, H. A. 1870. Monograph of the North American Astacidae. Illustrated Catalogue of the Museum of Comparative Zoology No. 3, 109 pages.
- Hall, E. T. Jr. 1959. A New Crayfish of the Genus *Cambarus* from Alabama. Journal of the Tennessee Academy of Sciences 34: 221-225.
- Harris, S. C., R. W. Hanley, K. J. Tennessen, and P. E. O'Neil. 1987. Aquatic Invertebrates in the Warrior Coal Basin of Alabama. Geological Survey of Alabama, Tuscaloosa, 303 pages.
- Hartfield, P. 1991. Status review of the crayfish *Cambarus miltus*. United States Fish and Wildlife, Jackson, MS. Unpublished Circular, 3 pages.
- Hartfield, P. 1992. Status review of the stream crayfish *Procambarus lagniappe*. United States Fish and Wildlife, Jackson, MS. Unpublished Circular, 2 pages.
- Hay, W. P. 1899. Descriptions of two new species of crayfish. Proceedings of the United States National Museum 22: 121-123.
- Hay, W. P. 1902. Observations on the crustacean fauna of Nickajack Cave, Tennessee and vicinity. Proceedings of the United States National Museum 25: 417-439.
- Hobbs, H. H., Jr. 1938. Two new crawfishes from Florida, *Cambarus hubbelli* and *Cambarus acherontis pallidus*. (Abstract) Proceedings of the Florida Academy of Sciences 2: 90-91.
- Hobbs, H. H., Jr. 1941. Three new Florida crayfishes of the subgenus *Cambarus* (Decapoda, Astacidae). American Midland Naturalist 26:110-121.
- Hobbs, H. H., Jr. 1942. The crayfishes of Florida. University of Florida Publications, Biological Science Series 3: 1- 179.
- Hobbs, H. H., Jr. 1945. Two new species of crayfishes of the genus *Cambarellus* from the Gulf Coastal States, with a key to the species of the genus (Decapoda, Astacidae). American Midland Naturalist 34: 466-474.
- Hobbs, H. H., Jr. 1952. A New Crayfish from Alabama, with Notes on *Procambarus lecontei* (Hagen). Proceedings of the United States National Museum 102: 209-219.
- Hobbs, H. H., Jr. 1953. A new crayfish of the genus *Procambarus* from Alabama and Florida. Proceedings of the Biological Society of Washington 66: 173-178.
- Hobbs, H. H., Jr. 1966. A New Crayfish from Alabama with Observations on the *Cristatus* Section of the Genus *Cambarus* (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 79: 109-116.

