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TYPE CATALOGUE OF THE NORTH AMERICAN
CYPRINID FISH GENUS *NOTROPIS*

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TYPE CATALOGUE OF THE NORTH AMERICAN CYPRINID FISH GENUS *NOTROPIS*

CARTER R. GILBERT¹

SYNOPSIS: A type catalogue is presented for the North American cyprinid fish genus *Notropis*. This genus, as presently constituted, is the largest of any group of North American fishes, comprising 131 valid described species and subspecies (119 and 12, respectively, of which one of the species is a fossil), and at least a dozen forms that are still undescribed. In addition, seven described species presently included in the genus *Hybopsis* may ultimately be transferred to *Notropis*. A total of 304 different names are available for the 138 valid described forms.

All nominal forms are listed alphabetically by species or subspecies name. The following data appear under each separate heading: (1) original genus and species combination, together with describer and year of description; (2) abbreviated citation of original description; (3) type locality; (4) catalogue number(s) of holotype, lectotype, neotype, or syntypes, together with numbers of specimens, range in standard length in mm, and name of collector and date of collection, if known; (5) catalogue number(s) of paratypes, number of specimens in each series, and an indication of which are paratopotypes; (6) remarks concerning the type (counts and condition), nomenclatural history of the taxon, and definitive references; (7) exact date of original description if known, or, if not known, the most accurate date determinable; and (8) present status of the taxon.

In addition to the above list, the following supplementary lists are included: (1) a generic synonymy; (2) presently recognized species of *Notropis*, with their included subspecies (if any) and junior and senior synonyms (if any); (3) species presently referred to the genus *Hybopsis*, but whose affinities are with *Notropis* and in which genus they may eventually be placed; (4) nominal species of *Notropis* that are based on hybrids, one or both parents of which belong to that genus; (5) nominal species of *Notropis* that are based on hybrids, both parents of which belong to other genera; (6) *nomina nuda* with their identifications; and (7) species that were originally described in *Notropis*, but which are now referred to another genus. Also, the genus is defined and a brief discussion of the nomenclatural history of the group is presented, which includes a comparison of the numbers of forms described during each decade.

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INTRODUCTION

In any systematic study, considerable time and effort is expended in locating and examining type material and in determining to which species the many nominal forms refer. This task can be greatly alleviated by previously published compilations of type material. Such catalogues exist, in published form, for only five major North American fish collections: the Field Museum of Natural History (Grey 1947), the Illinois Natural History Survey (Smith and Bridges 1960), the National Museum of Canada (McAllister 1965), Tulane University (Suttkus 1970), and the Florida State Museum (Gilbert 1974). In addition, Henn (1928) and Böhlke (1953) published fish-type catalogues for the Carnegie Museum and Stanford University, respectively. The Carnegie Museum's fish collection was sold to the Field Museum of Natural History in June, 1951 (Loren P. Woods, *in litt.*), and the Stanford University holdings were recently incorporated into the collection of the California Academy of Sciences; Henn's and Böhlke's papers thus become partial catalogues for the Field Museum and California Academy collections. Of equal value are type catalogues dealing with specific groups of fishes, which draw together such information as primary synonymies for the different species, extant type material and its disposition, composition of syntypic series, and pertinent information on the types themselves. So far, the only compilation of this kind for any group of North American fishes (freshwater or marine) is that by Collette and Knapp (1967) for the darters (family Percidae). In no other group of North American freshwater fishes is the need for such a catalogue more acute than for the Cyprinidae. Many species in this family, particularly those of the eastern genus *Notropis*, are very similar morphologically, and this, together with the large number of taxa, has resulted in considerable confusion regarding the identity of many nominal forms. Several species have been described as new a number of times. For example, two of the most common and widespread species, *Notropis cornutus* (Mitchill 1817) and *Notropis lutrensis* (Baird and Girard 1853), have totals of 14 and 25 junior synonyms, respectively, although at least four of the latter are considered to be valid subspecies (Contreras 1975). Over 625 specific and subspecific names exist for the nearly 300 valid described forms of North American Cyprinidae (another 20 to 25 forms re-

main to be described), of which 295 apply to the 131 valid described species and subspecies presently included in the genus *Notropis*. Further complicating the picture is the fact that many North American cyprinids are known to hybridize, and some of these hybrid combinations have been described as new species.

The present catalogue of the cyprinid genus *Notropis* was compiled in order to answer some of the above needs. Hopefully, this will stimulate the publication of other such catalogues, so that eventually all genera of North American Cyprinidae, and perhaps other families as well, will be so treated. With few exceptions the type of information presented is identical to that given by Collette and Knapp (1967) for the Percidae. I have attempted to examine, or at least to verify, the location of extant type material (holotypes, lectotypes, neotypes, syntypes, lectoparatypes, and paratypes) of all nominal forms of *Notropis*, but some lots have doubtless escaped detection, either because of inadequate labeling or because the series were misplaced on the shelves (i.e. mixed with nontype material). For inadequately labeled lots, value judgments must necessarily be made as to whether or not the specimens should be considered types, this based on agreement of data on the label and/or elsewhere in the jar with that included in the original description. As might be anticipated, problems of this sort occur most frequently in the older collections, with the United States National Museum of Natural History being particularly prominent in this regard.

Listing of all nominal forms is done alphabetically by species or subspecies name. This arrangement, which is somewhat different from that of Collette and Knapp (1967), was done to facilitate the finding of species names in the catalogue. The following data appear under each separate heading: (1) original genus and species combination, together with describer and year of description; (2) abbreviated citation of original description; (3) type locality; (4) catalogue number(s) of holotype, lectotype, neotype, or syntypes, together with numbers of specimens, range in standard length in mm, and name of collector and date of collection, if known; (5) catalogue number(s) of paratypes, number of specimens in each series, and an indication of which are paratopotypes; (6) remarks concerning the types (counts and condition), nomenclatural history of the taxon and definitive references; (7) exact date of original description if known, or, if not known, the most accurate date determinable; and (8) present status of the taxon.

In addition to the above list, the following supplementary lists are included: (1) a generic synonymy; (2) presently recognized species of *Notropis*, with their included subspecies (if any) and junior and senior synonyms (if any); (3) species presently referred to the genus *Hybopsis*, but whose affinities are with *Notropis* and in which genus they may eventually be placed; (4) nominal species of *Notropis* that are based on hybrids, one or both parents of which belong to that genus; (5) nominal species of *Notropis* that are based on hybrids,

both parents of which belong to other genera; (6) *nomina nuda*, with their identifications; and (7) species that were originally described in *Notropis*, but which are now referred to other genera. Also, the genus is defined and a brief discussion of the nomenclatural history of the group is presented, which includes a comparison of the numbers of forms described during each decade.

The generic synonymy includes 31 names. Each is accompanied by the describer and date, the type species and its present identification, the method by which the type species was designated, and the reference source. If the name is that of a presently recognized subgenus of *Notropis*, or if it is clearly a junior synonym of one of these accepted groups, this is also indicated. One subgenus listed here (*Codoma*) recently has been elevated tentatively to a full genus (Miller 1976:12). The status of *Opsopoeodus*, which Gilbert and Bailey (1972) downgraded to a subgenus of *Notropis*, was questioned by Campos and Hubbs (1973) after they discovered a reduced chromosome number (48 vs 50, pairs) in the species *emiliae*. Retention here of *Codoma* and *Opsopoeodus* as subgenera of *Notropis* does not necessarily imply disagreement with Miller or with Campos and Hubbs. Rather, this course is being followed because these taxa and their included species have been associated with *Notropis* so recently, and omitting them from the catalogue would cause the reader inconvenience and possible confusion. The genus *Hybopsis* (together with its junior synonym, *Erinemus*), which may be included in the synonymy of *Notropis* in the future, is listed separately following the generic synonymy of *Notropis*. This is to prevent possible misinterpretation that it is being so synonymized here. Such an action would be premature, inasmuch as the taxonomic relationships of some species presently placed in *Hybopsis* have not yet been completely resolved, and nomenclatural complications would result.

In the list of presently recognized species of *Notropis*, valid subspecies are included in subheadings under the species name, together with their respective synonyms. In this list, currently accepted taxonomic decisions (based on the 1970 American Fisheries Society checklist) are followed in nearly all cases, except in those situations where recent work clearly indicates that changes are in order. The taxonomic status of the Mexican forms not included in the AFS checklist has been determined from consultation with Drs. Robert R. Miller, University of Michigan, and Salvador Contreras, Universidad Autónoma de Nuevo Leon (see also Contreras 1975; Miller 1976). It has been necessary in several cases to make arbitrary decisions regarding subspecies, some of which are not recognized even though they have never been formally synonymized. Similarly, several taxa are here recognized as full species, despite recent papers in which they are not so treated.

In the above lists, those museums or institutions referred to are indicated by letter designations as follows: AMNH (American Museum of Natural History); ANSP (Academy of Natural Sciences of Philadelphia); ASU (Arizona State University); BCF (United States Bureau of Commercial Fisheries);

BMNH (British Museum [Natural History]); BU (Baylor University); CAS or CAS-SU (California Academy of Sciences and combined California Academy of Sciences/Stanford University); CU (Cornell University); FMNH (Field Museum of Natural History [formerly Chicago Natural History Museum]); FSU (Florida State University); INHS (Illinois Natural History Survey); IPN (Instituto Politecnico Nacional [Escuela Nacional de Ciencias Biológicas de Mexico]); IU (University of Indiana); KU (University of Kansas); MCZ (Museum of Comparative Zoology [Harvard University]); MNHN (Museum National d'Histoire Naturelle [France]); NCSM (North Carolina State Museum); NMC (National Museum of Canada [formerly Victoria Memorial Museum]); OAM (Oklahoma State University [formerly Oklahoma A&M University]); OSM (Ohio State Museum); TNHC (Texas Natural History Collection [University of Texas]); TU (Tulane University); UAIC (University of Alabama Ichthyological Collection); UANL (Universidad Autónoma de Nuevo León [Facultad de Ciencias Biológicas]); UF (University of Florida [Florida State Museum]); UMMZ (University of Michigan, Museum of Zoology); UNAM (Universidad Nacional Autónoma de México [Instituto de Biología]); UOMZ (University of Oklahoma, Museum of Zoology); USFC (United States Fish Commission); and USNM (United States National Museum [now National Museum of Natural History]).

All original descriptions were consulted to determine whether certain series comprised type material, inasmuch as syntypes and paratypes occasionally are not so labelled, either on the jars or in the museum catalogue. In many original descriptions, and occasionally in relatively recent ones, the number and disposition of syntypes or paratypes is not clearly indicated. Undoubtedly the biggest problem in this regard pertains to the types, as well as the type localities, for the many species Charles Girard described in the late 1850's (118 new cyprinids appeared in his 1857 paper alone). Most of these fishes were collected during the various United States Government Railroad and Mexican boundary surveys of a few years earlier, and the conditions under which the specimens were obtained, together with frequent inadequate labeling of the material, have sometimes made it difficult to pinpoint type localities. (This is discussed further below).

Further compounding the problem is the fact that the number of extant syntypes of a species is occasionally greater, and frequently less, than the number listed by Girard (1858, 1859a). I cannot account for the former situation, but the latter undoubtedly results from the fact that most of Girard's syntypic series were later broken up into smaller lots and sent on exchange to other institutions. (This statement, as well as others to follow in this paragraph, are generally true of most of the older type series initially housed at the USNM). Those sent to such places as the Academy of Natural Sciences of Philadelphia and the Museum of Comparative Zoology present no problems, inasmuch as this material is still extant and readily available. Much material, however,

cannot be accounted for. Some may have gone to Indiana University, where it was subsequently destroyed by fire in 1883. Apparently Barton A. Bean, then Curator of the United States National Museum fish collection, distributed many USNM types indiscriminately to various individuals and institutions between 1892 and 1932. Many of these lots were never returned. Some may also have been lost at the National Museum because of poor curatorial procedures. Whatever the reasons, most of Girard's species are represented by fewer type specimens than were originally present, and in some cases by none at all. Unfortunately, those forms for which type material is no longer extant often cannot be positively identified, as Girard's descriptions are generally quite vague and could refer to any one of several species.

Type localities are defined as accurately as possible. As might be expected, there is usually an inverse correlation between age of the species' description and geographical preciseness of the type locality. Sometimes locality data are included that did not appear in the original description, and may involve name changes for existing places or new names for places or political units that did not exist at the time of description; this is especially true of localities for species collected during the above-mentioned Railroad and Mexican boundary surveys. Fortunately, accurate day-by-day accounts were usually kept for those expeditions, and these, together with maps of the survey routes, were later published. Reference to these often permits one to pinpoint type localities for many species, as well as dates of collection. One result of this, not entirely unexpected, has been the discovery that a number of previously recognized type localities are erroneous, sometimes so markedly as to warrant nomenclatural reconsiderations in some cases.

For those species now regarded as junior synonyms, or which have been so regarded at some time in the past, I have attempted to determine the reference in which the taxon was first synonymized. These are probably not accurate in every case, as some taxa were synonymized in rather obscure papers or in papers where this would not normally be expected. Any corrections noted by the reader are hereby solicited.

I personally have examined over 90 percent of the type lots included in the present catalogue. This includes the pharyngeal teeth of a number of the United States National Museum types, which are stored separately in the osteological collection, and in some cases are the only part of a type series still remaining. Those collections with comparatively large holdings that were not examined include the Field Museum of Natural History, the University of Kansas, the British Museum (Natural History), and the Museum National d'Histoire Naturelle (France). Those collections with smaller holdings of types that were not examined include the American Museum of Natural History, Natural Museum of Canada, Ohio State Museum, Illinois Natural History Survey, University of Oklahoma, Oklahoma State University, Texas Natural History Collection, Arizona State University, Universidad Autonoma de

Nuevo Leon, Instituto Politecnico Nacional, and the Universidad Nacional Autonoma de Mexico.

Information on types in the Field Museum collection appears in Grey (1947). Additional information on the Field Museum holdings was obtained from Loren P. Woods and Robert Karl Johnson (*in litt*). Information on the *Notropis* types in the two European museums was obtained through the courtesy of James Chambers (BMNH) and Marie-Louise Bauchot (MNHN). William F. Smith-Vaniz, Academy of Natural Sciences of Philadelphia; Royal D. Suttkus, Tulane University; and Carl L. Hubbs, Scripps Institution of Oceanography, also generously supplied me with data on BMNH *Notropis* types; and Robert E. Jenkins, Virginia Commonwealth University, provided information on certain *Hybopsis* types. William I. Follett, California Academy of Sciences, and C. Richard Robins, University of Miami, have been extremely helpful in resolving several complicated nomenclatural problems. I also would like to thank Helen Hauck, Cleveland Public Library, for information pertaining to publication of J. P. Kirtland's (1854) paper in the Cleveland Annals of Science.

Many individuals have answered questions that have subsequently arisen regarding types housed at institutions I had visited earlier, and the patience and cooperation of the following people is gratefully acknowledged: William Ralph Taylor, James Frank McKinney, and Susan Karnella, National Museum of Natural History; Myvanwy M. Dick, Museum of Comparative Zoology; Robert Rush Miller, University of Michigan; Pearl M. Sonoda, California Academy of Sciences; and William G. Saul and Eugenia B. Böhlke, Academy of Natural Sciences of Philadelphia. I particularly wish to thank Eugenia Böhlke, inasmuch as she has called my attention to several situations that, had they not been noticed, would have resulted in some serious errors in the catalogue.

Considerable attention has been devoted to verifying publication dates, or, to be more precise, mailing dates, as this actually determines time of publication (Mayr, Linsley, and Usinger 1953:222). For most recent papers this presents no problem, inasmuch as journals now regularly include such information, either in each individual number or in the final number of a volume. For older papers, however, this often is not the case. Fortunately, several publications exist that provide this sort of information for some of the major museums (Nolan 1913, Sherborn 1934, True *et al.* 1946), for the various early United States government fisheries publications (MacDonald 1921), or for certain individuals such as Cope (Osborn 1931) and Jordan (Hays 1952). Books pose a particularly difficult problem, as their exact date of publication is rarely indicated, even today. When the mailing date for a book or journal number is not known, the date of publication has been determined according to Article 21 of the International Code of Zoological Nomenclature (1961), which says that in the absence of a specified publication date, the earliest

date of receipt is considered to constitute date of publication (Article 21f); many of the early publication dates for numbers of the several journals of the Academy of Natural Sciences of Philadelphia were determined in this way (Nolan 1913). Some taxa are listed in the present catalogue as having been described on "(31 December)" of a particular year. According to Article 21b(ii) this date is to be used in all cases in which the day or month of publication cannot be determined. In cases where the month, but not the day, of publication is known, the last day of that month is the one automatically designated [Article 21b(i)], as for example "(30) November 1931." It has been customary for many years for libraries to stamp the date of receipt on or inside the covers of journals and books as they are received, and it is quite likely that in some cases earlier description dates will ultimately be found than are indicated here. Hopefully readers will inform me of such cases as they are discovered.

Although space does not permit discussion of every example involving confused or obscure publication dates, several are of sufficient importance of interest to merit comment. One of the most complex situations, which involves several of Edward D. Cope's publications appearing in the 1860's, has been discussed previously (Gilbert 1971a). Although I said nothing in that paper about the type specimens of those species Cope originally described in Günther's (1868) catalogue, questions have since been raised as to (a) whether only those specimens actually listed in the original description (i.e. those in the British Museum) should be considered types, or whether the types should also include the remainder of the series retained by Cope; and (b) whether the type localities should be limited to those specifically mentioned in the original description, if part of Cope's material was from other localities. I have consulted with both William I. Follett and C. Richard Robins on these matters, and their advice and opinions have been extremely helpful in resolving the problem. The following facts were considered pertinent in reaching a decision:

- (a) the original descriptions obviously were prepared by Cope from all specimens in his original series, and not merely those sent to the British Museum;
- (b) five species originally described in the catalogue were not represented by BMNH specimens but were represented by material in Cope's possession;
- (c) all specimens clearly were intended to be types, and it was merely by chance that Günther's catalogue preceded Cope's papers in publication;
- (d) Girard described 118 new cyprinid species in his 1857 paper, and in no case were catalogue numbers or the number of type specimens indicated in the original descriptions. He (Girard 1858, 1859a) listed

these subsequently, and they have been accepted as the types without question ever since;

- (e) the original description of *Hybognathus hankinsoni* (Hubbs, in Jordan 1929:88) was not accompanied by either an indication of type specimens or a specific type locality, although the overall range limits of the species were given. Bailey (1954) regarded as syntypes the specimens Hubbs catalogued earlier as types in the University of Michigan collection, from which Bailey selected a lectotype and a type locality.

I conclude that there is ample precedent for recognizing all of Cope's original specimens as syntypes of those species he described in Günther's (1868) catalogue, and not merely those listed in the original accounts. Furthermore, for those species (i.e. *Alburnellus jaculus*) in which Cope's original material came from several localities, but for which individuals from only one locality were sent to Günther, all specimens should be regarded as syntypes and all localities as the potential type locality.

Another complex situation concerns the various U. S. government fisheries publications appearing in the late 19th and early 20th centuries. These were often published as house or senate documents or as author's preprints, and the publication dates of these frequently differ from those appearing in the bound volume itself. (In such cases the oldest available date is always the one cited.) Thus Jordan's paper on fishes from the Allegheny region of Virginia, North Carolina, and Tennessee appeared in the *Bulletin of the U. S. Fish Commission* for the year 1888. The date of publication listed for this paper in the volume is 13 March 1890, and this is the date usually cited, but the article was issued earlier as a preprint sometime during 1889 (see Hays 1952:116). As I have been unable to determine the exact day on which the preprint appeared, the publication date should properly be cited as "(31 December) 1889," at least until such time as an earlier date can be verified. Records of exact publication dates for the early United States National Museum Bulletins were not kept until after 1906 (True *et al.* 1946:12-18). The year "1882" appears on the cover of Bulletin 16, and this is often cited as the year of publication. However, in the opening paragraph of a later paper by Jordan (1885b: 789) appeared the remark that Bulletin 16 was not actually mailed until 1 April 1883, which thus becomes the official date of publication.

I have chosen not to designate lectotypes in most cases, even where such designations are clearly indicated, because I think this should be done by individuals who have conducted a definitive taxonomic study of the species in question. Several new lectotypes designated in the present catalogue result from studies that, though completed, are still unpublished (Gibbs 1955 [in part], Seaman 1968). In such cases, the lectotype designations are credited to the individuals responsible. Lectotype designations emanating from certain Fowler (1909, 1910, 1918) papers require special comment because, although

Fowler has officially been credited with these designations, I am actually the one responsible for choosing them. In an earlier paper (Gilbert 1971b), I reviewed the circumstances surrounding Fowler's lectotypes in my request to the International Commission on Zoological Nomenclature, in which I asked that these designations be suspended. The reader is referred to that paper for pertinent details. Inasmuch as this request will not be approved, for reasons discussed in my substitute petition (Gilbert 1977), it has become necessary to select and segregate lectotype specimens from the syntypic series, something that Fowler did not do. Fortunately Fowler's illustrated types (i.e. the lectotypes, according to Article 74b of the International Code), which appeared in his 1910 paper, can be identified in most cases, inasmuch as he characteristically drew the largest specimen in a series and also included a scale of measurement. Using this scale, the length of the illustrated specimen can be readily calculated. Fowler's drawings have been found to be surprisingly accurate, so far as their body lengths are concerned, and this, together with the fact that a number of the series contain one specimen that is clearly longer than the others, permits accurate selection of Fowler's lectotypes in many cases. For those series in which no one specimen is notably longer than the others, it simply becomes a matter of making the best choice possible.

My second request to the International Commission (Gilbert 1977) pertains only to Fowler's lectotype designations for two species, *Hypsilepis cornutus cerasinus* Cope 1868 and *Alburnops plumbeolus* Cope 1865, both of which are based on specimens of species other than those to which the original descriptions apply and to which the names are applied today. In each case this resulted from a complex syntypic series, of which the largest specimen (and thus the one illustrated) happened to be the "wrong" species. Fowler's illustration of *Hypsilepis cornutus cerasinus* (= *Notropis cerasinus*) is based on a specimen of *Notropis albeolus* Jordan 1889, and that of *Alburnops plumbeolus* (= *Notropis chrysocephalus* [Rafinesque 1820]) on a specimen of *Notropis heterodon* (Cope 1865). Should these lectotype designations be allowed to stand, the species now called *Notropis albeolus* would become *N. cerasinus*, and the present *N. cerasinus* would require a new name. The consequences of retaining the specimen of *Notropis heterodon* as lectotype of *Alburnops plumbeolus* are less critical, although it is conceivable that the long-established name *Notropis heterodon* could be changed to *N. plumbeolus* should the first reviser show imprudent judgment.

During this study, several cases of incorrect synonymization were discovered, although only two involve potential name changes for recognized species. These are: *Cyprinella ludibunda* Girard 1857, a senior synonym of *Notropis stramineus* (Cope 1865) and *Notropis volucellus* (Cope 1865) (the two extant syntypes comprise one specimen of each species); and *Notropis phenacobius* Forbes 1885, a probable senior synonym of *Notropis amnis* Hubbs and Greene 1951 (identification based on text of original description

and accompanying figure, geographic locality, and other circumstantial evidence). Inasmuch as other ichthyologists are currently studying the species involved, I have elected to take no further action on these matters.

DEFINITION OF GENUS *Notropis*

The genus *Notropis* Rafinesque (1818) is a large and diverse group of Cyprinidae containing numerous closely related, morphologically similar forms. At various times in the past its principal components have been regarded as distinct, though poorly defined genera. Gilbert (1884a) was the first to propose that a number of these be combined under the name *Notropis*. Jordan (1885b) relegated these groups to subgeneric status within the broad genus *Notropis*, where they (together with a number of subgenera subsequently proposed) have remained since, despite sporadic efforts (Jordan 1929, Jordan, Evermann, and Clark 1930) to separate them. Although numerous new species have been described down through the years, only one (*Notropis emiliae*) has so far been added through downgrading of a genus (*Opsopoeodus*) to a subgenus (Gilbert and Bailey 1972). A second species (*harperi*), which was long associated with the genus *Hybopsis*, was recently reassigned to *Notropis* (Gilbert and Bailey 1972), the genus in which it was originally described. About eight other barbelled species, currently also included in *Hybopsis*, may eventually be removed and incorporated into the group. One subgenus (*Codoma*), comprising a single species, is in the process of being elevated to full generic status (R. R. Miller, pers. comm.), and the allocation of *Opsopoeodus* to *Notropis* was recently questioned by Campos and Hubbs (1973). It has also been suggested that the subgenus *Cyprinella*, comprising 19 species, may be sufficiently distinct to merit generic recognition (R. E. Jenkins, pers. comm.). Of those genera presently regarded as distinct and which are not treated in this catalogue, *Dionda* (with eight species; Hubbs and Miller 1974, 1977, Contreras and Verduzco 1977) is the most likely candidate for eventual inclusion in *Notropis*.

Until recently the genus *Notropis* could be characterized by the following characters: (a) always one or two rows of pharyngeal teeth, and never with more than four in the greater (major) row; (b) dorsal-fin rays normally eight in number; (c) gut always short; (d) no maxillary barbel present at corners of mouth; (e) scales of relatively large size, never numbering more than 55 in the lateral series and usually fewer than 40; and (f) body size generally small, usually less than 100 mm standard length and never exceeding 175 mm SL.

Several papers have appeared in recent years that have caused the former cohesiveness of the group to be broken down. Cortés (1968), in her description of *Notropis imeldae*, noted that the species usually has a barbel at each corner of the mouth. Jenkins and Lachner (1971) and Gilbert and Bailey (1972) discussed the artificiality of this character, pointing out that barbels

sometimes may be present or absent within a single species, that they have undergone parallel evolution in many diverse cyprinid lines (presumably in response to certain environmental stimuli), and that although they usually are diagnostic of individual species, they are of limited value in the delineation of genera.

Swift (1970, 1971) recommended inclusion of *Dionda nubila* in *Notropis*, noting that this species bears close resemblance to the subgenus *Hydrophlox* except for having a long, coiled gut and herbivorous feeding habits. Snelson (1971) demonstrated a similar condition for *Notropis mekistocholas*, a species whose closest relatives each has a short gut.

Gilbert and Bailey (1972) downgraded *Opsopoeodus* (with one species and two subspecies) to a subgenus of *Notropis*, and in so doing eliminated two other characters by which the genus had formerly been distinguished. *Notropis emiliae* characteristically has nine dorsal rays, as opposed to eight in all other members of the genus presently described. The reduced importance of this character as a diagnostic feature of *Notropis* is further substantiated by the usual presence of 9 or 10 dorsal rays in an undescribed species that is obviously closely related to *N. welaka*. *N. emiliae* has always been characterized as having five pharyngeal teeth in the greater row of each pharyngeal arch, but Gilbert and Bailey (1972) showed their distinctive new subspecies, *N. emiliae peninsularis*, to have a count of four in the right arch. In addition, they presented morphological evidence to substantiate their idea that the upper (fifth) tooth in *N. emiliae* was derived from an ancestral condition of four, thus reversing an earlier phyletic reduction.

In summary, the genus *Notropis* can no longer be so readily characterized as in the past. Of the six diagnostic characters listed above, only those relating to body and scale size have not been modified or refuted in recent years. Although it is true that no species of *Notropis* has more than two rows of pharyngeal teeth, the same can be said for all native North American Cyprinidae. On the other hand, it should also be pointed out that the presumed addition of a tooth in the greater row in *N. emiliae* means that the original diagnostic pharyngeal-tooth character (i.e. four teeth in this row) does, in essence, still hold. Possibly investigations now under way will reveal other characters that will better unify the genus, or, conversely, will serve to dismember it. Among these are nuptial tuberculation, patterns of gut coiling, serum protein analyses, karyology, and osteology.

TAXONOMIC HISTORY OF GENUS *Notropis*

The taxonomic history of the genus *Notropis* parallels in large degree that of the darters (family Percidae), which was earlier reviewed by Collette (1967), and also reflects the overall history of North American Ichthyology during the past 160 years. Collette divided activity in darter systematics into

four periods ("Beginnings" [1818-1840]; "Golden Era" [1841-1892]; "Doldrums" [1893-1931]; and "Reawakening" [1932-present]), and these are (with certain modifications in dates) equally appropriate here. A comparison of the number of new *Notropis* forms (both valid and invalid) appearing during each decade is shown in Table 1.

The first species of *Notropis* to be described was *Cyprinus cornutus* Mitchill 1817. This was followed by 13 others during the next seven years (Rafinesque 1817, 1818, 1820a, 1820b; Clinton 1824), of which only three (*Notropis atherinoides* Rafinesque 1818, *Luxilus chrysocephalus* Rafinesque 1820, and *Clupea hudsonia* Clinton 1824) are regarded as valid today. The primary reason for the plethora of invalid forms is the inadequacy of Rafinesque's descriptions, and this, coupled with a total lack of type material, makes most of his taxa impossible to identify. Although some of Rafinesque's original notes and drawings still exist and are of value in identifying some of the more distinctive fish species (see Collette and Knapp 1967: Figs. 1, 3, and 5), they are too crude in most cases to permit recognition of the various kinds of Cyprinidae.

TABLE 1.—SUMMARY BY DECADE OF NUMBERS OF SPECIFIC AND SUBSPECIFIC NAMES PROPOSED THAT ARE NOW REFERABLE TO THE GENUS *Notropis*.

Decade beginning	Valid names	Invalid names	Total names
* 1810	2	2	4
1820	2	8	10
1830	0	0	0
1840	0	6	6
1850	16	38	54
1860	23	19	42
1870	23	18	41
1880	14	24	38
1890	9	17	26
1900	4	9	13
1910	0	3	3
1920	7	3	10
1930	1	0	1
1940	5	12	17
1950	13	5	18
1960	5	0	5
** 1970	7	0	7
TOTALS	131	164	295

*First name proposed in 1817.

**New names proposed as of September, 1977.

Following this initial flurry of activity, no other new species of *Notropis* appeared until 1842, at which time *Leuciscus vittatus* DeKay 1842 (a junior synonym of *Notropis cornutus*) was described. This was followed by *Argyreus rubripinnis* Heckel 1843 and *Leuciscus spiralingulus* Valenciennes 1844, both of which are also junior synonyms of *N. cornutus*. Storer (1845) published descriptions of other new forms, at least three of which likely belong to *Notropis* but none of which can positively be identified to species.

The 1850's showed a sharply increased level of activity (the beginning of the Golden Era for the genus *Notropis*). This was initiated by two lengthy publications by Agassiz (1850, 1854), in which he described several new taxa, and by a series of short descriptions by Baird and Girard (1853), Kirtland (1854), and Lapham (1854). These were followed by a veritable deluge of new *Notropis* species a few years later, 44 of which first appeared in Girard's 1857 paper. Despite the large number of new species described during this decade, comparatively few are considered to be valid today (16 of 54, or 29.6%). This stems largely from the highly uncritical nature of Girard's descriptions: 33 of the 44 new forms described in his 1857 paper are not considered valid, and 14 are junior synonyms of *Notropis lutrensis*.

Descriptions of new *Notropis* species continued unabated over the next 40 odd years, beginning with Edward D. Cope's eight publications between 1865 and 1875, continuing with a multitude of papers (mostly by David S. Jordan and students) from 1876 through 1899, and culminating with several papers, dealing primarily with new Mexican species, between 1902 and 1904. The end of the Golden Era actually was signaled a few years earlier by the publication of Jordan and Evermann's (1896-1900) monumental four volumes on the "Fishes of North and Middle America." This work, although of tremendous importance to Ichthyology, resulted in the premature decline of systematic work on North American freshwater fishes, inasmuch as Jordan regarded studies in this area to be essentially complete. Very few new species were described during the next 20 years (the Doldrum period), only seven new forms (two valid) appearing from 1905 through 1925. The mid-1920's signify the period of Reawakening. This largely resulted from the activities of Carl L. Hubbs who, with his associates, described six of the eight new forms (five valid) that appeared from 1926 through 1929.

The period of Reawakening is considered to have begun in 1926, but if one ignores the 4-year flurry of activity in the late 1920's, the Doldrum period actually may be regarded as lasting through the 1930's so far as *Notropis* systematics (but not North American freshwater ichthyology as a whole) are concerned. Only one new taxon (*Notropis volucellus wickliffi* Trautman) appeared during the 1930's, the second lowest total for any decade of the 17 under consideration (which cover 160 years). The 1940's saw a sharply increased degree of activity in the study of North American cyprinid fishes in general and the genus *Notropis* in particular, which has continued unabated

to the present day. The relatively small number of new forms described during the 1960's and 1970's, as compared to the 1940's and 1950's, may be accounted for both by the present state of knowledge (fewer new species are now being discovered), as well as a slightly more conservative philosophy regarding the description of new subspecies. At present, between 12 and 15 species of *Notropis* are known that remain to be described (Jenkins 1976), and subsequent study probably will reveal several more that are present in collections but which have not yet been distinguished.

GENERIC SYNONYMY¹

- Notropis* Rafinesque 1818:204 (type species *Notropis atherinoides* Rafinesque 1818, by monotypy). (= *Notropis*)
- Minnilus* Rafinesque 1820b:45 (type species *Minnilus dinemus* Rafinesque 1820b [= *Notropis atherinoides* Rafinesque 1818], by subsequent designation of Jordan and Gilbert 1877:86). (= *Notropis*)
- Luxilus* Rafinesque 1820b:47 (type species *Luxilus chrysocephalus* Rafinesque 1820b, by subsequent designation of Jordan and Gilbert 1877:86). (= *Luxilus*)
- Plargyrus* Rafinesque 1820b:50-51 (type species *Rutilus plargyrus* Rafinesque 1820b [= *Luxilus chrysocephalus* Rafinesque 1820b], by absolute tautonymy). (= *Luxilus*)
- Hypsilepis* Baird, in Agassiz 1854:359 (type species *Cyprinus cornutus* Mitchill 1817, by original designation; spelling emended by Cope [1865a:279] to *Hypsilepis*). (= *Luxilus*)
- Alburnellus* Girard 1857:193 (type species *Alburnus dilectus* Girard 1857 [= *Notropis atherinoides* Rafinesque 1818], by subsequent designation of Jordan and Gilbert 1877:91). (= *Notropis*)
- Alburnops* Girard 1857:194 (type species *Alburnops blennius* Girard 1857, by subsequent designation of Jordan and Gilbert 1877:91). (= *Alburnops*)
- Codoma* Girard 1857:194-195 (type species *Codoma ornata* Girard 1857, by subsequent designation of Jordan and Gilbert 1877:91; tentatively recognized by Miller [1976] as a valid genus). (= *Codoma*)
- Cyprinella* Girard 1857:196-197 (type species *Leuciscus bubalinus* Baird and Girard 1853 [= *Leuciscus lutrensis* Baird and Girard 1853], by subsequent designation of Jordan and Gilbert 1877:91). (= *Cyprinella*)
- Moniana* Girard 1857:199 (type species *Leuciscus lutrensis* Baird and Girard 1853, by subsequent designation of Jordan and Gilbert 1877:91). (= *Cyprinella*)
- Hudsonius* Girard 1857:210 (type species *Clupea hudsonia* Clinton 1824, by subsequent designation of Jordan and Gilbert 1877:92).
- Graodius* Günther 1868:485-486 (type species *Graodius nigrotaeniatus* Günther 1868 [= *Leuciscus boucardi* Günther 1868], by monotypy).
- Photogenis* Cope 1868a:163-164 (type species *Leuciscus spilopterus* Cope, in Günther 1868, by subsequent designation of Cope, in Jordan and Copeland 1877:154). (= *Cyprinella*)
- Lythrurus* Jordan 1876b:271-272 (type species *Semotilus diplemia* Rafinesque 1820b, which is actually *Hypsilepis diplemia* Cope 1868a [= *Lythrurus cyanocephalus* Copeland, in Jordan 1877a], by subsequent designation of Jordan and Gilbert 1877:95). (= *Lythrurus*)
- Episema* Cope and Jordan, in Jordan 1877b:77-78 (type species *Photogenis scabriceps* Cope 1868a, by original designation; preoccupied by *Episema* Ochseneimer 1816, a genus of lepidopteran insect).

¹ Includes only those nominal genera presently placed in synonymy of *Notropis*. Those genera that may ultimately be synonymized with *Notropis* are listed separately following this account.

- Nototropis* Jordan 1877c:342-343 (type species *Nototropis stilbius* Jordan 1877c, herein designated). (= *Notropis*)
- Chriope* Jordan 1878c:787 (type species *Hybopsis bifrenatus* Cope 1869, by original designation).
- Hydrophlox* Jordan, in Jordan and Brayton 1878:18-19 (type species *Hybopsis rubricroceus* Cope 1868b, by original designation). (= *Hydrophlox*).
- Erogala* Jordan, in Jordan and Brayton 1878:20-21 (type species *Photogenis stigmaturus* Jordan 1877c [= *Cyprinella venusta* Girard 1857], by original designation). (= *Cyprinella*)
- Opsopoeodus* Hay 1881:507 (type species *Opsopoeodus emiliae* Hay 1881, by monotypy; recognized by Campos and Hubbs [1973] as a valid genus). (= *Opsopoeodus*)
- Coccotis* Jordan 1882:852 (type species *Leuciscus coccogenis* Cope, in Günther 1868, by original designation). (= *Luxilus*)
- Trycherodon* Forbes, in Jordan and Gilbert 1883:247 (type species *Trycherodon megalops* Forbes, in Jordan and Gilbert 1883 [= *Opsopoeodus emiliae* Hay 1881], by original designation). (= *Opsopoeodus*)
- Miniellus* Jordan 1888:56 (type species *Hybognathus procne* Cope 1865a, by subsequent designation of Jordan 1920:442).
- Opsopoea* Jordan and Evermann 1896:249 (type species *Opsopoeodus bollmani* Gilbert 1890 [= *Hemitremia maculata* Hay 1881], by original designation).
- Azteca* Jordan and Evermann 1896:254, 258 (type species *Codoma vittata* Girard 1857 [= *Ceraticthys sallaei* Günther 1868], by original designation; *Codoma vittata* Girard 1857 is preoccupied in *Notropis* by *Leuciscus vittatus* DeKay 1842). (= *Aztecula*)
- Orcella* Jordan and Evermann 1896:254, 289 (type species *Notropis orca* Woolman 1894 [= *Alburnellus simus* Cope, in Cope and Yarrow 1875], by original designation).
- Aztecula* Jordan and Evermann 1898:2799 (type species *Codoma vittata* Girard 1857 [= *Ceraticthys sallaei* Günther 1868]; substitute name for *Azteca*, Jordan and Evermann 1896, preoccupied by *Aztecā* Forel 1878, a genus of hymenopteran insect). (= *Aztecula*)
- Orcula* Jordan and Evermann 1900:3410 (type species *Notropis orca* Woolman 1894 [= *Alburnellus simus* Cope, in Cope and Yarrow 1875]; substitute name for *Orcella*, Jordan and Evermann 1896, incorrectly regarded as preoccupied by *Orcaella* Gray 1866, a genus of cetacean mammal). (= *Orcella*)
- Paranotropis* Fowler 1904b:245 (type species *Photogenis leuciodus* Cope 1868a, by original designation). (= *Hydrophlox*)
- Coccogenia* Cockerell and Callaway 1909:190-191 (type species *Leuciscus coccogenis* Cope, in Günther 1868, by original designation). (= *Luxilus*)
- Pteronotropis* Fowler 1941:234 (type species *Leuciscus hypselopterus* Günther 1868, by monotypy; proposed as a subgenus of *Notropis*). (= *Pteronotropis*)

STATUS OF GENUS *Nototropis*

Some confusion attends the nominal genus *Nototropis*. The genus was first proposed by Jordan (1877c:342-343), who included two species (*N. lirus* and *N. stilbius*), both of which were described as new but neither of which was specifically designated as the type species. Although consistent spelling of the name throughout the paper eliminates the possibility that it was based on a misspelling of *Notropis*, it is curious that Jordan (1888, 1920, and other papers) and Jordan and Evermann (1896) made no subsequent reference to it. Meek (1904:62-63) later resurrected *Nototropis*, without comment, including in it all Mexican species now referred to *Notropis*. Ruthven (1906) apparently was the only other author to use the name.

As no type species is yet available for *Nototropis*, I hereby so designate *Notropis stilbuis*, which is a close relative of *Notropis atherinoides* Rafinesque 1818, the type species of *Notropis*. Thus *Nototropis* becomes a junior synonym of that taxon, both as a genus and subgenus.