- Hobbs, H. H., Jr. 1967. A new crayfish from Alabama caves with notes on the origin of the genera *Orconectes* and *Cambarus*. Proceedings of the U.S. National Museum 123: 1-17.
- Hobbs, H. H., Jr. 1968a. Two new crayfishes of the genus *Cambarus* from Georgia, Kentucky, and Tennessee (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 81: 261-274.
- Hobbs, H. H., Jr. 1968b. Crustacea: Malacostraca. In F. K. Parrish, Keys to Water Quality Indicative Organisms (Southeastern United States). Federal Water Pollution Control Administration, Department of Interior. Washington, D.C..
- Hobbs, H. H., Jr. 1969. On the distribution and phylogeny of the crayfish genus *Cambarus*. Pages 92-178. In P. C. Holt, R. L. Hoffman, and C.W. Hart, Jr., The Distributional History of the Biota of the Southern Appalachians, Part I: Invertebrates. Virginia Polytechnic Institute, Research Division Monograph, 1.
- Hobbs, H. H., Jr. 1971. New crayfishes of the genus *Procambarus* from Alabama and Texas (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 84: 81-94.
- Hobbs, H. H., Jr. 1972a. The subgenera of the crayfish genus *Procambarus* (Decapoda: Astacidae). Smithsonian Contributions to Zoology 117: 1-22.
- Hobbs, H. H., Jr. 1972b. Crayfishes (Astacidae) of North and Middle America, Identification Manual 9, 173 pages. In Biota of Freshwater Ecosystems. U. S. Environmental Protection Agency. Water Pollution Research Contributions Series.
- Hobbs, H. H., Jr. 1973. New species and relationships of the members of the genus *Fallicambarus*. Proceedings of the Biological Society of Washington 86: 461-481.
- Hobbs, H. H., Jr. 1974. A checklist of the North and Middle American crayfishes (Decapoda: Astacidae and Cambaridae). Smithsonian Contributions to Zoology. 166: 1-294.
- Hobbs, H. H., Jr. 1975. New crayfishes (Decapoda: Cambaridae) from the southern United States and Mexico. Smithsonian Contributions to Zoology. 201: 1-34.
- Hobbs, H. H., Jr. 1981. The crayfishes of Georgia. Smithsonian Contributions to Zoology. 318: 1-549.
- Hobbs, H. H. Jr. 1984. On the distribution of the crayfish genus *Procambarus* (Decapoda: Cambaridae). Journal of Crustacean Biology 4:12-24.
- Hobbs, H. H., Jr. 1989. An illustrated checklist of the American crayfishes (Decapoda: Astacidae, Cambaridae, and Parastacidae). Smithsonian Contributions to Zoology. 480: 1-236.
- Hobbs, H. H., Jr., and T. C. Barr. 1960. The origins and affinities of the troglobitic crayfishes of

- North America (Decapoda, Astacidae). I. The genus *Cambarus*. American Midland Naturalist 64: 12-33.
- Hobbs, H.H., Jr., and T. C. Barr. 1972. The origins and affinities of the troglobitic crayfishes of North America (Decapoda, Astacidae), II: Genus *Orconectes*. Smithsonian Contributions to Zoology. 105: 1-84.
- Hobbs, H. H., Jr., and E. T. Hall, Jr. 1969. New crayfishes from Georgia (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 82: 281-294.
- Hobbs, H. H., Jr., and E. T. Hall, Jr. 1972. A new crayfish from the Tallapoosa River in Georgia (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 85: 151-161.
- Hobbs, H. H., Jr., and C. W., Hart, Jr.. 1959. The freshwater decapod crustaceans of the Apalachicola Drainage System in Florida, southern Alabama and Georgia. Bulletin of the Florida State Museum 4: 145-191.
- Hobbs, H. H., Jr., and H. H. Hobbs, III. 1990. A new crayfish (Decapoda: Cambaridae) from southeastern Texas. Proceedings of the Biological Society of Washington 103: 608-613.
- Hobbs, H. H., Jr., H. H. Hobbs, III, and M. A. Daniel. 1977. A review of the troglobitic decapod crustaceans of the Americas. Smithsonian Contributions to Zoology No. 244, 1-183.
- Hobbs, H. H., Jr., and M. Walton. 1957. Three new crayfishes from Alabama and Mississippi. Tulane Studies in Zoology 5: 39-52.
- Hobbs, H. H., Jr., and M. Walton. 1959. A new crayfish of the genus *Procambarus* from Alabama (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 72: 39-44.
- Hobbs, H. H., Jr., and M. Walton. 1960. A new crayfish of the genus *Procambarus* from southern Alabama (Decapoda, Astacidae). Proceedings of the Biological Society of Washington 73: 123-130.
- Hobbs, H. H., III. 1992. Caves and springs. Pages 59-131. In C. T. Hackney, S. M. Adams, and W. A. Martin eds. Biodiversity of the southeastern United States: Aquatic Communities. John Wiley & Sons, Inc., New York.
- Hobbs, H. H., III and F. M. Bagley. 1989. Shelta Cave management plan. Biology Subcommittee of the Shelta Cave Management Committee, open file report: 78 pages.
- Jezerinac, R. F. 1993. A new subgenus and new species of crayfish (Decapoda: Cambaridae) of the genus *Cambarus*, with an amended description of the subgenus *Lacunecambarus*. Proceedings of the Biological Society of Washington 106: 532-544.

- Laguarda, A. 1961. Contribucion al studio comparative de la formula branquial en la familia Astacidae (Crustacea: Decapoda). 74 pages. Facultad de Ciencias, Departamento de Biologia, Universidad Nacional Autonoma de Mexico.
- LeConte, J. 1856. Descriptions of new species of *Astacus* from Georgia. Proceedings of the Academy of Natural Sciences of Philadelphia 7: 400-402.
- Lyle, C. 1938. Crawfishes of Mississippi, with special reference to the biology and control of destructive species. Iowa State College Journal of Science 13: 75-77.
- McGregor, S. W., P. E. O'Neil, K. F. Rheams, P. H. Moser, and R. Blackwood. 1997. Biological, geological and hydrological investigations in Bobcat, Matthews, and Shelta caves and other selected caves in north Alabama. Environmental Geology Division Bulletin 166: 1-198.
- McGregor, S. W., T. E. Shepard, T. D. Richardson, and J. F. Fitzpatrick, Jr. 1999. A survey of the primary tributaries of the Alabama and Lower Tombigbee rivers for freshwater mussels, snails and crayfish. Geological Survey of Alabama Circular 196: 1-29.
- Moser, P. H. and K. F. Rheams. 1992. Hydrological investigations of Shelta and Bobcat caves and adjoining areas, Madison County, Alabama. Geological Survey of Alabama, open-file report, Tuscaloosa.
- Ortmann, A.E. 1905. The mutual affinities of the species of the Genus *Cambarus*, and their dispersal over the United States. Proceedings of the American Philosophical Society 44: 435-442.
- Ortmann, A. E. 1931. Crawfishes of the southern Appalachians and the Cumberland Plateau. Annals of the Carnegie Museum 20: 61-160.
- Penn, G. H., and G. Marlow. 1959. The genus *Cambarus* in Louisiana. American Midland Naturalist 61: 191-203.
- Ratcliffe, J. A., and D. R. DeVries. 2004. The crayfishes (Crustacea: Decapoda) of the Tallapoosa River drainage, Alabama. Southeastern Naturalist 3: 417-430.
- Rheams, K. F., P. H. Moser, and S. W. McGregor. 1992. Geologic, hydrologic, and biologic investigations in Arrowwood, Bobcat, Matthews, and Shelta caves and selected caves, Madison County, Alabama. Geological Survey of Alabama, open-file report, Tuscaloosa.
- Rheams, K. F., P. H. Moser, and S. W. McGregor. 1994. Hydrogeologic and biologic factors related to the occurrence of the Alabama cave shrimp (*Palaemonias alabamae*), Madison County, Alabama. Environmental Geology Division Bulletin 161: 1-147.
- Rhoades, R. 1941. Notes on some crayfishes from Alabama caves with the description of a new

- species and a new subspecies. Proceedings of the U.S. National Museum 91: 141-148.
- Rhoades, R. 1944. The crayfishes of Kentucky, with notes on variation, distribution and descriptions of new species and subspecies. American Midland Naturalist 31: 111-149.
- Taylor, C. A. 2000. Systematic studies of the *Orconectes juvenilis* complex (Decapoda: Cambaridae), with descriptions of two new species. Journal of Crustacean Biology 20: 132-152.
- Taylor, C. A., and G. A. Schuster. 2004. The crayfishes of Kentucky. Illinois Natural History Survey. Special Publication No. 28: 1-219.
- Taylor, C. A., M. L. Warren, Jr., J. F. Fitzpatrick, Jr., H. H. Hobbs, III, R. F. Jezerinac, W. L. Pflieger, and H. W. Robison. 1996. Conservation status of crayfishes of the United States and Canada. Fisheries 21: 25-38.
- Walls, J. G. 1972. Three new crawfishes related to *Orconectes difficilis* (Faxon) (Decapoda: Astacidae). Proceedings of the Biological Society of Washington 84: 449-458.
- Williams, A. B. 1989. Common and scientific names of aquatic invertebrates from the United States and Canada: Decapod Crustaceans. American Fisheries Society Special Publication No. 17: 1-77.
- Yarbrough, J. E. 1973. An ecological and taxonomic survey of the crayfish of the Tallapoosa and Chattahoochee River drainages in Lee County, Alabama. Unpublished M.S. Thesis, Auburn University: 1-96.