GENERA THAT MAY ULTIMATELY BE INCLUDED IN *Notropis*

- Hybopsis* Agassiz 1854:358 (type species *Hybopsis gracilis* Agassiz 1854 [= *Rutilus amblops* Rafinesque 1820b], by subsequent designation of Jordan and Gilbert 1877:90). (= *Hybopsis*)
Erinemus Jordan 1876b:279 (type species *Ceratichthys hyalinus* Cope, in Günther 1868:179-180 [= *Rutilus amblops* Rafinesque 1820b], by subsequent designation of Jordan and Gilbert 1877:95). (= *Hybopsis*)

TAXONOMIC LISTS

VALID FORMS OF *Notropis*, INCLUDING SYNONYMS^{1 2 3 4}

1. *Notropis aquirrepequeni* Contreras and Rivera 1973—none.
2. *Notropis albeolus* Jordan 1889—none.
3. *Notropis alborus* Hubbs and Raney 1947—none.
4. *Notropis altipinnis* (Cope 1870)—*Notropis altipinnis chowanus* Hubbs and Raney 1948; *Notropis altipinnis neusensis* Hubbs and Raney 1948; *Notropis altipinnis tarenensis* Hubbs and Raney 1948; *Notropis altipinnis whitei* Hubbs and Raney 1948; *Notropis altipinnis wrighti* Hubbs and Raney 1948.
5. *Notropis amabilis* (Girard 1857)—*Alburnus megalops* Girard 1857; *Alburnus socius* Girard 1857; *Cyprinella luxiloides* Girard 1857 (?); *Cyprinella macrostoma* Girard 1857; *Notropis swaini* Jordan and Gilbert 1885.
6. *Notropis amnis* Hubbs and Greene 1951—*Notropis phenacobius* Forbes 1885 (a probable senior synonym); *Notropis nocomis* Evermann 1892 (a preoccupied senior synonym); *Notropis amnis pinnosa* Hubbs and Bonham 1951.
7. *Notropis amoenus* (Abbott 1874)—none.
8. *Notropis analostanus* (Girard 1859)—none.
9. *Notropis anogenus* Forbes 1885—none.
10. *Notropis ardens* (Cope 1868)—*Rutilus ruber* Rafinesque 1820 (?); *Alburnellus matutinus* Cope 1870; *Notropis umbratilis fasciolaris* Gilbert 1891.
11. *Notropis ariommus* (Cope 1868)—none.
12. *Notropis asperifrons* Suttkus and Raney 1955—none.
13. *Notropis atherinoides* Rafinesque 1818—*Minnilus dinemus* Rafinesque 1820; *Alburnus nitidus* Kirtland 1854; *Alburnus acutus* Lapham 1854; *Alburnus dilectus* Girard 1857; *Alburnus lepidulus* Girard 1857 (?); *Alburnus oligaspis* Cope 1865; *Notropis atherinoides caddonis* Meek 1891; *Notropis louisianae* Evermann 1898.
14. *Notropis atrapiculus* Snelson 1972—none.
15. *Notropis atrocaudalis* Evermann 1892—none.
16. *Notropis baileyi* Suttkus and Raney 1955—none.

¹ Nominal forms are presumed to be junior synonyms unless stated otherwise.

² The systematics of the *Notropis lutrensis* complex have been clarified only in the southern part of the range (Mexico and southern Texas) (Contreras 1975). Consequently, the nominal forms described from more northerly areas cannot presently be assigned to subspecies, and thus are simply listed here as junior synonyms of *Notropis lutrensis*.

³ Fossil species.

⁴ The systematics of *Notropis stramineus* have been clarified only in one area (South Dakota) (Bailey and Allum 1962). Consequently, only those nominal forms whose subspecific allocation was clearly indicated by those authors are listed by subspecies here.

17. *Notropis bairdi* Hubbs and Ortenburger 1929—none.
18. *Notropis bellus* (Hay 1881)
 - a. *Notropis bellus aegnotus* Snelson 1972—none.
 - b. *Notropis bellus bellus* (Hay 1881)—*Notropis alabamae* Jordan and Meek 1884.
19. *Notropis bifrenatus* (Cope 1869)—*Notropis cayuga* Meek 1889.
20. *Notropis blennius* (Girard 1857)—*Episema jejuna* Forbes 1878; *Notropis albeolus* Eigenmann and Eigenmann 1893; *Notropis jordanti* Eigenmann and Eigenmann 1893.
21. *Notropis boops* Gilbert 1884—none.
22. *Notropis boucardi* (Günther 1868)—*Ceraticthys cumingii* Günther 1868; *Graodus nigrotaeniatus* Günther 1868.
23. *Notropis braytoni* Jordan and Evermann 1896—*Moniana nitida* Girard 1857 (a preoccupied senior synonym); *Notropis robustus* Meek 1902.
24. *Notropis buccula* Cross 1953—none.
25. *Notropis buechanani* Meek 1896—none.
26. *Notropis caeruleus* (Jordan 1877)—none.
27. *Notropis calientis* Jordan and Snyder 1899—none.
28. *Notropis callisema* (Jordan 1877)—none.
29. *Notropis callistius* (Jordan 1877)—none.
30. *Notropis callitaenia* Bailey and Gibbs 1956—none.
31. *Notropis camurus* (Jordan and Meek 1884)—none.
32. *Notropis cerasinus* (Cope 1868)—none.
33. *Notropis chalybaeus* (Cope 1869)—*Notropis chalybaeus abbotti* Fowler 1904.
34. *Notropis chihuahua* Woolman 1892—none.
35. *Notropis chiliticus* (Cope 1870)—none.
36. *Notropis chloristius* (Jordan and Brayton 1878)—none.
37. *Notropis chlorocephalus* (Cope 1870)—none.
38. *Notropis chrosomus* (Jordan 1877)—none.
39. *Notropis chrysocephalus* (Rafinesque 1820)
 - a. *Notropis chrysocephalus chrysocephalus* (Rafinesque 1820)—*Rutilus plargyrus* Rafinesque 1820 (?); *Leuciscus obesus* Storer 1845 (?); *Plargyrus typicus* Girard 1857(?); *Alburnops plumbeolus* Cope 1865; *Hypsilepis cornutus gibbus* Cope 1868 (possibly based on a hybrid: *Notropis chrysocephalus* × *Notropis cornutus*); *Hybopsis lacertosus* Cope 1868.
 - b. *Notropis chrysocephalus isolepis* Hubbs and Brown 1927—*Leuciscus gibbosus* Storer 1845 (?)(a possible senior synonym).
40. *Notropis coccogenis* (Cope 1868)—*Notropis brimleyi* Bean 1903.
41. *Notropis cornutus* (Mitchill 1817)—*Cyprinus megalops* Rafinesque 1817; *Cyprinus melanurus* Rafinesque 1817; *Cyprinus haematopterus* Rafinesque 1820; *Cyprinus trivittatus* Rafinesque 1820; *Rutilus compressus* Rafinesque 1820 (?); *Leuciscus vittatus* DeKay 1842; *Argyreus rubripinnis* Heckel 1843; *Leuciscus spiralingulus* Valenciennes 1844; *Leuciscus frontalis* Agassiz 1850; *Leuciscus gracilis* Agassiz 1850; *Plargyrus bowmani* Girard 1857; *Plargyrus argentatus* Girard 1857; *Hypsilepis cornutus cyaneus* Cope 1868; *Notropis universitatis* Evermann and Cockerell 1909.
42. *Notropis cummingsae* Myers 1925—*Notropis cummingsae collis* Hubbs and Raney 1951.
43. *Notropis dorsalis* (Agassiz 1854)—*Photogenis piptolepis* Cope 1871; *Hybopsis montanus* Meek 1885; *Notropis gilberti* Jordan and Meek 1885; *Notropis keimi* Fowler 1909; *Notropis horatii* Cockerell 1911.
44. *Notropis edwardraneyi* Suttkus and Clemmer 1968—none.
45. *Notropis emiliae* (Hay 1881)
 - a. *Notropis emiliae emiliae* (Hay 1881)—*Trycherodon megalops* Forbes 1883; *Opsopoeodus osculus* Evermann 1892.
 - b. *Notropis emiliae peninsularis* Gilbert and Bailey 1972—none.

46. *Notropis euryzonus* Suttkus 1955—none.
47. *Notropis fumeus* Evermann 1892—*Notropis macrolepidotus* Forbes 1885 (?) (a possible senior synonym).
48. *Notropis galacturus* (Cope 1868)—none.
49. *Notropis gibbsi* Howell and Williams 1971—none.
50. *Notropis girardi* Hubbs and Ortenburger 1929—none.
51. *Notropis greenei* Hubbs and Ortenburger 1929—none.
52. *Notropis harperi* Fowler 1941—*Notropis norrisi* Fowler 1945; *Hybopsis harperi subterranea* Hubbs and Crowe 1956.
53. *Notropis heterodon* (Cope 1865)—none.
54. *Notropis heterolepis* Eigenmann and Eigenmann 1893—*Notropis muskoka* Meek 1899; *Notropis kendalli* Evermann and Cockerell 1909; *Notropis heterolepis regalis* Hubbs and Lagler 1949.
55. *Notropis hudsonius* (Clinton 1824)—*Hudsonius amarus* Girard 1857; *Hudsonius fluviatilis* Girard 1857; *Hybopsis phaenna* Cope 1865; *Luxilus selene* Jordan 1877; *Alburnops saludanus* Jordan and Brayton 1878; *Hudsonius euryopa* Bean 1880; *Notropis scopiferus* Eigenmann and Eigenmann 1893; *Opsopoeodus borealis* Harper and Nichols 1919 (possibly based on hybrid involving *Notropis hudsonius*).
56. *Notropis hypselopterus* (Günther 1868)
- a. *Notropis hypselopterus hypselopterus* (Günther 1868)—*Alburnus formosus* Putnam 1863 (a preoccupied senior synonym); *Photogenis grandipinnis* Jordan 1877; *Notropis metallicus* Jordan and Meek 1884.
- b. *Notropis hypselopterus stonoi* Fowler 1921—none.
57. *Notropis hypsilepis* Suttkus and Raney 1955—none.
58. *Notropis imeldae* Cortés 1968—none.
59. *Notropis jemezanus* (Cope 1875)—*Notropis santarosaliae* Meek 1902.
60. *Notropis leedsi* Fowler 1942—none.
61. *Notropis lepidus* (Girard 1857)—none.
62. *Notropis leuciodus* (Cope 1868)—none.
63. *Notropis lirus* (Jordan 1877)—none.
64. *Notropis longirostris* (Hay 1881)—*Leuciscus croceus* Storer 1845 (?) (a possible senior synonym).
65. *Notropis lutipinnis* (Jordan and Brayton 1878)—none.
- *66. *Notropis lutrensis* (Baird and Girard 1853)—*Leuciscus bubalinus* Baird and Girard 1853; *Cyprinella beckwithi* Girard 1857; *Cyprinella gunnisoni* Girard 1857; *Cyprinella suavis* Girard 1857; *Cyprinella umbrosa* Girard 1857; *Moniana leonina* Girard 1857; *Moniana frigida* Girard 1857; *Moniana pulchella* Girard 1857; *Cyprinella billingiana* Cope 1871; *Moniana jugalis* Cope 1871; *Cyprinella forbesi* Jordan 1878; *Notropis lutrensis blairi* Hubbs 1940.
- a. *Notropis lutrensis forlonensis* (Meek 1904)—none.
- b. *Notropis lutrensis formosus* (Girard 1857)—*Notropis mearnsi* Snyder 1915.
- c. *Notropis lutrensis garmani* Jordan 1885—*Cyprinella rubripinna* Garman 1881 (a preoccupied senior synonym).
- d. *Notropis lutrensis lutrensis* (Baird and Girard 1853)—*Moniana complanata* Girard 1857; *Moniana laetabilis* Girard 1857; *Moniana couchi* Girard 1857; *Moniana gibbosa* Girard 1857; *Moniana gracilis* Girard 1857; *Hypsilepis iris* Cope 1875; *Chiola montiregis* Cope 1885.
- e. *Notropis lutrensis santamariae* Evermann and Goldsborough 1902—none.
67. *Notropis maculatus* (Hay 1881)—*Opsopoeodus bolmani* Gilbert 1890; *Notropis louisae* Fowler 1940; *Notropis burchi* Fowler 1942.
- *68. *Notropis megalepis* Smith 1962—none.

69. *Notropis mekistocholas* Snelson 1971—none.
70. *Notropis moralesi* DeBuen 1956—none.
71. *Notropis nazas* (Meek 1904)—none.
72. *Notropis niveus* (Cope 1870)—none.
73. *Notropis nubilus* (Forbes 1878)—none.
74. *Notropis ornatus* (Girard 1857)—none.
75. *Notropis ortenburgeri* Hubbs 1927—none.
76. *Notropis oxyrhynchus* Hubbs and Bonham 1951—none.
77. *Notropis ozarcanus* Meek 1891—none.
78. *Notropis perpallidus* Hubbs and Black 1940—none.
79. *Notropis petersoni* Fowler 1942—*Notropis waccamanus* Fowler 1942; *Notropis williamsi* Fowler 1945.
80. *Notropis photogenis* (Cope 1865)—*Photogenis leucops* Cope 1868; *Photogenis leucops engraulinus* Cope 1868; *Alburnellus arge* Cope 1869.
81. *Notropis pilsbryi* Fowler 1904—none.
82. *Notropis potteri* Hubbs and Bonham 1951—none.
83. *Notropis procne* (Cope 1865)—*Hybopsis longiceps* Cope 1868.
84. *Notropis proserpinus* (Girard 1857)—*Moniana aurata* Girard 1857.
85. *Notropis pyrrhomelas* (Cope 1870)—none.
86. *Notropis roseipinnis* Hay 1885—*Minnilus rubripinnis* Hay 1881 (a preoccupied senior synonym).
87. *Notropis rubellus* (Agassiz 1850)—*Cyprinella lugubris* Girard 1857 (?); *Alburnus rubrifrons* Cope 1865; *Leuciscus copii* Günther 1868; *Alburnellus jaculus* Cope 1868; *Alburnellus micropteryx* Cope 1868; *Alburnellus percobromus* Cope 1871.
88. *Notropis rubricroceus* (Cope 1868)—none.
89. *Notropis rutilus* Girard 1857—none.
90. *Notropis sabinae* Jordan and Gilbert 1886—none.
91. *Notropis saladonis* Hubbs and Hubbs 1958—none.
92. *Notropis sallei* (Günther 1868)—*Codoma vittata* Girard 1857 (a preoccupied senior synonym); *Notropis aztecus* Woolman 1894; *Notropis lernae* Evermann and Goldsborough 1902; *Aztecula mexicana* Meek 1902.
93. *Notropis scabriceps* (Cope 1868)—none.
94. *Notropis scepticus* (Jordan and Gilbert 1883)—none.
95. *Notropis semperasper* Gilbert 1961—none.
96. *Notropis shumardi* (Girard 1857)—*Alburnops illecebrosus* Girard 1857; *Notropis chamberlaini* Evermann 1898; *Notropis brazosensis* Hubbs and Bonham 1951.
97. *Notropis signipinnis* Bailey and Suttkus 1952—none.
98. *Notropis simus* (Cope 1875)—*Notropis orca* Woolman 1894.
99. *Notropis spectrunculus* (Cope 1868)—none.
100. *Notropis spilopterus* (Cope 1868)—*Hybopsis fretensis* Cope 1869; *Notropis spilopterus hypsisomatus* Gibbs 1958.
101. *Notropis stilbuis* (Jordan 1877)—none.
102. *Notropis stramineus* (Cope 1865)—*Minnilus microstomus* Rafinesque 1820 (?) (a possible senior synonym); *Cyprinella ludibunda* Girard 1857 (a senior synonym of either *Notropis stramineus* or *Notropis volucellus*, as determined from future designation of lectotype); *Alburnus lineolatus* Agassiz 1863 (a probable senior synonym); *Notropis reticulatus* Eigenmann and Eigenmann 1893.
 - a. *Notropis stramineus missuriensis* (Cope 1871)—*Hybopsis scylla* Cope 1871; *Cliola chlora* Jordan 1878.
 - b. *Notropis stramineus stramineus* (Cope 1865)—(most or all the remaining forms listed above under the synonymy of *Notropis stramineus* may ultimately be shown to belong to this subspecies).

103. *Notropis telescopus* (Cope 1868)—*Notropis telescopus arcansanus* Meek 1891.
104. *Notropis texanus* (Girard 1857)—*Moniana deliciosa* Girard 1857; *Luxilus roseus* Jordan 1877; *Notropis nux* Evermann 1892; *Notropis heterodon richardsoni* Hubbs and Greene 1926; *Hudsonius aletes* Jordan and Evermann 1927.
105. *Notropis topeka* (Gilbert 1884)—*Notropis aeneolus* Hay 1887.
106. *Notropis trichroistius* (Jordan and Gilbert 1878)—none.
107. *Notropis tropicus* Hubbs and Miller 1975—none.
108. *Notropis umbratilis* (Girard 1857)
- a. *Notropis umbratilis cyanocephalus* (Copeland 1877)—*Hypsilepis diplaemia* Cope 1868 (a senior synonym); *Lythrurus atripes* Jordan 1878; *Minnilus punctulatus* Hay 1881; *Notropis lythrurus* Jordan 1884; *Notropis macrolepidotus* Forbes 1885 (?); *Notropis notemigonoides* Evermann 1892.
 - b. *Notropis umbratilis umbratilis* (Girard 1857)—*Luxilus lucidus* Girard 1857; *Minnilus nigripinnis* Gilbert 1884.
109. *Notropis uranoscopus* Suttkus 1959—none.
110. *Notropis venustus* (Girard 1857)
- a. *Notropis venustus cercostigma* (Cope 1868)—*Photogenis eurystomus* Jordan 1877; *Photogenis leucopus* Jordan and Brayton 1878; *Luxilus chickasavensis* Hay 1881.
 - b. *Notropis venustus stigmaturus* (Jordan 1877)—*Cyprinella calliura* Jordan 1877 (based on intergrades: *N. v. cercostigma* × *N. v. stigmaturus*).
 - c. *Notropis venustus venustus* (Girard 1857)—*Cyprinella notata* Girard 1857; *Cliola urostigma* Jordan and Meek 1884; *Notropis cooglei* Hildebrand and Towers 1928.
111. *Notropis volucellus* (Cope 1865)—*Minnilus microstomus* Rafinesque 1820 (?) (a possible senior synonym); *Cyprinella ludibunda* Girard 1857 (a senior synonym of either *Notropis stramineus* or *Notropis volucellus*, as determined from future designation of lectotype); *Notropis nocomis* Jordan and Gilbert 1886.
112. *Notropis welaka* Evermann and Kendall 1898—none.
113. *Notropis whipplei* (Girard 1857)—none.
114. *Notropis wickliffi* Trautman 1931—none.
115. *Notropis xaenocephalus* (Jordan 1877)—none.
116. *Notropis xaenurus* (Jordan 1877)—none.
117. *Notropis xanthicara* Minckley and Lytle 1969—none.
118. *Notropis zonatus* (Agassiz 1863)—none.
119. *Notropis zonistius* (Jordan 1880)—none.

Valid forms of *Hybopsis*, including synonyms,
that may eventually be placed in *Notropis*

1. *Hybopsis amblops* (Rafinesque 1820)—*Hybopsis gracilis* Agassiz 1854; *Ceratichthys hyalinus* Cope 1868.
2. *Hybopsis hypsinotus* (Cope 1870)—none.
3. *Hybopsis labrosa* (Cope 1870)—none.
4. *Hybopsis lineapunctata* Clemmer and Suttkus 1971—none.
5. *Hybopsis rubrifrons* (Jordan 1877)—none.
6. *Hybopsis winchelli* Girard 1857—none.
7. *Hybopsis zanema* (Jordan and Brayton 1878)—none.

Nominal forms of *Notropis* definitely or likely based on hybrids of the genus

1. *Opsopoeodus borealis* Harper and Nichols 1919—possibly based on a hybrid, one parent of which is presumed to be *Notropis hudsonius*.
2. *Notropis germanus* Hay 1887—*Hybognathus hankinsoni* × *Notropis heterolepis* (see Hubbs 1951b).

3. *Notropis kanawha* Jordan and Jenkins 1889—*Notropis rubellus* × *Notropis volucellus* (see Bailey and Gilbert 1960)
4. *Notropis macdonaldi* Jordan and Jenkins 1889—*Notropis cornutus* × *Notropis rubellus* (see Hubbs and Moore 1940)
5. *Notropis umbrifer* Hay 1887—likely based on a hybrid, one parent of which may be *Notropis topeka*.

NOMINAL FORM OF *Notropis* BASED ON HYBRIDS
OF OTHER GENERA

1. *Notropis henryi* Fowler 1942—*Clinostomus funduloides* × *Nocomis leptocephalus* (see Gilbert 1978).

Nomina nuda of *Notropis*

1. *Notropis comalis* Jordan and Gilbert 1885—name listed by Jordan (1885b:812); most likely based on *Notropis stramineus*, but possibly could refer to *Notropis buchani* or *Notropis amnis*.
2. *Notropis ionthas* Jordan and Gilbert 1886—described as a supposed junior synonym of *Notropis dilectus* (= *N. atherinoides*) (Jordan and Gilbert 1886:11), but name is unavailable since it was proposed as a junior synonym and was not treated as an available name, with its original date and authorship, prior to 1961 (International Code of Zoological Nomenclature [1964: Articles 11(d) and 16(b) (ii)]); based on *Notropis perpallidus* Hubbs and Black (see Snelson and Jenkins 1973:293).
3. *Notropis ochoterenai* Hubbs and Gordon, in Hubbs 1937—based on *Notropis aquirrepequenoi* Contreras and Rivera 1973.
4. *Notropis xaenocephalus octoradius* Baughman 1950—name indicated as having first appeared in a mimeographed key to Texas fishes by G. H. Soulen (1941); based on *Notropis chalybaeus* (Cope) (C. C. Swift, in litt.).
5. *Notropis spilurus* Gilbert and Swain 1885—name listed by Jordan (1885:814); based on specimens of *Notropis stilbius* (Jordan) with a conspicuous caudal spot (see Gilbert 1891:154).

NOMINAL FORMS OF *Notropis* NOW REFERRED TO OTHER GENERA

1. *Notropis celayensis* Alvarez 1958—a junior synonym of *Yuriria alta* (Jordan 1880) (R. R. Miller, in litt.).
2. *Notropis ipni* Alvarez and Navarro 1953—a valid species now referred to the genus *Dionda* (see Hubbs and Miller 1974:1).
3. *Notropis rasconis* Jordan and Snyder 1899—a valid species now referred to the genus *Dionda* (see Hubbs and Miller 1974:1).

ACCOUNTS OF FORMS REFERRED TO *Notropis*

Notropis chalybaeus abbotti Fowler 1904

Fowler 1904a:239-240, pl. 17 (upper fig.). TYPE LOCALITY: broken dam on Batsto R., Burlington County, New Jersey. HOLOTYPE: ANSP 19860 (45.0), E. D. Cope. PARATYPES: ANSP 19861-19878 (18), paratopotypes.

REMARKS.—Fowler (1910: pl. 19, fig. 40) illustrated the holotype. Anal-ray count for holotype 8. Original description date 7 April 1904.

= *Notropis chalybaeus* (Cope)

Alburnus acutus Lapham 1854

Lapham 1854:101, figs. 1-2. TYPE LOCALITY: lower part of Milwaukee R. (below first dam), Milwaukee Co., Wisconsin. TYPES: None located.

REMARKS.—Original description reproduced in Hubbs (1945:16). Hubbs and Lagler (1958:81) regarded *acutus* as a valid subspecies of *N. atherinoides*, but the systematics of this species have not yet been adequately worked out. Original description date 1 April 1854.

= *Notropis atherinoides* Rafinesque

Notropis aeneolus Hay 1887

Hay 1887:245-246. TYPE LOCALITY: Saline R., ca. 5 mi. N of WaKeeney, Trego Co., Kansas. HOLOTYPE: USNM 37945 (56.5), M. J. Thompson, July 1885.

REMARKS.—Jordan and Evermann (1896:266) were first to synonymize this form with *N. topeka*. Original description date 2 July 1887.

= *Notropis topeka* (Gilbert)

Notropis aguirrepequenoi Contreras and Rivera 1973

Contreras and Rivera 1973:9-23, fig. 1. TYPE LOCALITY: Rio Pilon (trib. to Rio Soto la Marina), at crossing of hwy. 85, town of Mainero, Tamaulipas, Mexico. HOLOTYPE: UNAM IB/CML-P434 (39.7), S. Contreras, D. Molina, A. Aseff, and A. Martinez, 21 May 1966. PARATYPES: UANL 1137 (416), IPN P-3678 (4), UNAM IB/CML-P435 (4), TU 94116 (20), UMMZ 197492 (4), USNM 214998 (4) (all ex UANL 1137), paratopotypes; UANL 290 (1), UANL 297 (109), UANL 1141 (150).

REMARKS.—This species was earlier listed by Hubbs (1937) as a *nomen nudum*, *Notropis ochoterenai*. Original description date 5 October 1973.

= *Notropis aguirrepequenoi* Contreras and Rivera

Notropis alabamae Jordan and Meek 1884

Jordan and Meek 1884:476-477. TYPE LOCALITY: trib. to Alabama R., Montgomery, Alabama. LECTOTYPE: USNM 35297 (44.5), Col. Marshall McDonald. Snelson (1972:21) designated lectotype. LECTOPARATYPES: USNM 203323 (5), paratopotypes.

REMARKS.—Jordan and Evermann (1896:298) erroneously listed USNM 35295 as a type number. Species first synonymized with *N. lirus* (Jordan, 1885b:815), but subsequently synonymized with *N. bellus* by Smith-Vaniz (1968:43). Original description date 23 October 1884.

= *Notropis bellus bellus* (Hay)

Notropis megalops albeolus Jordan 1889

Jordan 1889b:123. TYPE LOCALITY: Roanoke R., near Roanoke, Virginia. LECTOTYPE: USNM 40177 (76.0), D. S. Jordan and B. W. Evermann, 31 July-2 August 1888. Gilbert (1964:152) designated lectotype. LECTOPARATYPES: USNM 177840 (14), CAS-SU 611 (6), paratopotypes; MCZ 31984 (1), paratopotype (?).

REMARKS.—Gilbert (1964:151-157) reviewed species. Original description date (31 December) 1889.

= *Notropis albeolus* Jordan

Notropis albeolus Eigenmann and Eigenmann 1893

Eigenmann and Eigenmann 1893a:152. TYPE LOCALITY: S. Saskatchewan R., Medicine Hat, Alberta, Canada. HOLOTYPE: BMNH 1892.12.30.531 (53.5), C. H. Eigenmann, August or September 1892.

REMARKS.—As the species name *albeolus* was preoccupied in *Notropis*, the name *jordanii* was later substituted by Eigenmann and Eigenmann (1893b). Hubbs (1926:41) first synonymized this form with *N. heterolepis*, but later reidentified it as *N. blennioides* following examination of holotype (Hubbs, *in litt.*). The type has 1,4-4,2 pharyngeal teeth (left arch deformed) and seven anal rays. Original description gives type locality as "Medicine Hat, Assiniboia," but the former locality is in Alberta and the latter in Saskatchewan. Only one specimen-formed basis for original

description, and the label in the holotype bottle shows Medicine Hat to be the correct type locality. Original description date 4 February 1893.

= *Notropis blennioides* (Girard)

Notropis alborus Hubbs and Raney 1947

Hubbs and Raney 1947:1-17, pl. 1 (figs. 1-2). TYPE LOCALITY: Brush Cr., trib. to Deep R., 5 mi. W of Siler City, Randolph Co., North Carolina. HOLOTYPE: UMMZ 138489 (42.0), E. C. Raney and E. A. Lachner, 6 March 1940. PARATYPES: UMMZ 138490 (19), paratopotypes; UMMZ 132797 (1), UMMZ 138332 (8), UMMZ 138333 (3), UMMZ 138488 (8), USNM 40347 (27), USNM 93227 (16), USNM 107615 (48), CU 3538 (5), CU 9619 (2).

REMARKS.—Original description date 25 February 1947.

= *Notropis alborus* Hubbs and Raney

Notropis bellus alegnotus Snelson 1972

Snelson 1972:37-43; figs. 3a, 9. TYPE LOCALITY: Five Mile Cr., trib. to Valley Cr., U.S. hwy. 11 bridge, 5.0 air mi. SW of jct. of st. hwy. 150 and U.S. hwy. 11 in Bessemer, T19S, R5W, Sec. 36, Jefferson Co., Alabama. HOLOTYPE: CU 53346 (42.3), F. F. Snelson, Jr. and B. W. Menzel, 19 May 1969 (orig. no. FFS 69-7). PARATYPES: CU 53354 (68), TU 58810 (10), UMMZ 197674 (10), USNM 204313 (10), paratopotypes.

REMARKS.—Original description date 30 November 1972.

= *Notropis bellus alegnotus* Snelson

Hudsonius aletes Jordan and Evermann 1927

Jordan and Evermann 1927:502. TYPE LOCALITY: Switz City Swamp, Green County, Indiana. TYPES: None. Based on three specimens, collected by C. H. Gilbert in late August, 1883 (and identified by him as *Notropis heterodon* [Gilbert 1884b:207-208]), which were catalogued into the Stanford University collection as SU 2580. Inasmuch as these were destroyed as a result of the 1906 earthquake (C. C. Swift, *in litt.*), the original description evidently was based on material no longer extant.

REMARKS.—Gerking (1945:60) regarded this form as a subspecies of *N. xaenocephalus* (auct.). Bailey, Winn, and Smith (1954:126) were first to synonymize it with *N. roseus* (= *N. texanus*). Original description date 27 April 1927.

= *Notropis texanus* (Girard)

Albumellus altipinnis Cope 1870

Cope 1870:464-465. TYPE LOCALITY: Yadkin R., Roane (= Rowan) Co., North Carolina. LECTOTYPE: ANSP 2846 (41.3), E. D. Cope, Fall 1869. Fowler (1910: pl. 19, fig. 37) designated lectotype by illustrating "type" (ANSP 2846); calculated length 41.3 mm SL. LECTOPARATYPE: ANSP 2847 (1), paratopotype. The third syntype (ANSP 2031) has been reidentified as *N. petersoni*, and is recatalogued under that name.

REMARKS.—Condition of ANSP 2846-2847 fair; condition of ANSP 2031 poor. Counts for ANSP 2846: teeth 2,4-4,1 (lesser tooth in right arch represented only by a hole); anal rays 9. Counts for ANSP 2847: teeth 1,4-4,1; anal rays 9. Counts for ANSP 2031 (*N. petersoni*): teeth 2,4-4,2; anal rays 7. Hubbs and Raney (1948) reviewed species and also described several new subspecies. Original description date 21 November 1870.

= *Notropis altipinnis* (Cope)

Albumus amabilis Girard 1857

Girard 1857:193. TYPE LOCALITY: Rio Leona (trib. to Rio Nueces), Uvalde, Uvalde Co., Texas. SYNTYPES: USNM 72 (26, 42.8-50.2; one right pharyngeal arch in bone collection), ANSP 3151 (ex USNM 72) (1,45.5), MCZ 1684 (ex USNM 72) (2, 45.5-48.5), J. H. Clark, 1851.

REMARKS.—Girard (1859a:52; pl. 29, figs. 10-13) listed only 15 original syntypes and illustrated one of these. Types in relatively good condition for old specimens. Counts for USNM syntypes: teeth 2,4-4,1 (1); anal rays 8 (2), 9 (22), 10 (2); lateral-line scales 36 (1). Counts for MCZ

syntypes: teeth-4,2 and 2,4-4,2; anal rays 9 in both; predorsal scales 17 and 18; body-circumferential scales 11-2-9 = 22 in both; caudal-peduncle circumferential scales 5-2-5 = 12 in both; lateral-line scales 36 and 37. Counts for ANSP syntypes: teeth 2,4-4,1; anal rays 9.

As can be seen from the master species list (p. 17), several nominal forms described by Girard (1857) are identical with *N. amabilis*, the original description of which also appeared in the same paper. Jordan and Gilbert (1883:195) synonymized *Alburnus socius* with *A. megalops*, although Jordan (1885a:123) subsequently refuted this and regarded the two as distinct. Jordan and Gilbert (1883:177) also synonymized *Cyprinella luxiloides* with *C. macrostoma*. The species *amabilis* was regarded as valid in both the above papers, as it was in all subsequent papers in which the name appeared (Evermann and Kendall 1894:102; Jordan and Evermann 1896:292; Fowler 1910:288; Jordan, Evermann, and Clark 1930:124). Baughman (1950:130) listed *N. amabilis* and *N. swaini* as valid, but made no comment regarding the other forms; and Hubbs, Kuehne, and Ball (1953:226) indicated that specimens recorded as *N. swaini* by Jordan and Gilbert (1886:24) and Evermann (1892:79) from the Guadelupe River system are, in fact, *N. amabilis*. Miller (1976:11) synonymized *C. macrostoma* with *N. amabilis* and, as first reviser, selected the latter name. Other than this, none of the above forms have been identified or placed in synonymy. I conclude, based on examination of the descriptions, figures, and extant type material, that *Alburnus megalops* (including the replacement name *Notropis swaini*), *Alburnus socius*, and (probably) *Cyprinella luxiloides* are also identical to *N. amabilis*, and, as first reviser, I formally select the last name as the one to be used. Original description date 25 April 1857.

= *Notropis amabilis* (Girard)

Hudsonius amarus Girard 1857

Girard 1857:210. TYPE LOCALITY: Potomac R., between Chesapeake Bay and Washington, D.C. SYNTYPES: USNM 15 (one set of pharyngeal arches), USNM 16 (one set of arches), USNM 17 (four sets of arches).

REMARKS.—Counts for pharyngeal arches: USNM 15 (?-4,2), USNM 16 (?-4;1), USNM 17 (2,4-4,2 in two; 1,4-4,1 in one; 1,4-4,0 in one). Jordan (1876b:281) was first to synonymize this form with *N. hudsonius*. Original description date 25 April 1857.

= *Notropis hudsonius* (Clinton)

Rutilus amblops Rafinesque 1820.

See pages 21, 90.

Notropis annis Hubbs and Greene 1951

Hubbs and Greene, in Hubbs 1951a:2-14, pl. 1 (figs. 1-2). TYPE LOCALITY: Mississippi R., 1 mi. N of Prairie du Chien, Crawford Co., Wisconsin. HOLOTYPE: UMMZ 75435 (43.0), L. P. Schultz and C. M. Tarzwell, 27 August 1928. PARATYPES: UMMZ 78246 (68), MCZ 36079 (ex UMMZ 78246) (3), paratopotypes; UMMZ 72004 (2), UMMZ 72022 (1), UMMZ 76634 (3), UMMZ 76797 (2), UMMZ 77705 (8), UMMZ 77959 (1), UMMZ 78186 (30), UMMZ 78222 (16), USNM 117559 (ex UMMZ 78222) (2), UMMZ 78279 (11), UMMZ 78312 (11), UMMZ 78361 (8), UMMZ 100918 (2), UMMZ 100949 (4).

REMARKS.—Species name *annis* first appeared as a *nomen nudum* in Greene (1935:96-97). For further remarks on the nomenclature of this species see accounts of *N. nocomis* Jordan and Gilbert and *N. nocomis* Evermann. Clemmer (1970) reviewed species. Original description date 14 March 1951.

= *Notropis annis* Hubbs and Greene

Alburnellus amoenus Abbott 1874

Abbott 1874:334-335, fig. 78. TYPE LOCALITY: Delaware and Raritan Canal, probably in Mercer Co., New Jersey. TYPES: None located. Two specimens, 66.4-73.6 mm SL (MCZ 30697), are catalogued as "types," but Snelson (1968:779-780), on basis of locality and other accompanying data, feels they should not be so considered.

REMARKS.—Snelson (1968) reviewed species. Original description date (30) June 1874.
= *Notropis amoenus* (Abbott)

Cyprinella analostana Girard 1859

Girard 1859b:58-59. TYPE LOCALITY: Rock Cr., trib. to Potomac R., Washington, D.C. TYPE: None located.

REMARKS.—Gibbs (1963) reviewed species. Form very close to *N. whipplei*. Original description date (31 December) 1859.

= *Notropis analostanus* (Girard)

Notropis anogenus Forbes 1885

Forbes 1885:138-139. TYPE LOCALITY: Fox R., McHenry, McHenry Co., Illinois. LECTOTYPE: INHS 26948 (43.0), S. H. Forbes (presumably), 8-10 May 1880. Bailey (1959:120) designated lectotype. LECTOPARATYPES: INHS 26949 (5), USNM 64153 (7), paratopotypes.

REMARKS.—Lectotype in poor condition (desiccated). Bailey (1959) reviewed species. Original description date (31) March 1885.

= *Notropis anogenus* Forbes

Notropis telescopus arcansanus Meek 1891

Meek 1891:133-134. TYPE LOCALITY: Spring Branch, town of Mammoth Spring, Fulton Co., Arkansas. LECTOTYPE: CAS-SU 1027 (50.6), S. E. Meek, L. Rettger, and F. J. Drew, 5 August 1889. Lectotype herein designated. LECTOPARATYPES: CAS-SU 68040 (4), paratopotypes; ANSP 3251-3258 (8).

REMARKS.—Although Meek (1891:134) took his original specimens at Mammoth Spring, he also mentions having examined material collected by D. S. Jordan et al from the White River, near Eureka Springs, Carroll County, Arkansas, in September 1884. Of the two extant type series, one (CAS-SU 1027) is from Mammoth Spring, and the other (ANSP 3251-3258) is from near Eureka Springs. Inasmuch as syntypes of *N. telescopus arcansanus* exist from both places, and the type locality has, in consequence, never been clearly specified; a lectotype is herein selected in order to stabilize this situation. Gilbert (1969:489-490) synonymized this form with *N. telescopus*. Lectotype and CAS-SU lectoparatypes in poor condition. Anal-ray counts for ANSP lectoparatypes 10 (3), 11 (5). Original description date 19 June 1891.

= *Notropis telescopus* (Cope)

Leuciscus ardens Cope 1868

Cope, in Günther 1868:257-258. TYPE LOCALITY: headwaters of Roanoke R., Montgomery Co., Virginia. LECTOTYPE: ANSP 3268 (66.0), E. D. Cope, July 1867. Fowler (1910: pl. 21, fig. 56) designated lectotype by illustrating "type" (ANSP 3268); calculated length 67.9 mm SL. LECTOPARATYPES: ANSP 3269-3315 (48), BMNH 1868.1.10.23 (2), paratopotypes. According to Günther (1868), eight BMNH syntypes were originally present.

REMARKS.—F. F. Snelson (Ms.) is reviewing species. Original description date 14 March 1868.

= *Notropis ardens* (Cope)

Alburnellus arge Cope 1869

Cope 1869:388. TYPE LOCALITY: either Detroit or St. Josephs River, Michigan. TYPES: None located.

REMARKS.—Hubbs (1926:45) was first to synonymize this form with *Notropis photogenis*. Original description date (31) August 1869.

= *Notropis photogenis* (Cope)

Plargyrus argentatus Girard 1857

Girard 1857:212. TYPE LOCALITY: James River system, Virginia. TYPES: None located.

REMARKS.—Jordan and Gilbert (1883:187) were first to synonymize this form with *N. cornutus*.

Original description date 25 April 1857.

= *Notropis cornutus* (Mitchill)

Photogenis ariommus Cope 1868

Cope 1868a:164-165. TYPE LOCALITY: White R., near Indianapolis, Marion Co., Indiana.

HOLOTYPE: ANSP 16488 (54.0), W. P. Clark, 1865 or 1866.

REMARKS.—Gilbert (1969) reviewed species. Fowler (1910: pl. 20, fig. 43) illustrated "type," calculated length 54.9 mm SL. Most literature records of "*Notropis ariommus*" between 1939-1969 actually refer to *N. telescopus*. Original description date 11 May 1868.