Tables

Table 1. Crayfish species and subspecies with descriptions based on Alabama specimens and their corresponding reference.

Species	Reference
<i>Cambarellus diminutus</i>	Hobbs 1954
<i>C. lesliei</i>	Fitzpatrick and Laning 1942
<i>Cambarus acanthura</i>	Hobbs 1981
<i>C. cracens</i>	Bouchard and Hobbs 1976
<i>C. girardianus</i>	Faxon 1884
<i>C. jonesi</i>	Hobbs and Barr 1960
<i>C. miltus</i>	Fitzpatrick 1978
<i>C. obstipus</i>	Hall 1959
<i>C. scotti</i>	Hobbs 1981
<i>C. veitchorum</i>	Cooper and Cooper 1997a
<i>Hobbseus prominens</i>	Hobbs 1966
<i>Orconectes alabamensis</i>	Faxon 1884
<i>O. australis australis</i>	Rhoades 1941
<i>O. compressus</i>	Faxon 1884
<i>O. cooperi</i>	Cooper and Hobbs 1980
<i>O. forceps</i>	Faxon 1884
<i>O. holti</i>	Cooper and Hobbs 1980
<i>O. jonesi</i>	Fitzpatrick 1992
<i>O. perfectus</i>	Walls 1972
<i>O. sheltae</i>	Cooper and Cooper 1997b
<i>O. validus</i>	Faxon 1914
<i>Procambarus capillatus</i>	Hobbs 1971
<i>P. evermanni</i>	Faxon 1890
<i>P. hybus</i>	Hobbs and Walton 1959
<i>P. lecontei</i>	Hagen 1870
<i>P. lewisi</i>	Hobbs and Walton 1959
<i>P. lophotus</i>	Hobbs and Walton 1960
<i>P. marthae</i>	Hobbs 1975
<i>P. pecki</i>	Hobbs 1967
<i>P. suttkusi</i>	Hobbs 1953
<i>P. verrucosus</i>	Hobbs 1952
<i>P. versutus</i>	Hagen 1870
<i>P. vioscai paynei</i>	Fitzpatrick 1990

Table 2. Preliminary checklist of the crayfishes (Cambaridae) of Alabama

Subfamily **Cambarellinae** Laguarda 1961

Genus ***Cambarellus*** Ortmann 1905

Subgenus ***Dirigicambarus*** Fitzpatrick 1983

Cambarellus (D.) shufeldtii (Faxon 1884)

Subgenus ***Pandicambarus*** Fitzpatrick 1983

Cambarellus (P.) diminutus Hobbs 1945

Cambarellus (P.) lesliei Fitzpatrick and Laning 1976

Subfamily **Cambarinae** Hobbs 1942

Genus ***Cambarus*** Erichson 1846

Subgenus ***Aviticambarus*** Hobbs 1969

Cambarus (A.) hamulatus (Cope 1881)