= *Notropis ariommus* (Cope)

Notropis asperifrons Suttkus and Raney 1955

Suttkus and Raney 1955c:3-33, figs. 1-2. TYPE LOCALITY: Holly Cr., Ramhurst, 8 mi. N of Murray Co. line, on U.S. hwy. 411, Murray Co., Georgia. HOLOTYPE: CU 28262 (50.0), R. H. Gibbs and P. P. Caswell, 12 June 1952. PARATYPES: CU 28263 (7), paratopotypes: CU 28261 (1), CU 28260 (3), TU 4251 (28), TU 3426 (8), TU 2974 (22), TU 3063 (5), UMMZ 111122 (2), UMMZ 111125 (7), UMMZ 162594 (2), USNM 164968 (1), USNM 164969 (1), UMMZ 139104 (3).

REMARKS.—Swift (1970) reviewed species. Original description date 8 July 1955.

= *Notropis asperifrons* Suttkus and Raney

Notropis atherinoides Rafinesque 1818

Rafinesque 1818:204. TYPE LOCALITY: "Lake Erie." TYPES: None located. Specimens said to have been collected by DeWitt Clinton and deposited in Lyceum of Natural History.

REMARKS.—Type species of genus *Notropis*. Original description date (31) January 1818.

= *Notropis atherinoides* Rafinesque

Notropis atrapiculus Snelson 1972

Snelson 1972:58-71, figs. 3c, 4e-h. TYPE LOCALITY: Sikes Cr., trib. to West Fk. of Choctawhatchee R., on unnumbered county rd., 3.5 air mi. ENE of center of Clio, T9N, R25E, Sec. 33, Barbour Co., Alabama. HOLOTYPE: CU 53343 (47.7) (adult tuberculate male), F. F. Snelson, Jr. and B. W. Menzel, 25 May 1969 (orig. no. FFS 69-18). PARATYPES: CU 53351 (20), CU 53142 (26), USNM 204314 (8), paratopotypes: TU 2509 (36).

REMARKS.—Earlier literature records of *N. roseipinnis* are based in part on this species. Original description date 30 November 1972.

= *Notropis atrapiculus* Snelson

Lythrurus atripes Jordan 1878

Jordan 1878b:59. TYPE LOCALITY: "Various streams in Union and Johnson countries, Illinois." Locality on label of lectotype indicated as Cache R., Johnson Co., Illinois. LECTOTYPE: USNM 26295 (46.0), S. A. Forbes, Snelson and Pflieger (1975:235) designated lectotype. LECTOPARATYPES: CAS-SU 1989 (2), "Illinois."

REMARKS.—Form regarded as subspecies of *N. ardens* by Jordan (1885b:814) and as subspecies of *N. umbratilis* by Jordan and Evermann (1896:300). Original description date (30) June 1878.

= *Notropis umbratilis cyanocephalus* (Copeland)

Notropis cayuga atrocaudalis Evermann 1892

Evermann 1892:76. TYPE LOCALITY: Neches R., ca. 14 mi. E of Palestine, Anderson Co., Texas (at Palestine and Rusk RR bridge). LECTOTYPE: USNM 45557 (39.6), B. W. Evermann, J. T. Scovell, R. R. Gurley, and J. A. Singley, 24 November 1891. Evermann and Kendall (1894: pl. 16) designated lectotype by illustrating "type." Label in type jar says "specimen drawn." LECTOPARATYPES: USNM 125171 (14), CAS-SU 2139 (1), paratopotypes.

REMARKS.—Hubbs and Ortenburger (1929b:67) considered this possibly to be a distinct species, but Hubbs (1951a:13) was first actually to validate it. Original description date 25 May 1892.

= *Notropis atrocaudalis* Evermann

Moniana aurata Girard 1857

Girard 1857:200. TYPE LOCALITY: Pinto Creek, "Piedra Pinta," 15-20 mi. SE of Del Rio, Kinney Co., Texas. (Not "Piedra Painte," New Mexico.) SYNTYPES: USNM 118 (43, 33.5-55.0, plus one left arch in bone collection) (in two jars [2 + 41 specimens]), USNM 125084 (4, 42.7-49.3), MCZ 1689 (ex USNM 118) (2, 48.0-48.3), ANSP 2833-2834 (ex USNM 118) (2, 40.2-45.5), J. H. Clark, 1851.

REMARKS.—Girard (1859a:56; pl. 30, figs. 13-16) listed only 20 original syntypes and illustrated one of these. Jordan (1885a:125) was first to synonymize this form with *N. proserpinus*, an action confirmed by Hubbs and Ortenburger (1929b:75) following examination of types. The two MCZ syntypes, in relatively good condition, are high tuberculate males (tubercles in front of eye large), both with 4-4 pharyngeal teeth and 8 anal rays. The two ANSP syntypes, also in relatively good condition, have 4-4 teeth and 8 anal rays. The type locality is presumed to be that listed as "Piedra Pinta" in the table of distances of Emory's (1857:135) report. No locality with this name appears for the "New Mexico" section of the table, and the remaining data accompanying the specimens (collector and year) are in accord with this interpretation. Original description date 25 April 1857.

= *Notropis proserpinus* (Girard)

Notropis aztecus Woolman 1894

Woolman 1894:63-64; pl. 2, upper right fig. TYPE LOCALITY: canal in Mexico City, D.F., Mexico. SYNTYPES: USNM 45569 (1, 63.0), USNM 47505 (1, 58.7), USNM 125172 (1, 57.5), CAS-SU 644 (10, 45.6-73.7), FMNH 6604 (11, 42.0-77.3), BMNH 1894.1.27.58-61 (4, 56.0-69.5), A. J. Woolman and U. O. Cox, August 1891.

REMARKS.—Jordan and Evermann (1896:258) synonymized this form with *Codoma vittata* Girard 1857, but pointed out that the latter was preoccupied in *Notropis* by *Leuciscus vittatus* DeKay 1842. Jordan and Evermann (1900: pl. 45, fig. 122) and later Meek (1904:60, fig. 13) illustrated one of the syntypes (USNM 45569). Miller (1976:10) tentatively called *Ceraticthys sallaei* Günther 1868 a senior synonym of *N. aztecus*. Counts for USNM 45569: anal rays 7; lateral-line scales 45. Counts for USNM 47505: anal rays 7; lateral-line scales 46. Counts for USNM 125172: anal rays 7; lateral-line scales 50; pharyngeal teeth 4-. Original description date 3 May 1894.

= *Notropis sallaei* (Günther)

Notropis baileyi Suttkus and Raney 1955

Suttkus and Raney 1955a:71-86, figs. 1-2. TYPE LOCALITY: Sawacklahatchee Cr., 1.7 mi. W of Society Hill, on U.S. hwy. 80, Macon Co., Alabama. HOLOTYPE: CU 28224 (59.6), R. D. Suttkus, C. F. Cole, and R. H. Gibbs, Jr., 12 June 1949. PARATYPES: CU 16020 (66), paratopotypes; TU 3195 (4), TU 2637 (30), TU 3430 (75), TU 2965 (4), TU 3066 (41), USNM 163568 (1), UMMZ 105526 (2), UMMZ 105554 (73), UMMZ 124018 (1), UMMZ 124024 (1), UMMZ 124094 (41), UMMZ 124117 (45), UMMZ 146517 (5), UMMZ 146533 (16), UMMZ 146544 (97).

REMARKS.—Swift (1970) reviewed species. Original description date 12 January 1955.

= *Notropis baileyi* Suttkus and Raney

Notropis bairdi Hubbs and Ortenburger 1929

Hubbs and Ortenburger 1929a:29-32. TYPE LOCALITY: Red R., 6-9 mi. SW of Hollis, Harmon Co., Oklahoma. HOLOTYPE: UMMZ 80346 (64.0), A. I. Ortenburger *et al.*, 16 June 1926. PARATYPES: UMMZ 80344 (1), UMMZ 80345 (590 originally, now 574), USNM 93428 (1), USNM 117560 (10), BMNH 1933.1.24.3-5 (3), and OAM uncat. (2) (all four series ex UMMZ 80345), UOMZ 6350 (1300±), paratopotypes; UMMZ 73031 (9), UMMZ 80368 (118), UMMZ 80378

(934 originally, now 929), MCZ 36084 (ex UMMZ 80378) (5), UMMZ 80387 (102 originally, now 94), UF 14599 (ex UMMZ 80387) (8), UMMZ 80402 (3), UMMZ 80409 (1), UOMZ 6183 (140 ±), UOMZ 6197 (3), UOMZ 6212 (1), UOMZ 6284 (100 ±), UOMZ 6295 (100 ±).

REMARKS.—Original description date 16 March 1929.

= *Notropis bairdi* Hubbs and Ortenburger

Cyprinella beckwithi Girard 1857

Girard 1857:197. TYPE LOCALITY: sluices of Arkansas R., near Ft. Makee, Kansas. (Said to be "Ft. Walker" in ANSP catalogue). SYNTYPES: MCZ 1801 (1, 40.3), USNM 135 (two left and one right pharyngeal arches in bone collection), Lt. E. G. Beckwith, July 1853. The one syntype (ANSP 3053) Fowler (1910:280) said was "nearly dissolved" was not located.

REMARKS.—Girard (1858:268) listed nine original syntypes. Jordan (1885a:123) synonymized this form with *N. bubalinus*, and Hubbs and Ortenburger (1929b:75) later synonymized both with *N. lutrensis*. MCZ syntype contorted but otherwise in relatively good condition; specimen examined by Hubbs (see Hubbs and Ortenburger 1929b:75). Counts for MCZ syntype: teeth 1,4-4,1 (Hubbs said 2,4-4,0); anal rays 9. Counts for USNM syntypes (pharyngeal arches): left arches 1,4- and 0,4-; right arch -4,1 (hole where lesser tooth should be). Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Minnilus bellus Hay 1881

Hay 1881:510-511. TYPE LOCALITY: Catawba Cr. and tributaries, Artesia, Lowndes Co., Mississippi. LECTOTYPE: USNM 27426 (44.0), O. P. Hay, March-April 1880. Snelson (1972:20) designated lectotype. LECTOPARATYPES: USNM 203332 (ex USNM 27426) (3), CAS-SU 756 (6), CAS-SU 2526 (1), paratopotypes.

REMARKS.—Originally 40 syntypes were extant, of which 36 were from the above locality and 4 were from the Noxubee R., Macon, Noxubee Co., Mississippi. Only the types listed above are now accounted for. Snelson (1972:20-37) reviewed species. Original description date 23 February 1881.

= *Notropis bellus bellus* (Hay)

Hybopsis bifrenatus Cope 1869

Cope 1869:384-385. TYPE LOCALITY: Trib. of Schuylkill R., Conshohocken, Montgomery Co., Pennsylvania. TYPES: None located. In the original description Cope mentioned having collected nearly 100 specimens. Fowler (1909:531) stated, "Cope's types of this species (*Hybopsis bifrenatus*) seem to be lost."

REMARKS.—Harrington (1947) mapped distribution and Jenkins and Zorach (1970) reviewed species. Original description date (31) August 1869.

= *Notropis bifrenatus* (Cope)

Cyprinella billingsiana Cope 1871

Cope 1871:439. TYPE LOCALITY: Missouri R., St. Joseph, Missouri. LECTOTYPE: ANSP 2952 (34.5), Dr. William Stimpson. Fowler (1910: pl. 17, fig. 19) designated lectotype by illustrating "type" (ANSP 2952); calculated length 35.0 mm SL. LECTOPARATYPES: ANSP 2953-2991 (39), paratopotypes.

REMARKS.—Jordan (1885b:812) was first to synonymize this form with *N. lutrensis*. Condition of syntypes soft, but otherwise fairly good. Largest specimen with teeth 4-?; anal rays 9. Counts for other specimens: teeth 4-4 (2), 1,4-4,1 (2); anal rays 8 (3), 9 (36). Original description date (31 December) 1871.

= *Notropis lutrensis* (Baird and Girard)

Notropis lutrensis blairi Hubbs 1940

Hubbs 1940:6-8. TYPE LOCALITY: Garden Springs (= Monument Spring), trib. to Peña Colo-

rado Cr. (Maravillas Creek drainage), 12-13 mi. SSW of Marathon, Brewster Co., Texas. Elevation 3700 ft. HOLOTYPE: UMMZ 104170 (44.0), Josselyn Van Tyne and W. F. Blair, 16 April 1937. PARATYPES: UMMZ 104171 (15), UMMZ 127335 (22), BU (uncat.) (ex UMMZ 127335) (3), paratopotypes (UMMZ 127335 collected subsequent to UMMZ 104171); UMMZ 120330 (10).

REMARKS.—Contreras (1975) tentatively synonymized this form with the typical subspecies. Original description date (31) October 1940.

= *Notropis lutrensis* (Baird and Girard)

Alburnops blennius Girard 1857

Girard 1857:194. TYPE LOCALITY: Arkansas R., near Fort Smith, Arkansas. LECTOTYPE: USNM 67 (55.9), Dr. George F. Shumard, 1853. Suttkus (1958:308) designated lectotype. LECTOPARATYPES: USNM 171791 (ex USNM 67) (5), USNM 64 (one pair of pharyngeal arches in bone collection), MCZ 1784 (1), ANSP 3030 (1), paratopotypes.

REMARKS.—Girard (1858:261; pl. 57, figs. 13-16) listed 18 original syntypes and illustrated one of these. Hubbs, in 1958, identified syntype in British Museum (BMNH 1883.12.14.213) as *N. volucellus*. Pharyngeal-tooth count for USNM 64:2,4-4,2. Counts for MCZ 1784: teeth 1,4-4,1; anal rays 7. Counts for ANSP 3030: teeth 2,4-4,2; anal rays 7. The specific name *blennius* was long incorrectly applied to the species now called *N. stramineus* (Jordan and Evermann 1896:261-262), until Hubbs (1926:42-43) clarified its status. Hubbs and Bonham (1951:104) recognized two subspecies of *N. blennius* (the nominate southern subspecies and a northern subspecies, *jejunus*), but these are not substantiated by the preliminary findings of Suttkus and Clemmer (1968). Original description date 25 April 1857.

= *Notropis blennius* (Girard)

Opsopoeodus bollmani Gilbert 1890

Gilbert 1890:226-227. TYPE LOCALITY: lagoon of Buckhead Cr., 1 mi. SW of Millen, Jenkins Co., Georgia. SYNTYPES: USNM 61570 (4, 33.8-47.4), C. H. Bollman and B. Fesler, late June 1889.

REMARKS.—Bailey, Winn, and Smith (1954:129) were first to synonymize this form with *N. maculatus*. Original description date (31 December) 1890.

= *Notropis maculatus* (Hay)

Notropis boops Gilbert 1884

Gilbert 1884a:201-202. TYPE LOCALITY: Salt Cr., Brown Co., Indiana; also Flat Rock Cr., Rush Co., Indiana. SYNTYPES: USNM 34982 (3, 44.0-45.6), MCZ 35961 (1, 54.3), C. H. Gilbert et al. CAS-SU 3794 (20, 47.4-61.0 [plus one specimen of *Hybopsis amblops*]); probable syntypes (see below).

REMARKS.—Originally 10 syntypes were listed for USNM 34982, all from Salt Creek. The four specimens still remaining, including the one at the MCZ, leave six syntypes from this series unaccounted for. In the original description Gilbert (1884a:202) also listed 30 syntypes from Flat Rock Creek, collected by W. P. Shannon. The California Academy of Sciences collection (CAS-SU 3794) has 20 specimens of *N. boops* (plus one specimen of *Hybopsis amblops*) from the Flat Rock Creek locality. These probably are syntypes, though C. H. Gilbert is listed as the collector, and nothing in the jar indicates that these are type specimens. Because of the doubt regarding the status of these specimens, I recommend that a lectotype, if selected, be chosen from among the USNM or MCZ types. Counts for USNM and MCZ types: teeth 1,4-4,1, in all; anal rays 8 in all. Original description date 1 September 1884.

= *Notropis boops* Gilbert

Opsopoeodus borealis Harper and Nichols 1919

Harper and Nichols 1919:266. TYPE LOCALITY: Lake Athabaska, Ft. Chipewyan, Alberta, Canada. HOLOTYPE: NMC 1048 (27.0), F. Harper, 15 June 1914. Type lost, according to McAllister (1965:10); this reconfirmed by McAllister (*in litt.*, 6 August 1971).

REMARKS.—Exact status uncertain. Possibly a junior synonym of *N. hudsonius*, as suggested by Kendall (1924) and by Gilbert and Bailey (1972:14), this based on geographic locality and the "sharply defined black blotch, about half diameter of eye, at base of caudal, partly on the fin." However, the pharyngeal tooth count was given as 4-, and dorsal- and anal-fin ray counts as 9 each, all of which differ from what one would expect in *N. hudsonius* from western Canada. Possibly this nominal form is based on a hybrid, one parent of which is *N. hudsonius*. Original description date 22 September 1919.

= *Notropis hudsonius* (Clinton) or possibly a hybrid involving that species.

Leuciscus boucardi Günther 1868

Günther 1868:485. TYPE LOCALITY: Cuernavaca, Mexico. SYNTYPES: BMNH 1868.3.3.4-7 (4, 61.0-72.0), M. Boucard.

REMARKS.—This species has been assigned to the genus *Hypopsis*, based on the presence of a barbel at each corner of the mouth, but Cortés (1968) recently placed it in *Notropis*. *Leuciscus boucardi*, *Graodus nigrotaeniatus*, and *Ceratichthys cumingii*, all of which were originally described by Günther (1868), are synonyms. Meek (1904:68) was first to point out the relationships of the first two forms, and, as first reviser, selected the name *boucardi*. Carl L. Hubbs examined the types of *C. cumingii* in the British Museum in 1958, and synonymization of that form with *N. boucardi* is based on his analysis. Original description date 14 March 1868.

= *Notropis boucardi* (Günther)

Plargyrus bowmani Girard 1857

Girard 1857:196. TYPE LOCALITY: Sweetwater R., Nebraska. HOLOTYPE: ANSP 3236 (59.5), J. Soulé Bowman. This may not be the type (see below).

REMARKS.—Girard (1858: pl. 59, figs. 1-5) illustrated the unique type (USNM 65), which measures 51 mm SL and was said to be drawn to actual size. The length of the ANSP individual (60.5 mm SL) raises doubt that this is the type specimen. Also, as the type is unique, it seems unlikely that the USNM would have sent it to the ANSP. Jordan and Gilbert (1883:187) were first to synonymize this form with *N. cornutus*. Condition of type (?) fairly good, considering age. Original description date 25 April 1857.

= *Notropis cornutus* (Mitchill)

Notropis braytoni Jordan and Evermann 1896

Jordan and Evermann 1896:264-265. TYPE LOCALITY: Rio Monterrey (trib. to Rio San Juan), Cadereita (= Cadereyta), Nuevo Leon, Mexico. SYNTYPES: USNM 39657 (2, 47.5-52.4), Lt. D. N. Couch, winter 1852-1853. USNM 96 (one set of pharyngeal arches in osteological collection). CAS 29301 (old IU 8628) (1) indicated as "type," but locality listed as Texas.

REMARKS.—Substitute name for *Moniana nitida* Girard 1857 (preoccupied in *Notropis* by *Albumus nitidus* Kirtland 1854). Types and type locality thus same as for *Moniana nitida*. Counts for USNM 39657: pharyngeal teeth 4-4 in one, arches absent in other; anal rays 7 in both. Counts for USNM 96: pharyngeal teeth 1,4-4,0, with tooth in left lesser row represented by a stump. Original description date 18 March 1896.

= *Notropis braytoni* Jordan and Evermann

Notropis brazosensis Hubbs and Bonham 1951

Hubbs and Bonham 1951:97-100, pl. 1 (fig. 2) and pl. 2 (fig. 2). TYPE LOCALITY: Brazos R., at Wellborn Crossing, Brazos Co., Texas. HOLOTYPE: UMMZ 129827 (49.2), K. Bonham and party, 21 October 1938. PARATYPES: UMMZ 129828 (101), paratopotypes; UMMZ 129840 (18), UMMZ 146293 (2).

REMARKS.—Gilbert and Bailey (1962) synonymized this form with *N. shumardi*. Original description date 30 March 1951.

= *Notropis shumardi* (Girard)

Notropis brimleyi Bean 1903

Bean 1903:913-914. TYPE LOCALITY: Cane R., Cane River P.O. (near Burnsville), Yancey Co., North Carolina. HOLOTYPE: USNM 50601 (76.5), H. H. Brimley and F. Sherman, Jr., 4 October 1902. PARATYPES: None located. Original description listed two paratypes collected with holotype.