Cambarus (A.) jonesi Hobbs and Barr 1960

Cambarus (A.) veitchorum Cooper and Cooper 1997

Subgenus ***Cambarus*** Erichson 1846

Cambarus (C.) bartonii cavatus Hay 1902

Cambarus (C.) howardi Hobbs and Hall 1969

Subgenus ***Depressicambarus*** Hobbs 1969

Cambarus (D.) englishi Hobbs and Hall 1972

Cambarus (D.) graysoni Faxon 1914

Cambarus (D.) halli Hobbs 1968

Cambarus (D.) latimanus LeConte 1856

Cambarus (D.) obstipus Hall 1959

Cambarus (D.) striatus Hay 1902

Subgenus ***Erebicambarus*** Hobbs 1969

Cambarus (E.) rusticiformis Rhoades 1944

Cambarus (E.) tenebrosus Hay 1902

Subgenus ***Exilicambarus*** Bouchard and Hobbs 1976

Cambarus (E.) cracens Bouchard and Hobbs 1976

Subgenus ***Hiaticambarus*** Hobbs 1969

Cambarus (H.) girardianus Faxon 1884

Cambarus (H.) longirostris Faxon 1885

Cambarus (H.) manningi Hobbs 1981

Subgenus ***Jugicambarus*** Hobbs 1969

Cambarus (J.) distans Rhoades 1944

Cambarus (J.) unestami Hobbs and Hall 1969

Subgenus ***Lacunicambarus*** Hobbs 1969

Cambarus (L.) diogenes Girard 1852

Cambarus (L.) ludovicianus Faxon 1884

Cambarus (L.) miltus Fitzpatrick 1978

Subgenus ***Puncticambarus*** Hobbs 1969

Cambarus (P.) coosae Hobbs 1981

Cambarus (P.) scotti Hobbs 1981

- Subgenus ***Tubericambarus*** Jezerinac 1993
Cambarus (T.) acanthura Hobbs 1981
Cambarus (T.) sp. A
- Genus ***Fallicambarus*** Hobbs 1969
 Subgenus ***Creaserinus*** Hobbs 1973
Fallicambarus (C.) burrisi Fitzpatrick 1987
Fallicambarus (C.) byersi (Hobbs 1941)
Fallicambarus (C.) danielae Hobbs 1975
Fallicambarus (C.) fodiens (Cottle 1863)
Fallicambarus (C.) oryktes (Penn and Marlow 1959)
- Genus ***Faxonella*** Creaser 1933
Faxonella clypeata (Hay 1899)
- Genus ***Hobbseus*** Fitzpatrick and Payne 1968
Hobbseus prominens (Hobbs 1966)
- Genus ***Orconectes*** Cope 1872
 Subgenus ***Crockerinus*** Fitzpatrick 1987
Orconectes (C.) erichsonianus (Faxon 1898)
- Subgenus ***Gremicambarus*** Fitzpatrick 1987
Orconectes (G.) compressus (Faxon 1884)
- Subgenus ***Hespericambarus*** Fitzpatrick 1987
Orconectes (H.) perfectus Walls 1972
- Subgenus ***Orconectes*** Cope 1872
Orconectes (O.) australis australis (Rhoades 1941)
Orconectes (O.) sheltae Cooper and Cooper 1997
- Subgenus ***Procericambarus*** Fitzpatrick 1987
Orconectes (P.) forceps (Faxon 1884)
Orconectes (P.) mirus (Ortmann 1931)
Orconectes (P.) placidus (Hagen 1870)
Orconectes (P.) putnami (Faxon 1884)
Orconectes (P.) spinosus (Bundy 1877)
- Subgenus ***Tragulicambarus*** Fitzpatrick 1987
Orconectes (T.) lancifer (Hagen 1870)
- Subgenus ***Trisellecens*** Bouchard and Bouchard 1995
Orconectes (T.) alabamensis (Faxon 1884)
Orconectes (T.) chickasawae Cooper and Hobbs 1980
Orconectes (T.) cooperi Cooper and Hobbs 1980
Orconectes (T.) holti Cooper and Hobbs 1980
Orconectes (T.) jonesi Fitzpatrick 1992
Orconectes (T.) mississippiensis (Faxon 1884)
Orconectes (T.) validus (Faxon 1914)
- Genus ***Procambarus*** Ortmann 1905
 Subgenus ***Girardiella*** Lyle 1938
Procambarus (G.) hagenianus hagenianus (Faxon 1884)
- Subgenus ***Leonticambarus*** Hobbs 1972
Procambarus (L.) capillatus Hobbs 1971
Procambarus (L.) escambiensis Hobbs 1942