REMARKS.—Gilbert (1964:124) synonymized this form with *N. coccogenis*. Smith (1907:253) erroneously gave the type locality as Cane Creek, in the French Broad River system, but Menhinick, Burton, and Bailey (1974:24) showed that the Cane River and Bollings (= Bowlens) Creek mentioned in Bean's (1903) original description are in Yancey County, in the Nolichucky system. Original description date 6 July 1903.

= *Notropis coccogenis* (Cope)

Leuciscus bubalinus Baird and Girard 1853

Baird and Girard 1853:391. TYPE LOCALITY: Otter Cr., trib. to N. Fk. of Red R., either Tillman or Kiowa County, southwestern Oklahoma. (Locality erroneously listed in original description as in Arkansas). HOLOTYPE: USNM 125 (one set of pharyngeal arches in bone collection), R. B. Marcy and G. B. McClellan, 1852.

REMARKS.—Girard (1858:265) listed only one type specimen. Pharyngeal-tooth count for USNM 125:4-4. Hubbs and Ortenburger (1929a:34) were first to synonymize this form with *N. lutrensis* and, as first revisers, selected name *lutrensis* over *bubalinus*, both species having been described on the same page of Baird and Girard's paper. Original description date 5 September 1853.

= *Notropis lutrensis* (Baird and Girard)

Notropis bairdi buccula Cross 1953

Cross 1953:252-259, fig. 1. TYPE LOCALITY: Brazos R., ca. 7 mi. S of Mineral Wells, at U.S. hwy. 281 crossing, Palo Pinto Co., Texas. HOLOTYPE: KU 2642 (41.3), G. A. Moore and F. B. Cross, 14 April 1952. PARATYPES: KU 2318 (originally 13, now 9), UMMZ 166743 (ex KU 2318) (2), USNM 163279 (ex KU 2318) (2), paratopotypes.

REMARKS.—Form very close to *N. bairdi* and perhaps not specifically distinct. Original description date 29 June 1953.

= *Notropis buccula* Cross

Notropis buchanani Meek 1896

Meek 1896:342. TYPE LOCALITY: small creek near Poteau, Le Flore Co., Oklahoma. SYNTYPES: USNM 47532 (3, 27.4-30.2) and USNM 125161 (3, 26.9-30.0) are catalogued as syntypes, but on the basis of available evidence (see below) should not be so considered.

REMARKS.—Confusion attends the type material of *N. buchanani*. In the original description Meek (1896:342) listed 14 syntypes from a small creek near Poteau, Oklahoma, and gave the catalogue number as USNM 47532. At present six specimens are labelled "types" in the USNM collection, three of which bear the above catalogue number and three of which are catalogued as USNM 125161, the latter having been transferred from the old U.S. Bureau of Fisheries duplicate collection. The labels in both jars say "Red River, Arthur, Texas," and nothing in the jars, the catalogue, or the files suggests these locality data to be in error.

The Red River collection was treated by Meek in the same paper as that from Poteau, and *N. buchanani* is known to occur at both localities. Inquiries at the U.S. National Museum, the Field Museum of Natural History, the California Academy of Sciences, and the University of Michigan (those collections most likely to have Meek material) have failed to uncover any specimens of *N. buchanani* from the Poteau locality in either their type or general collections. The most likely explanation for this mixup is that Meek originally intended to use the Poteau specimens as types, subsequently decided to use the Red River material instead (the latter specimens are in excellent condition for their age), but for some reason failed to change the type locality

in his paper. Whatever the reason, the Red River specimens cannot properly be regarded as types, at least until such time as an explanation for the present situation is forthcoming.

Hubbs and Greene (1928: 377-378) reduced this form to a subspecies, but Bailey (1951:193) subsequently re-elevated it to a full species. Original description date 13 April 1896.

= *Notropis buchanani* Meek

Notropis burchi Fowler 1942

Fowler 1942:4-6, figs. 5-6. TYPE LOCALITY: Mill Cr., trib. to St. Marys R., Charlton Co., Georgia. HOLOTYPE: ANSP 69970 (47.5), J. W. Burch, 14 December 1940. PARATYPE: ANSP 69971 (1), paratopotype.

REMARKS.—Although Fowler designated a holotype, the above types are in the same jar and are exactly the same length, with no indication which specimen is which. However, one specimen is in slightly better condition, and thus is here considered to be the holotype. Counts for holotype: pharyngeal teeth 4-4; anal rays 8. Bailey, Winn, and Smith (1954:127) erroneously synonymized this form with *N. chalybaeus*. Original description date 16 September 1942.

= *Notropis maculatus* (Hay)

Notropis atherinoides caddonis Meek 1891

Meek 1891:136. TYPE LOCALITY: Little Red River, Judsonia, White County, Arkansas. TYPES: None located.

REMARKS.—Other than the original description, the only reference to this form of which I am aware is that by Meek (1894:78) (as *N. atherinoides caddoënsis*). To my knowledge, it has not previously been formally synonymized with *N. atherinoides*. Original description date 19 June 1891.

= *Notropis atherinoides* Rafinesque

Photogenis caeruleus Jordan 1877

Jordan 1877c:338-339. TYPE LOCALITY: tribs. of Oostanula R. (primarily Rocky Cr.), above Rome, Floyd Co., Georgia. LECTOTYPE: USNM 17883 (59.6), D. S. Jordan and C. H. Gilbert, July 1876. Lectotype herein designated by R. H. Gibbs, Jr. LECTOPARATYPES: USNM 20114 (2), MCZ 24396 (1), CU 1488 (1), BMNH 1880.1.21.10 (1), MNHN A.1306 (1), paratopotypes. The three syntypes listed (one illustrated) by Fowler (1910:282; pl. 28, fig. 26) cannot be located on the shelves at the ANSP, nor can a number for such specimens be found in the ANSP catalogue.

REMARKS.—Gibbs (1955) reviewed species, but (1955:177) did not list CU, ANSP, nor BMNH types, although Fowler's (1910: pl. 18, fig. 26) illustration of one of the ANSP syntypes (specimens not seen by me) appears to be *N. caeruleus*. Name first appeared as a *nomen nudum* (*Cyprinella caerulea*) in Jordan and Copeland (1877:153). Original description date (30) June 1877.

= *Notropis caeruleus* (Jordan)

Notropis calientis Jordan and Snyder 1899

Jordan and Snyder 1899:122-123, fig. 4. TYPE LOCALITY: Rio Verde, Aguascalientes, Mexico. HOLOTYPE: CAS-SU 6193 (40.2), J. O. Snyder, 9 January 1899. PARATYPES: CAS-SU 6198 (11), BMNH 1900.9.29.152-157 (6), paratopotypes.

REMARKS.—Counts for holotype: Pharyngeal teeth 4-4; anal rays 7; body-circumferential scales 12-2-11 = 25; caudal-peduncle circumferential scales 5-2-5 = 12. Counts for CAS-SU paratypes: anal rays 7 (10), 8 (1). Original description date 30 August 1899.

= *Notropis calientis* Jordan and Snyder

Episema callisema Jordan 1877

Jordan 1877c:363-364. TYPE LOCALITY: S.Fk. of Ocmulgee R., Flat Rock, DeKalb Co., Georgia. LECTOTYPE: USNM 17864 (55.4), D. S. Jordan and C. H. Gilbert, July 1876. Lectotype herein designated by R. H. Gibbs, Jr. LECTOPARATYPES: USNM 163954 (ex USNM 17864) (3), USNM 20126 (1), MCZ 24384 (1), BMNH 1880.1.21.20 (1), paratopotypes.

REMARKS.—Gibbs (1955) reviewed species, but did not (1955:138) list MCZ nor BMNH types. Name first appeared as a *nomen nudum* (*Moniana callisema*) in Jordan and Copeland (1877:154). Original description date (30) June 1877.

= *Notropis callisema* (Jordan)

Photogenis callistius Jordan 1877

Jordan 1877c:337-338. TYPE LOCALITY: tribs. of Etowah and Oostanaula rivers, near Rome, Georgia. (Most specimens from Silver Cr., trib. to Etowah R.) LECTOTYPE: MCZ 24363 (80.0), D. S. Jordan and C. H. Gilbert, summer 1876. Lectotype herein designated by R. H. Gibbs, Jr. LECTOPARATYPES: Possibly none (see below). One specimen each of BMNH 1880.1.21.67 and MNHN A. 1289 were not examined by either Gibbs or me.

REMARKS.—Gibbs (1955) reviewed species. Of the seven extant former syntypes of this species, two have not yet been examined (BMNH 1880.1.21.67 and MNHN A. 1289), two are *N. trichroistius* (ANSP 19837-19838), two are *N. caeruleus* (USNM 17882 and 163965), one is *Semotilus atromaculatus* (USNM), and only one is *N. callistius* as now recognized (MCZ 24363). Name first appeared as a *nomen nudum* (*Cyprinella callistia*) in Jordan and Copeland (1877:153). Original description date (30) June 1877.

= *Notropis callistius* (Jordan)

Notropis callitaenia Bailey and Gibbs 1956

Bailey and Gibbs 1956:1-14, fig. 1. TYPE LOCALITY: Flint R., ca. 1 mi. S of Radium Springs outlet, 5.5 mi. S of Albany, Dougherty Co., Georgia. HOLOTYPE: UMMZ 168938 (64.4), H. E. Winn and R. R. Rosanio, 20-29 September 1952. PARATYPES: UMMZ 163922 (70), USNM 171351 (ex UMMZ 163922) (6), ANSP 73864 (20), paratopotypes. Numerous other specimens examined, but not designated paratypes.

REMARKS: Original description date 13 August 1956.

= *Notropis callitaenia* Bailey and Gibbs

Cyprinella calliura Jordan 1877

Jordan 1877e:61-62. TYPE LOCALITY: Alabama River system, Selma, Alabama. Type locality given in original description as Black Warrior River, but this stream is some distance from Selma. LECTOTYPE: USNM 6865 (89.6), Prof. Winchell. Gibbs (1957:192) designated lectotype. LECTOPARATYPES: USNM 163951 (7), USNM 214661 (1), paratopotypes.

REMARKS.—Jordan (1885b:813) was first to synonymize this form with *N. cercostigma stigmaturus* (= *N. venustus stigmaturus*). A jar labelled *Cyprinella calliura*, with appropriate locality data and also bearing the catalogue number USNM 6865, was found in the non-type section of the collection on 15 June 1975. This specimen, which I identify as *N. venustus*, presumably was an original syntype that had, for reasons unknown, been placed in a separate jar some years ago. Because it was not included among the lectoparatypes listed by Gibbs (1957:192), it was not added to the series USNM 163951 but instead was recatalogued as USNM 214661. Original description date (31 December) 1877.

= *Notropis venustus: cercostigma* × *stigmaturus*

Cliola camura Jordan and Meek 1884

Jordan and Meek 1884:474-475. TYPE LOCALITY: Uncertain. According to the original description, the type locality is Fort Lyon, Colorado. This is well west of the present range of the species, although *N. camurus* does occur in the middle and lower parts of the Arkansas River system, and it is possible that a relict population was, till recently, present at the Fort Lyon locality. A second possibility is Lyons, Kansas (also in the Arkansas system), as *N. camurus* occurs today within about a hundred miles of there. The most likely possibility is that the types are from Lyons County, in the Neosho River drainage (Arkansas R. system) of eastern Kansas, where the species is common today. LECTOTYPE: USNM 15256 (80.0), Dr. E. Palmer. Gibbs (1961:345) desig-

nated lectotype. LECTOPARATYPES: None. Gibbs (1961:345) reidentified second syntype as *Hybognathus placitus*.

REMARKS.—Gibbs (1961) reviewed species. Original description date 23 October 1884.
= *Notropis camurus* (Jordan and Meek)

Notropis cayuga Meek 1889

Meek 1889:305-307. TYPE LOCALITY: Cayuga Lake and Fall Creek, Ithaca, Tompkins Co., New York. SYNTYPES: CAS-SU 3790 (15, 39.3-46.5) (= *N. bifrenatus*), CAS-SU 67156 (36, 24.9-50.2) (= *N. heterodon*), CAS-SU 67159 (1, 35.2) (= *N. analostanus*), S. E. Meek, 1885-1886. Specimens were identified by me and subsequently recatalogued by species, but all are still syntypes.

REMARKS.—The above syntypes were originally in two lots, both apparently with the same data, which were mixed as a result of the 1906 earthquake. Hubbs (1928:41) restricted the species name *cayuga* to *N. bifrenatus*, so that the lectotype, when selected, should come from CAS-SU 3790. Original description date (31 December) 1889.

= *Notropis bifrenatus* (Cope)

Notropis celayensis Alvarez 1958

See page 22.

Hypsilepis cornutus cerasinus Cope 1868

Cope 1868a:159. TYPE LOCALITY: headwaters of Roanoke R., Virginia. LECTOTYPE: ANSP 3833 (73.0), E. D. Cope. Gilbert (1964:137) designated lectotype. Fowler's (1910) earlier lectotype designation (ANSP 3791) is discussed below. LECTOPARATYPES: ANSP 3792-3799 (8), paratopotypes. Remainder of original syntypic series (ANSP 3791, 3800-3833) (34 specimens) reidentified (Gilbert 1964:137) as *N. albeolus* and catalogued under that name.

REMARKS.—Gilbert (1964:137-140) reviewed species. Fowler (1910: pl. 18, fig. 25) illustrated the "type" of *Hypsilepis cornutus cerasinus* which, according to its calculated length (99 mm SL), obviously was based on one of the specimens of *N. albeolus* in the original syntypic series. Should Fowler's lectotype designation be allowed to stand, it could result in the changing of two long-established species' names. In the interest of nomenclatural stability, I (Gilbert 1977) therefore have requested that the International Commission suspend Fowler's (1910) designation and allow mine (Gilbert 1964) to stand. Inasmuch as the same catalogue number (ANSP 3791) was used for two different lectotype specimens, a new catalogue number (ANSP 3833) was required for the lectotype I designated in 1964. Original description date 11 May 1868.

= *Notropis cerasinus* (Cope)

Cyprinella cercostigma Cope 1868

Cope 1868a:157. TYPE LOCALITY: Pearl R., Monticello, Lawrence Co., Mississippi. TYPES: None located. Four specimens supposedly at USNM, collected by Helen Tension.

REMARKS.—Gibbs (1957:189-192) reviewed this form. In the original description Cope gave the pharyngeal tooth count as 2,4-4,2, which if accurate would refer to a species other than *N. venustus*. Original description date 11 May 1868.

= *Notropis venustus cercostigma* (Cope)

Hybopsis chalybaeus Cope 1869

Cope 1869:383-384. TYPE LOCALITY: trib. of Schuylkill R., near Conshohocken, Montgomery Co., Pennsylvania. TYPES: None located. Fowler (1909, 1910) did not list types in ANSP collection.

REMARKS: Swift (1970) reviewed species. Original description date (31) August 1869.

= *Notropis chalybaeus* (Cope)

Notropis chamberlaini Evermann 1898

Evermann, in Jordan and Evermann 1898:2800-2801. TYPE LOCALITY: Atchafalaya R., Mel-

ville, St. Landry Psh., Louisiana. HOLOTYPE: USNM 48900 (70.0), F. M. Chamberlain, 5 May 1897. PARATYPES: USNM 48901(4), USNM 125608(5), CAS-SU 8570(4), paratopotypes.

REMARKS.—Ortenburger and Hubbs (1927:126) were first to synonymize this form with *N. illecebrosus* (= *N. shumardi*). Original description date (30) November 1898.

= *Notropis shumardi* (Girard)

Luxilus chickasawensis Hay 1881

Hay 1881:506. TYPE LOCALITY: Chickasawha R., Enterprise, Clark Co., Mississippi. LECTOTYPE: USNM 27419 (76.6), O. P. Hay, March-April 1880. Gibbs (1957:190) designated lectotype. LECTOPARATYPES: USNM 163953 (8), paratopotypes.

REMARKS.—Gibbs (1957:190) synonymized this form with *N. venustus cercostigma*. Original description date 23 February 1881.

= *Notropis venustus cercostigma* (Cope)

Notropis chihuahua Woolman 1892

Woolman 1892:260. TYPE LOCALITY: Rio de los Conchos, Chihuahua City, Chihuahua, Mexico. SYNTYPES: UMMZ 61702 (ex old IU 4868) (5, 46.7-59.0), CAS 14213 (ex old IU 4868) (19, 43.2-56.1), CAS-SU 818 (27, 41.0-55.4), USNM 44151 (10, 43.6-56.3), USNM 125186 (1, 49.6), FMNH 1889 (1, 53.7), BMNH 1894.1.27.48-57 (12, 40.0-51.0), A. J. Woolman and J. T. Scovell, July-August 1891.

REMARKS: Original description date (31) March 1892.

= *Notropis chihuahua* Woolman

Hybopsis chiliticus Cope 1870

Cope 1870:462. TYPE LOCALITY: trib. of Yadkin R., Roane (= Rowan) Co., North Carolina. LECTOTYPE: ANSP 4378 (49.0) E. D. Cope, Fall 1869. Fowler (1910: pl. 19, fig. 36) designated lectotype by illustrating "type" (ANSP 4378); calculated length 49.5 mm SL. LECTOPARATYPES: ANSP 4379-4388 (10), paratopotypes.

REMARKS.—Condition of types fair. Counts for syntypes: pharyngeal teeth 1,4-4,1 (6), 2,4-4,1 (1), 1,4-4,2 (1), 2,4-4,2 (3); anal rays 8 (9), 9 (2). Original description date 21 November 1870.

= *Notropis chiliticus* (Cope)

Cliola chlora Jordan 1878

Jordan 1878c:791. TYPE LOCALITY: Upper Missouri River system. (Exact locality unknown; see opening remarks by Jordan [1878c:777]). SYNTYPES: USNM 20193 (9, 36.8-43.4) (in two jars: eight specimens in first jar, one specimen in second), Elliott Coues, 1873 or 1874.

REMARKS.—Pharyngeal teeth 4-4 in two, -4 in two; anal rays 7 in all nine. Jordan and Evermann (1896:263) synonymized this form with *N. scylla*, and Hubbs and Greene (1928:375) synonymized both with the Great Plains form (*missuriensis*) of *N. deliciosus*. Original description date 11 December 1878.

= *Notropis stramineus missuriensis* (Cope)

Codoma chloristia Jordan and Brayton 1878

Jordan and Brayton 1878:21-23. TYPE LOCALITY: Saluda R., Farr's Mills, W of Greenville, Greenville Co., South Carolina. LECTOTYPE: MCZ 24380 (50.1), D. S. Jordan and C. H. Gilbert, summer 1877. Gibbs (1963:522) designated lectotype. LECTOPARATYPE: BMNH 1880.1.21.43 (1), paratopotype.

REMARKS.—Gibbs (1963:522-524) reviewed this form and regarded it as a subspecies of *N. analostanus*, but most still consider it to be a valid species (Bailey *et al.* 1970:21). Original description date (31 December) 1878.

= *Notropis chloristius* (Jordan and Brayton)

Hybopsis chlorocephalus Cope 1870

Cope 1870:461. TYPE LOCALITY: tribs. of Catawba R., North Carolina. LECTOTYPE: ANSP

2755 (44.0), E. D. Cope, fall 1869. Fowler (1910: pl. fig. 35) designated lectotype by illustrating "type" (ANSP 2755); calculated length 45.1 mm SL. LECTOPARATYPES: ANSP 2756-2767 (12), ANSP 2803-2829 (27). One original syntype (ANSP 2768) reidentified as *Hybopsis hypsinotus* and recatalogued under that name.

REMARKS: Condition of types fair (ANSP 2755-2767) to poor (ANSP 2803-2829), the bodies soft in the latter series. Counts for lectotype: pharyngeal teeth 1,4-; anal rays 8. Counts for ANSP 2756-2767: anal rays 8 (11), 9 (1). Counts for ANSP 2803-2829: teeth 1,4-4,1 (5), 1,4-4,0 (1); anal rays 8 (27). Original description date 21 November 1870.

= *Notropis chlorocephalus* (Cope)

Notropis altipinnis chowanus Hubbs and Raney 1948

Hubbs and Raney 1948:10-11. TYPE LOCALITY: Waqua Cr., trib. to Nottoway R., near Rawlings, Brunswick Co., Virginia. HOLOTYPE: UMMZ 94515 (38.2), Donald Ameel, 10 November 1931. PARATYPES: UMMZ 94516 (5), USNM 101338 (9), paratopotypes; CU 10569 (75 originally, now 65).