- Procambarus (L.) hubbelli* (Hobbs 1939)
Procambarus (L.) shermani Hobbs 1942
- Subgenus ***Ortmannicus*** Fowler 1912
- Procambarus (O.) acutissimus* (Girard 1852)
Procambarus (O.) acutus acutus (Girard 1852)
Procambarus (O.) bivittatus Hobbs 1942
Procambarus (O.) evermanni (Faxon 1890)
Procambarus (O.) hayi (Faxon 1884)
Procambarus (O.) hybus Hobbs and Walton 1957
Procambarus (O.) lecontei (Hagen 1870)
Procambarus (O.) lewisi Hobbs and Walton 1959
Procambarus (O.) lophotus Hobbs and Walton 1960
Procambarus (O.) marthae Hobbs 1975
Procambarus (O.) verrucosus Hobbs 1952
Procambarus (O.) viaeviridis (Faxon 1914)
Procambarus (O.) zonangulus Hobbs and Hobbs 1990
- Subgenus ***Pennides*** Hobbs 1972
- Procambarus (P.) clemmeri* Hobbs 1975
Procambarus (P.) lagniappe Black 1968
Procambarus (P.) spiculifer (LeConte 1856)
Procambarus (P.) suttkusi Hobbs 1953
Procambarus (P.) versutus (Hagen 1870)
Procambarus (P.) vioscai paynei Fitzpatrick 1990
- Subgenus ***Remoticambarus*** Hobbs 1972
- Procambarus (R.) pecki* Hobbs 1967
- Subgenus ***Scapulicambarus*** Hobbs 1972
- Procambarus (S.) clarkii* (Girard 1852)
Procambarus (S.) okaloosae Hobbs 1942
Procambarus (S.) paeninsulanus (Faxon 1914)
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Table 3. Crayfish taxa that have questionable occurrence in the state of Alabama.

***Cambarellus (P.) schmitti* Hobbs 1942** – A single USNM database record from Marengo County. Identified by Hobbs. Probably a misidentification of *Cambarellus lesliei*. Not reported from Alabama by Taylor et al. 1996.

***Cambarus (D.) sphenoides* Hobbs 1968** – A single USNM database record from the Tennessee River system, Madison County. One INHS record from Coosa River system, Shelby County. Not reported from Alabama by Taylor et al. 1996.

***Cambarus (H.) speciosus* Hobbs 1981** – A single record from the University of Alabama database from the upper Coosa River system in Alabama, identified by J. Fitzpatrick. Not reported from Alabama by Taylor et al. 1996.

***Cambarus (J.) parvovculus* Hobbs and Shoup 1947** – A single USNM record from Dade County. Not reported from Alabama by Taylor et al. 1996.

***Orconectes (G.) virilis* Hagen 1870** – Reported by Taylor et al. 1996 as a suspected introduction. However, reports of this species in Alabama are probably due to misidentification of *O. trisellezensis* species.

***Orconectes (T.) immunis* (Hagen 1979)** – Reported by Taylor et al. 1996 from Alabama. However, reports of this species in Alabama are probably due to misidentification of other *O. trisellezensis* species.

***Orconectes (T.) rhoadesi* Hobbs 1949** – Several USNM database records from Alabama; probably misidentification of other species of *O. trisellezensis*. Not reported from Alabama by Taylor et al. 1996.

***Procambarus (G.) hagenianus vesticeps* Fitzpatrick 1977** - Fitzpatrick (1978b) lists the range of this subspecies as being north of Tibbie Creek in the Tombigbee River system in Chickasaw, Clay, Monroe, and Pontotoc counties, Mississippi. The National Museum of Natural History indicates 14 paratypes of this subspecies from Carrolton, Pickens County, Alabama. This apparently is in error, but needs to be verified. Not reported from Alabama by Taylor et al. 1996.