REMARKS.—This subspecies and others described in the same paper are not usually regarded as valid, although they have never been formally synonymized. Original description date 26 April 1948.

= *Notropis altipinnis* (Cope)

Hybopsis chrosomus Jordan 1877

Jordan 1877c:333-334. TYPE LOCALITY: tribs. of Etowah and Oostanaula rivers, around Rome, Georgia. (Most specimens from Silver Cr., trib. to Etowah R.). LECTOTYPE: USNM 17881 (44.5), D. S. Jordan and C. H. Gilbert, July 1876. Lectotype herein designated by C. C. Swift. LECTOPARATYPES: USNM 203857 (ex USNM 17881) (1), ANSP 19843-19845 (3), CU 1487 (1), MCZ 24373 (1), BMNH 1880.1.21.40 (1), MNHN A. 1292 (3), paratopotypes.

REMARKS.—Swift (1970) reviewed species. Fowler (1910: pl. 20, fig. 41) illustrated "cotype." Name first appeared as a *nomen nudum* (*Hybopsis chrosomus*) in Jordan and Copeland (1877:151). Original description date (30) June 1877.

= *Notropis chrosomus* (Jordan)

Luxilus chrysocephalus Rafinesque 1820

Rafinesque 1820b:48. TYPE LOCALITY: "Kentucky." Neotype locality is a creek ca 6 mi. SSW of Danville, off st. hwy. 35, Lincoln Co., Kentucky. NEOTYPE: UMMZ 174539(99.0), R. M. Bailey and party, 5 April 1953. Gilbert (1964:160) designated neotype.

REMARKS.—Jordan (1876a:94) was first to synonymize this form with *N. cornutus*. Hubbs (1926:46) regarded it as a subspecies of *N. cornutus*, and Gilbert (1961a, 1961b) elevated it to a full species. Menzel (1970, 1976), on the basis of close similarity to *N. cornutus* in blood serum protein pattern, recommended reversion to status of a subspecies of *N. cornutus*. Gilbert (1964:157-167) reviewed species. Original description date (31) May 1820.

= *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Leuciscus coccogenis Cope 1868

Cope, in Günther, 1868:253. TYPE LOCALITY: Holston R., Virginia. LECTOTYPE: USNM 36849 (97.3), E. D. Cope, September 1867. Gilbert (1964:123) designated lectotype. LECTOPARATYPE: MCZ 35653 (1), BMNH 1868.1.10.3 (8), ANSP 5379 (1), ANSP 3561-3650 (90), MNHN 4852 (1) paratopotypes. Remainder of larger ANSP syntypic series (ANSP 3651-3660) comprises four other species (*N. chrysocephalus*, *N. galacturus*, *N. rubricroceus*, and *N. telescopus*), which are now recatalogued under those names.

REMARKS.—Gilbert (1964:122-126) reviewed species. Original description date 14 March 1868.

= *Notropis coccogenis* (Cope)

Notropis cummingsae collis Hubbs and Raney 1951

Hubbs and Raney 1951:16-22, pl. 1, fig. 3. TYPE LOCALITY: Roses Cr., 1.5 mi. S of Smyrna, on st. hwy. 181, Burke Co., North Carolina. HOLOTYPE: UMMZ 160557 (34.0), E. E. Brown, 6 September 1946. PARATYPES: UMMZ 160558 (2), CU 11218 (3), paratopotypes; UMMZ 94553 (1), UMMZ 94556-94557 (18), CU 11269 (9).

REMARKS.—This is a weakly defined form, differing from the nominate subspecies in usually having one less anal ray. It is sometimes recognized, although the usual practice is to treat all populations of *N. cummingsae* binomially. Original description date 11 December 1951.

= *Notropis cummingsae* Myers

Notropis comalis Jordan and Gilbert 1885

See page 22.

Moniana complanata Girard 1857

Girard 1857:200. TYPE LOCALITY: Rio Grande (or tributary), Brownsville, Cameron County, Texas. SYNTYPE: USNM 94 (one pharyngeal arch), Capt. Van Vliet.

REMARKS.—Girard (1859a:56; pl. 31, figs. 17-20) listed three original syntypes and illustrated one of them. Count for pharyngeal arch: 4-. Jordan (1885a:125) synonymized this form with *N. leoninus*, and Jordan and Evermann (1896:272) later synonymized both with *N. lutrensis*. Contreras (1975) regarded it as a junior synonym of *N. l. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Rutilus compressus Rafinesque 1820

Rafinesque 1820b:51. TYPE LOCALITY: "Monongahela River." TYPES: None located.

REMARKS.—Possibly a synonym of *N. cornutus* or *N. photogenis* (see Jordan, Evermann, and Clark 1930:123). Of these, *N. cornutus* is the more likely possibility, based on a compressed body and dorsal and anal fin each with 9 rays, although Gilbert (1964:140-142) did not list it under synonymy of that species. Original description date (31) May 1820.

= Not definitely identifiable. Most likely *Notropis cornutus* (Mitchill)

Notropis cooglei Hildebrand and Towers 1928

Hildebrand and Towers 1928:18. TYPE LOCALITY: Pelucia Cr., S of Greenwood, Leflore Co., Mississippi. HOLOTYPE: USNM 88379 (58.5), 19 June 1925, I. L. Towers. PARATYPES: USNM 127019 (38 originally, now 30), UMMZ 167162 (ex USNM 127019) (8), USNM 127021 (54 originally, now 46), UMMZ 167164 (ex USNM 127021) (8), USNM 127024 (26 originally, now 22), UMMZ 167165 (ex USNM 127024) (4), paratopotypes; USNM 127020 (1), USNM 127022 (30 originally, now 26), UMMZ 167166 (ex USNM 127022) (4), USNM 127023 (72 originally, now 62), UMMZ 167163 (ex USNM 127023) (10).

REMARKS.—Bailey, Winn, and Smith (1954:128) synonymized this form with *N. venustus*, and Gibbs (1957:180) later synonymized it with *N. v. venustus*. Original description date 2 February 1928.

= *Notropis venustus venustus* (Girard)

Leuciscus copii Günther 1868 (emended spelling *Leuciscus copei*)

Günther 1868:255-256. TYPE LOCALITY: Walker Cr., either Bland or Giles Co., Virginia; St. Joseph R. and Dowagiac Cr. (trib. to St. Joseph R.), Berrien Co., Michigan. SYNTYPES: BMNH 1868.1.10.24 (3, 43.0-58.0) (Walker Cr.), E. D. Cope, August-September 1867; ANSP 2577 (1, 42.0), MCZ 4688 (2, 50.6-55.2) (St. Joseph R. and Dowagiac Cr.), E. D. Cope.

REMARKS: Günther (1868:255-256) introduced the name *copii* to replace the species name *jaculus* (preoccupied in *Alburnellus*) which, contrary to Günther's indication, had not yet been described (see Gilbert 1971a:476). Both names thus emanate from the same publication. According to W. I. Follett, whose advice I sought in the matter, Günther should be considered the first reviser, as he chose the name *copii* over *jaculus* and clearly indicated that they represent the same

species. (This has been confirmed by re-examination of the types.) *Alburnellus jaculus* thus stands as a junior synonym of *Leuciscus copii*. The name *jaculus*, though first appearing as a junior synonym, is available under the rules of zoological nomenclature (1964: Article 11D), as a result of Cope's (1869:387).subsequent description. Although the Michigan localities were not specifically mentioned in the original description, they are still regarded as type localities and the specimens taken there as syntypes, for reasons discussed earlier in this paper, and because the range of the species was specified in the original description to include Michigan and Virginia. Original description date 14 March 1868.

= *Notropis rubellus* (Agassiz)

Cyprinus cornutus Mitchell 1817

Mitchell 1817:289. TYPE LOCALITY: Walkill R., New York. Neotype locality is Walkill R., 3 mi. SW of New Paltz, Ulster Co., New York. NEOTYPE: UMMZ 174540 (69.0), J. R. Greeley and R. M. Bailey, 2 June 1936. Gilbert (1964:142) designated neotype.

REMARKS.—Gilbert (1964:140-151) reviewed species. See subsequent account of *Cyprinus megalops* for more detailed discussion of nomenclature of *C. cornutus*. On the basis of close similarity in blood serum protein pattern between this form and *N. chrysocephalus*, Menzel (1970, 1976) recommended calling the latter a subspecies of *N. cornutus*. Original description date (31) August 1817.

= *Notropis cornutus* (Mitchill)

Moniana couchi Girard 1857

Girard 1857:201. TYPE LOCALITY: Rio San Juan, vicinity of China, Nuevo Leon, Mexico. SYNTYPES: USNM 103 (= USNM 20227 ?) (33, 18.7-42.8 + one set of pharyngeal arches in bone collection and one unidentified specimen not this species), MCZ 1795 (2, 31.0-39.6), Lt. D. N. Couch, 1853. ANSP 2924 (1, 39.2) is also labelled as a type of this species, but label in jar says "Arkansas River near Fort Smith. Dr. George B. Shumard. Smiths. Inst. 2982." This obviously should not be considered a syntype of this species.

REMARKS.—Girard (1859a:57; pl. 30, figs. 21-24) listed 20 original syntypes and illustrated one of them. Jordan (1885a:125) was first to synonymize this form with *N. lutrensis*. Contreras (1975) regarded it as a junior synonym of *N. l. lutrensis*. USNM 103 erroneously recatalogued as USNM 20227 at one time. Counts for USNM syntypes: teeth 4-4 in two; anal rays 9(3), 10(1). Counts for ANSP syntypes: teeth 4-4 and anal rays 9 in both. Original description date 25 April 1857.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Leuciscus croceus Storer 1845

Storer 1845:48. TYPE LOCALITY: "Alabama." TYPES: None located.

REMARKS.—Possibly not a *Notropis*, although dorsal-ray count (8), anal-ray count (7), and orange fins suggest *N. longirostris*. Original description date (31 December) 1845.

= Not definitely identifiable, but most likely *Notropis longirostris* (Hay)

Ceraticthys cumingii Günther 1868 (emended spelling *Ceraticthys cumingi*)

Günther 1868:177-178. TYPE LOCALITY: Unknown. Label in jar says "California," which is obviously in error, as *N. boucardi* does not occur in California. SYNTYPES: BMNH 1856.4.9.10 (2, 50.0-57.5), H. Cuming.

REMARKS.—Specimens identified as *Hybopsis boucardi* by C. L. Hubbs on 30 September 1958. The species *cumingii* and *boucardi* were described in the same publication, and I, as first reviser, hereby select the latter name. Original description date 14 March 1868.

= *Notropis boucardi* (Günther)

Notropis cummingsi Myers 1925

Myers 1925:1-4, fig. 1. TYPE LOCALITY: Upper Burnt Mill Cr., Wilmington, New Hanover County, North Carolina. HOLOTYPE: AMNH 8391 (48.4), C. S. Myers, 19 May 1924. This speci-

men cannot be located and may be lost (C. L. Smith, *in litt.*, 23 November 1971). PARATYPES: USNM 94242 (1), ANSP 53943 (1), UMMZ 66514 (4), CAS-SU 24327 (1), BMNH 1925.10.19.5 (1), paratopotypes.

REMARKS.—Hubbs and Raney (1951) reviewed this species and recognized two subspecies (*collis* and the nominate form). Although these have sometimes been considered valid (Smith-Vaniz 1968: fig. 87), the usual practice is to treat all populations of *N. cummingsae* binomially. Hubbs and Raney (1951:5) also emended the name ending to conform to the International Commission on Zoological Nomenclature ruling, as species was named for Mrs. J. H. Cummings. Original description date 23 April 1925.

= *Notropis cummingsae* Myers

Hypsilepis cornutus cyaneus Cope 1868

Cope 1868a:160. TYPE LOCALITY: Montreal R., (trib. to Lake Superior), Keeweenaw Pt., Keeweenaw Co., Michigan. LECTOTYPE: ANSP 3950 (119.0), Dr. J. H. Slack. Fowler (1910: pl. 18, fig. 32) designated lectotype by illustrating "type" (ANSP 3950); calculated length 124.0 mm SL. LECTOPARATYPES: ANSP 3951-3959 (9), paratopotypes.

REMARKS.—Hubbs (1926:46) synonymized this form with *N. cornutus frontalis* (= *N. cornutus*). Condition of syntypes good. Original description date 11 May 1868.

= *Notropis cornutus* (Mitchill)

Lythrurus cyanocephalus Copeland 1877

Copeland, in Jordan, 1877a:70-71. TYPE LOCALITY: Root R., Racine Co., Wisconsin. (See under *Remarks*). LECTOTYPE: USNM 17857 (45.0), Dr. Hoy, 1874. Snelson and Pflieger (1975:235) designated lectotype.

REMARKS.—Snelson and Pflieger (1975) reviewed this form. Name first appeared as a *nomen nudum* (*Lythrurus cyanocephalus*) in Nelson (1876:47). The original type specimens came from two localities: the one listed above, and Bass Creek, tributary to the Rock River, near Hanover, Wisconsin (coll. H. E. Copeland). Inasmuch as only one syntype (USNM 17857) apparently remains, it has been chosen as the lectotype and the place from which it came (Root River) the type locality. Original description date 17 April 1877.

= *Notropis umbratilis cyanocephalus* (Copeland)

Moniana deliciosa Girard 1857

Girard 1857:199. TYPE LOCALITY: Leon R. (= Leon Cr.), trib. to San Antonio R., Bexar Co., Texas. LECTOTYPE: USNM 119 (49.6), Dr. C. B. Kennerly, 1853. Clark Hubbs (1954a:73) designated lectotype. LECTOPARATYPES: None. Suttkus (1958:310) reidentified, as *N. volucellus nocomis*, the specimen (USNM 162723) Clark Hubbs (1954a:73) listed as a paratype.

REMARKS.—Girard (1858:275) listed only 12 original syntypes. Clark Hubbs (1954a:72-73) believed the lectotype and lectoparatype of *Moniana deliciosa* to be the species now known as *N. stramineus* (the fish to which the name *deliciosus* was applied for many years). Nine other syntypes were recatalogued as *N. volucellus* (USNM 162724). Suttkus (1958:307-318) later reidentified the lectotype as *N. texanus*, the lectoparatype as *N. volucellus nocomis*, and one of the nine recatalogued syntypes as *N. texanus* (the other eight syntypes are *N. volucellus*, as indicated by Hubbs). Suttkus also identified the three other extant syntypes as *N. volucellus nocomis*: MCZ 1690 (2) and ANSP 4170 (1). Thus, none of the extant syntypes are *N. stramineus*. Counts for lectotype: pharyngeal teeth 2,4-4,2; anal rays 7. Fowler (1910: pl. 15, fig. 4) illustrated ANSP "cotype." Original description date 25 April 1857.

= *Notropis texanus* (Girard)

Alburnus dilectus Girard 1857

Girard 1857:193. TYPE LOCALITY: Arkansas R., near Ft. Smith, Arkansas. SYNTYPES: USNM 71 (2, 56.8-63.8), USNM 36927 (27, 39.0-60.2 + two specimens of *Notropis volucellus*), MCZ 1785 (2, 51.5-52.0), Dr. George C. Shumard, 14 July 1853.

REMARKS.—Girard (1858:259; pl. 57, figs. 9-12) listed only 24 original syntypes and illustrated one of these. This form was first synonymized with *N. atherinoides* by Jordan (1878a:422), but was subsequently regarded as a distinct species, closely related to *N. rubrifrons* (= *N. rubellus*) (Jordan and Evermann 1896:294). Hubbs and Ortenburger (1929b:83) again synonymized it with *N. atherinoides*. Knapp (1953:61) considered it to be a subspecies of *N. atherinoides*. Original description date 25 April 1857.

= *Notropis atherinoides* Rafinesque

Minnilus dinemus Rafinesque 1820

Rafinesque 1820b:46. TYPE LOCALITY: "Ohio River." TYPES: None located.

REMARKS.—Jordan and Copeland (1877:154) synonymized this form with *Alburnellus jaculus*, and Jordan (1878a:422) synonymized it (*dinemus*) with *N. atherinoides*. Jordan and Evermann (1896:293) later synonymized both with *N. atherinoides*. Original description date (31) May 1820.

= *Notropis atherinoides* Rafinesque

Hypsilepis diplaemia Cope 1868

Cope 1868a:162-163. TYPE LOCALITY: Grand River (or tributary thereof), Lansing, Ingham Co., Michigan. SYNTYPES: Possibly ANSP 3054-3055 (2, 49.0-50.0). These specimens bear only the data "Michigan, E. D. Cope," with no positive indication that they actually are types.

REMARKS.—Strictly speaking, Rafinesque (1820b:50) was first to use this specific name in his description of *Semotilus diplemia*, a form that cannot be positively identified, but which probably does not refer to a species of *Notropis*. Others (Kirtland 1846:276, pl. 22, fig. 3; Putnam 1863:7; Günther 1868:250) subsequently applied it to a variety of species, and Cope (1868a:162-163) also regarded Rafinesque as authority for the name. Jordan (in Jordan and Meek 1884:476), however, proposed the substitute name *lythrusus* for *Hypsilepis diplaemia* Cope, at the same time clearly indicating this was not the *Semotilus diplemia* of Rafinesque. According to Article 16a, International Code of Zoological Nomenclature, Jordan's action allows Cope's (1868a) description of *H. diplaemia* to stand as the original description of *N. lythrusus*, which in turn is a junior synonym of *N. umbratilis cyanocephalus* (Copeland 1877). Although Jordan and Gilbert (1877:95) designated *Semotilus diplemia* Rafinesque 1820 as type species of the genus *Lythrusus*, the species involved actually is *Hypsilepis diplaemia* Cope 1868, for reasons discussed above. For further discussion see accounts of *N. lythrusus* (this paper), and also that by Snelson and Pflieger (1975:235). Original description date 11 May 1868.

= *Notropis umbratilis cyanocephalus* (Copeland)

Hybopsis dorsalis Agassiz 1854

Agassiz 1854:358. TYPE LOCALITY: Burlington, Iowa. SYNTYPES: MCZ 1947 (93, 22.8-47.0), USNM 120418 (ex MCZ 1947) (4, 30.0-38.5) UMMZ 86506 (ex MCZ 1947) (10, 30.0-48.0), Dr. I. H. Rauch.

REMARKS.—This form was generally ignored after its original description, or was placed in the questionable synonymy of *N. deliciosus* (= *N. stramineus*). Hubbs and Greene (1928:380) were first to clarify its status. Types soft, but otherwise in good condition for old specimens. Counts for two of MCZ syntypes: pharyngeal teeth 1,4-4,1 in both; anal rays 8 in both. Counts for four USNM syntypes: pharyngeal teeth 1,4-4,1 (2); anal rays 7 (1), 8 (3). For remarks on subspecies of *N. dorsalis* see account of *Photogenis piptolepis*. Original description date (31 December) 1854.

= *Notropis dorsalis* (Agassiz)

Notropis edwardraneyi Suttks and Clemmer 1968

Suttks and Clemmer 1968:18-39, figs. 1-10. TYPE LOCALITY: Alabama R. at Yellow Jacket Bar, river mile 129.8, 1.2 mi down-river from Holly Ferry crossing, or 12.5 mi E of Pine Hill, Wilcox Co., Alabama. HOLOTYPE: TU 49485 (57.6), R. D. Suttks and G. R. Gunning, 8 March 1967. PARATYPES: USNM 202435 (100), UMMZ 187475 (100), ANSP 109424 (100), CU 52941

(100), MCZ 45878 (100), CAS-SU 66551 (100), KU 12674 (100), UAIC 2791 (100), FMNH 74294 (100), TU 4618 (33), TU 40303 (1020), TU 40925 (85), TU 41400 (390), TU 41726 (16), TU 42737 (5630), TU 44028 (7324), TU 46802 (223), TU 47361 (49), TU 47924 (105), paratopotypes; TU 33381 (1613), TU 35243 (236), TU 35269 (314), TU 35323 (28), TU 40293 (297), TU 40320 (491), TU 40335 (243), TU 40900 (289), TU 40940 (226), TU 40950 (109), TU 41608 (284), TU 41632 (92), TU 41639 (187), TU 41655 (119), TU 41666 (147), TU 41670 (301), TU 41695 (83), TU 41711 (29), TU 41732 (19), TU 41745 (63), TU 41755 (12), TU 41761 (9), TU 41772 (151), TU 41791 (22), TU 41797 (4), TU 41813 (10), TU 41823 (1), TU 42731 (370), TU 42746 (687), TU 42759 (900), TU 44011 (175), TU 44029 (94), TU 44045 (461), TU 46783 (202), TU 46796 (395), TU 46819 (43), TU 46830 (32), TU 47346 (64), TU 47374 (86), TU 47387 (168), TU 47396 (33), TU 47408 (475), TU 47420 (173), TU 47435 (229), TU 47452 (134), TU 47477 (89), TU 47491 (24), TU 47499 (16), TU 47515 (306), TU 47762 (143), TU 47781 (9), TU 47822 (85), TU 47838 (75), TU 47909 (152), TU 47936 (39), TU 47968 (23), TU 47980 (180), TU 47994 (65), TU 48012 (232).

REMARKS.—Original description date 16 October 1968.

= *Notropis edwardraneyi* Suttkus and Clemmer

Opsopoeodus emiliae Hay 1881

Hay 1881:507-508. TYPE LOCALITY: The original description listed three localities, all in Mississippi: Catawba Cr., Artesia, Lowndes Co.; Chickasawha R. and tributaries, Enterprise, Clarke Co.; and Horsehunter Cr., near confluence with Noxubee R., Macon, Noxubee Co. Gilbert and Bailey (1972:20) restricted type locality to Horsehunter Creek (see REMARKS). SYNTYPES: None located. Hay, in original description, listed one specimen from Artesia, one from Enterprise, and several from Macon. He listed USNM 27429 as type number, whereas Jordan and Evermann (1896:248) gave it as USNM 32222. Presumably these numbers apply to different syntypic series.

REMARKS.—Gilbert and Bailey (1972) reviewed *N. emiliae*, and reduced *Opsopoeodus* to a subgenus of *Notropis*, an action questioned by Campos and Hubbs (1973) on the basis of difference in chromosome number. Inasmuch as the syntypes of *N. emiliae* from Macon were the ones catalogued as USNM 27429 (Gilbert and Bailey 1972:20), they restricted the type locality on that basis. Original description date 23 February 1881.

= *Notropis emiliae emiliae* (Hay)

Photogenis leucops engraulinus Cope 1868

Cope 1868a:164. TYPE LOCALITY: trib. to Kanawha R., Austinville, Wythe Co., Virginia. HOLOTYPE: ANSP 3033 (length not determinable), E. D. Cope, August-September 1867.

REMARKS.—Gilbert (1971a:477) discussed the type specimen. Type in very poor condition (head missing); anal rays 10, pelvic rays 9-9. Original description date 11 May 1868.

= *Notropis photogenis* (Cope)

Hudsonius euryopa Bean 1880

Bean 1880:285-286. TYPE LOCALITY: McBean Cr., near McBean, at Burke and Richmond Co. line, Georgia. LECTOTYPE: USNM 23513 (85.2), A. Graves, 1879. Lectotype herein designated by William Seaman, Jr. The other syntype is *N. petersoni* and is recatalogued under that name:

REMARKS.—Original description date 30 March 1880.

= *Notropis hudsonius* (Clinton)

Photogenis eurystomus Jordan 1877

Jordan 1877c:356. TYPE LOCALITY: Nancys Cr., trib. to Chattahoochee R., Atlanta, Fulton Co., Georgia. LECTOTYPE: MCZ 24388 (68.3), D. S. Jordan and C. H. Gilbert, summer 1876. Gibbs (1957:190) designated lectotype. This specimen apparently is the only type still extant.

REMARKS.—Name first appeared as a *nomen nudum* (*Cyprinella eurystoma*) in Jordan and Copeland (1877:153). Bailey, Winn, and Smith (1954:128) were first to synonymize this form

with *N. venustus*, and Gibbs (1957:189-190) synonymized it with *N. venustus cercostigma*. Condition of type fair to good (wrinkled); anal rays 9. Original description date (30) June 1877.
= *Notropis venustus cercostigma* (Cope)

Notropis euryzonus Suttkus 1955

Suttkus 1955:85-100, fig. 1 (two illustrations). TYPE LOCALITY: Uchee Cr., 0.7 mi. E of Marvin, Lee Co., Alabama. HOLOTYPE: CU 28346 (49.0), R. D. Suttkus, R. H. Gibbs, Jr., and C. F. Cole, 12 June 1949. PARATYPES: CU 15990 (36), paratopotypes; CU 13983 (5), CU 14316 (43), CU 16194 (2), UMMZ 123951 (1), UMMZ 128744 (6), UMMZ 128745 (1), TU 10700 (8), TU 10718 (60).

REMARKS.—Original description date 28 December 1955.

= *Notropis euryzonus* Suttkus

Notropis umbratilis fasciolaris Gilbert 1891

Gilbert 1891:148. TYPE LOCALITY: Spring and Pin-hook creeks, Huntsville, Alabama. LECTOTYPE: USNM 42504 (59.5), P. H. Kirsch, 27-28 May 1889. Lectotype herein designated by F. F. Snelson, Jr. LECTOPARATYPES: USNM 203331 (ex USNM 42504) (4), USNM 43529(5), paratopotypes; USNM 36185(7), USNM 36831(2), USNM 43485(11), CAS-SU 937(9).

REMARKS.—Smith-Vaniz (1968:42) was first to synonymize this form with *N. ardens*. Original description date 16 June 1891.

= *Notropis ardens* (Cope)

Hudsonius fluviatilis Girard 1857

Girard 1857:210. TYPE LOCALITY: Chicago Harbor, Lake Michigan, Illinois; also Root River, at Racine, Wisconsin. SYNTYPES: USNM 14 (2, 92.5-93.7 + one set of pharyngeal arches in bone collection) (Chicago Harbor), S. F. Baird; USNM 13 (one set of pharyngeal arches in bone collection) (Root River), S. F. Baird.

REMARKS.—Counts for USNM 13: teeth 1,4-4,2. Counts for USNM 14: teeth 2,4-4,1 (arches in bone collection). Jordan (1885a:127) was first to synonymize this form with *N. hudsonius*. Original description date 25 April 1857.

= *Notropis hudsonius* (Clinton)

Cyprinella forbesi Jordan 1878

Jordan 1878a:57-58. TYPE LOCALITY: Illinois R., Union Co., Illinois. SYNTYPES: USNM 29869 (1, 50.8), CAS-SU 1290 (2, 53.2-57.4), S. A. Forbes, summer 1877.

REMARKS.—Jordan (1885b:812) was first to synonymize this form with *N. lutrensis*. Hubbs, in Hubbs and Ortenburger (1929b:75) called it the "northern subspecies of *N. lutrensis*." Counts for USNM 29869: teeth 1,4-4,0; anal rays 9. Counts for CAS-SU 1290: teeth 1,4-4,1 and 4-4; anal rays 9 and 8, respectively. Original description date (30) June 1878.

= *Notropis lutrensis* (Baird and Girard)

Notropis forlonensis Meek 1904

Meek 1904:70-71, fig. 20. TYPE LOCALITY: Rio Forlon, trib. to Rio Panuco, Forlon, Tamaulipas, Mexico. HOLOTYPE: FMNH 4478 (40.8), S. E. Meek, 9 May 1903. PARATYPES: FMNH 4479 (25), CAS-SU 22341 (3), CAS 33825 (old IU 10914) (4), paratopotypes; FMNH 4495 (3).

REMARKS.—Although the jar contains no indication that the four specimens catalogued as IU 10914 are paratypes, they are here so regarded as locality and collector (Meek) are both correct. Counts for holotype: teeth 4-4; anal rays 9. Counts for CAS-SU paratypes: anal rays 9 (1), 10 (2). Carl Hubbs (1954:293) downgraded this form from a full species to a subspecies of *N. lutrensis*, a decision followed more recently by Contreras (1975). Original description date (31) August 1904.

= *Notropis lutrensis forlonensis* (Meek)

Moniana formosa Girard 1857

Girard 1857:201. TYPE LOCALITY: Mimbres R., near Deming, Luna Co., New Mexico. (See REMARKS below). SYNTYPES: USNM 114 (one set of pharyngeal arches in bone collection), ANSP 3056 (ex USNM 114) (1, 40.0), MCZ 1686 (ex USNM 114) (2, 35.7), John H. Clark, 1851. Girard (1859a:58) also listed USNM 113 as an original type number.

REMARKS.—The type locality for this species has generally been regarded as the Rio Mimbres (basin of Laguna de Guzman), in Chihuahua, Mexico (Girard 1859a:58), but T. Uyeno and R. R. Miller (unpub. ms), after studying Emory's (1857:46) account and consultation with Dr. W. J. Koster (Univ. of New Mexico), agreed with him that the type locality is in New Mexico, as indicated above. They also considered the collector and date of collection to be different from that indicated by Girard (1859a:58) (Dr. C. B. Kennerly, 1854). Girard (1859a:58; pl. 30, figs. 5-8) listed 24 original syntypes (USNM 113 [4] and USNM 114 [20]) and illustrated one of these. Counts for USNM 114: teeth 4-4. Counts for ANSP 3056: teeth 4-4; anal rays 8. Counts for MCZ 1686: teeth 4-4 in both; anal rays 9 in both. Condition of types good for old specimens. This form is close to *N. lutrensis*, but was listed as a valid species by Koster (1957:67-68), Bailey *et al.* (1970:22), and Minckley (1973:138-139). Contreras (1975) subsequently reviewed this form and regarded it as a subspecies of *N. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis formosus* (Girard)

Alburnus formosus Putnam 1863

Putnam 1863:9. TYPE LOCALITY: Mobile, Alabama. LECTOTYPE: UMMZ 162442 (43.0), Judge LeSene and Albert Stein. Bailey and Suttkus (1952:15) designated lectotype. LECTOPARATYPES: UMMZ 87183 (6), MCZ 1845 (24), paratopotypes. Bailey and Suttkus identified one other syntype (UMMZ 86863) as *N. signipinnis*.

REMARKS.—This is a senior synonym of *N. hypselopterus*. Günther (1868:255) proposed the substitute name *hypselopterus* for this species, as *Alburnus formosus* Putnam 1863 was preoccupied in the genus *Leuciscus* by *Moniana formosa* Girard 1857. Original description date 28 April 1863.

= *Notropis hypselopterus hypselopterus* (Günther)

Hybopsis fretensis Cope 1869

Cope 1869:382. TYPE LOCALITY: near Detroit, Michigan. HOLOTYPE: ANSP 2840 (44.0), E. D. Cope.

REMARKS.—The type of this species is apparently unique, and thus is regarded as the holotype. Fowler (1910: pl. 15, fig. 3) illustrated "type"; calculated length 44.7 mm SL. Hubbs (1926:45) was first to synonymize this form with *N. spilopterus*. Original description date (31) August 1869.

= *Notropis spilopterus* (Cope)

Moniana frigida Girard 1857

Girard 1857:200. TYPE LOCALITIES: Salado Cr., just E of San Antonio, Bexar Co., Texas; Rio Sabinal, at Sabinal, Uvalde Co., Texas; and Rio Medina, at Castroville, Medina Co., Texas (all tributaries of Rio San Antonio); Rio Nueces, ca. 7 mi. W of Uvalde, Uvalde Co., Texas; and Rio Frio, ca. 10 mi. NE of Uvalde, Uvalde Co., Texas (tributaries of Rio Nueces). According to Hubbs and Ortenburger (1929b:74), Jordan and Evermann (1896:271) virtually restricted type locality to Rio Frio, but none of extant syntypes are from there. Also, USNM 124, which was the only type number given by Jordan and Evermann (op. cit.), represents the series from the Rio Medina. The type locality, therefore, should not yet be considered firmly fixed. SYNTYPES: USNM 98 (9, 27.3-47.0) (Rio Sabinal), USNM 100 (three pharyngeal arches) (Salado Creek), USNM 123 (93, 35.9-59.1), ANSP 5062-5063 (presumably ex USNM 123; label in jar says S.I. 2978) (2, 53.0-57.0), USNM 124 (47, 27.8-61.3 + one set of pharyngeal arches in bone collection; also four specimens of *N. volucellus* and one specimen of *Moxostoma* sp. [probably *congestum*]) (Rio Medina), John

H. Clark, 1851. Specimens from Rio Nueces not found. One syntype from Rio Frio (USNM 99; Dr. C. B. Kennerly, 1853) not found.

REMARKS.—Girard (1858:276-277; pl. 59, figs. 16-20) listed and illustrated one syntype (USNM 99) from Rio Frio. Girard (1859a:56-57; pl. 30, figs. 17-20) listed a total of 133 syntypes (and illustrated one) from three localities as follows: USNM 98 (10 specimens from Rio Sabinal), USNM 100 (3 from Salado Creek), USNM 123 (100 from Salado Creek), and USNM 124 (20 from Rio Medina). Condition of types fairly good for old specimens. Counts for USNM 100: pharyngeal teeth 4-4 (3). Count for USNM 124: pharyngeal teeth 4-4 (set of arches in bone collection). Jordan (1885a:125) synonymized this form with *N. leoninus*, and Hubbs and Ortenburger (1929b:74) synonymized both with *N. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Leuciscus frontalis Agassiz 1850

Agassiz 1850:368. TYPE LOCALITY: Montreal R. (trib. to east side of Lake Superior), N of Sault Ste. Marie, Ontario, Canada. SYNTYPES: MCZ 1751 (1, 116.0), BMNH 1867.4.12.3 (1, 69.0), L. Agassiz, 5 July 1848.

REMARKS.—Hubbs (1926:46) regarded this form as a subspecies of *N. cornutus*. Gilbert (1961a) reduced it to the synonymy of that species. Condition of MCZ type (a tuberculate male) excellent. Original description date (31 December) 1850.

= *Notropis cornutus* (Mitchill)

Notropis fumeus Evermann 1892

Evermann 1892:81. TYPE LOCALITY: Hunter Cr., ca. 9 mi. W of Houston, Harris Co., Texas. LECTOTYPE: USNM 45558 (41.8), B. W. Evermann, J. T. Scovell, and R. R. Gurley, 20 November 1891. Evermann and Kendall (1894: pl. 18) designated lectotype by illustrating "type." Label in type jar says "specimen drawn." LECTOPARATYPES: USNM 125072 (ex USNM 45558) (3), paratopotypes.

REMARKS.—Snelson (1973) reviewed species. Original description date 25 May 1892.

= *Notropis fumeus* Evermann

Hypsilepis galacturus Cope 1868

Cope 1868a:160. TYPE LOCALITY: Holston River system, Virginia. (See REMARKS). LECTOTYPE: USNM 14981 (83.8), E. D. Cope, October 1867. Gibbs (1961:339) designated lectotype. LECTOPARATYPES: ANSP 3381-3444 (65), MCZ 32255 (1), MNHN 4853 (1), paratopotypes.

REMARKS.—Gibbs (1961) reviewed species. Although Gibbs (1961:339) indicated the type locality as in North Carolina, this is considered erroneous, as Cope did not collect from that part of the Holston system. Furthermore, the USNM specimen almost certainly came originally from the ANSP type series, for which Gibbs (*op. cit.*) gave the locality "Holston River, Virginia." Original description date 11 May 1868.

= *Notropis galacturus* (Cope)

Notropis garmani Jordan 1885

Jordan 1885b:813. TYPE LOCALITY: Lago del Muerto, Parras, Coahuila, Mexico. SYNTYPES: MCZ 24891 (2, 53.0-56.0), MCZ 24892 (20, 27.8-54.0) UMMZ 86663 (ex MCZ 24892) (6, 40.0-56.0), USNM 120257 (6, 35.5-51.3), Dr. E. Palmer, 1880.

REMARKS.—Jordan (1885b:813) proposed this as a substitute name for *Cyprinella rubripinna* Garman 1881, which was preoccupied in *Notropis* by *Argyreus rubripinnis* Heckel 1843. According to Article 72d, International Code of Zoological Nomenclature, the types for *Cyprinella rubripinna* must also serve as the types for the replacement name. Species close to *N. lutrensis*. This form has heretofore been considered to be a full species, but Contreras (1975) now regards it as a subspecies of *N. lutrensis*. Types in very good condition. Counts for MCZ 24891: teeth 4-4 in both; anal rays 9 (smaller specimen), 10 (larger specimen). Counts for MCZ 24892: anal rays

9 (7), 10 (12), 11 (1). Counts for USNM 120257: teeth 4-4 (2); anal rays 9 (1), 10 (3), 11 (2). Original description date 2 October 1885.

= *Notropis lutrensis garmani* Jordan

Notropis germanus Hay 1887

Hay 1887:252-253. TYPE LOCALITY: Smoky Hill River, Wallace, Wallace Co., Kansas. HOLOTYPE: USNM 37949 (48.7), O. P. Hay and M. J. Thompson, July 1885.

REMARKS.—Hubbs (1951b) determined this form to be based on an intergeneric hybrid. Original description date 2 July 1887.

= Hybrid: *Hybognathus hankinsoni* × *Notropis heterolepis*

Leuciscus gibbosus Storer 1845

Storer 1845:48. TYPE LOCALITY: Tuscaloosa, Alabama. TYPES: None located.

REMARKS.—Original description inadequate for positive identification. Gilbert (1964:167) listed it as a possible senior synonym of *N. chrysocephalus isolepis*. Original description date (31 December) 1845.

= Status uncertain. Possibly *Notropis chrysocephalus isolepis* Hubbs and Brown

Moniana gibbosa Girard 1857

Girard 1857:201. TYPE LOCALITY: trib. to Rio Grande, Brownsville, Cameron Co., Texas. SYNTYPE: USNM 31159 (1, 47.2), Capt. Van Vliet, 1852.

REMARKS.—Girard (1859a:59, pl. 30, figs. 9-12) listed three original syntypes (USNM 105) and illustrated one of them. Counts for USNM 31159: teeth 4-4; anal rays 9. Jordan (1885a:126) was first to synonymize this form with *N. lutrensis*. Contreras (1975) regarded it as a junior synonym of *N. l. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Notropis gibbsi Howell and Williams 1971

Howell and Williams 1971:55-64, figs. 1 (two photographs), 2 a, e, and g. TYPE LOCALITY: Enitachope Cr., trib. to Hillabee Cr., 3.2 mi. SSW of Ashland, along st. hwy. 9, Clay Co., Alabama. HOLOTYPE: USNM 204933 (74.0), J. D. Williams and H. Harima, 13 July 1968. PARATYPES: USNM 204934 (40), UMMZ 189199 (45), CU 64311 (45), UAIC 3020 (30), paratopotypes: TU 61102 (28), UF 15933 (28), FSU 16881 (28).

REMARKS.—Species close to *N. trichroistius*. Original description date 8 March 1971.

= *Notropis gibbsi* Howell and Williams

Hypsilepis cornutus gibbus Cope 1868

Cope 1868a:158. TYPE LOCALITY: "southeastern Michigan." TYPES: None located.

REMARKS.—Hubbs (1926:46) synonymized this form with *N. cornutus chrysocephalus*. Gilbert (1964:160) showed that it could also have been based on a hybrid. Original description date 11 May 1868.

= *Notropis chrysocephalus chrysocephalus* (Rafinesque), or possibly a hybrid between that species and *Notropis cornutus* (Mitchill)

Notropis gilberti Jordan and Meek 1885

Jordan and Meek 1885:4-5. TYPE LOCALITY: Village Cr. (trib. to Des Moines R.), SW of Ottumwa, Wapello Co., Iowa. SYNTYPES: USNM 35840 (1, 38.0) (= *N. cornutus*), UMMZ 61487 (2, 42.0) (= *N. dorsalis*), UMMZ 61998 (2, 35.0-47.0) (= *N. stramineus*), ANSP 4137-4143, 4176 (8, 40.0-51.0) (= *N. dorsalis*), CAS-SU 1456 (9 total: 6, 43.5-45.3 [= *N. dorsalis*]; 3, 41.0-46.2 [= *N. stramineus*]), CAS 13518 (ex IU 4612) (15 total: 14, 34.5-46.1 [= *N. dorsalis*]; 1, 36.1 [= *N. stramineus*]), D. S. Jordan and S. E. Meek, August 1884.

REMARKS.—Fowler (1910: pl. 16, fig. 12) illustrated "cotype" (ANSP 4137). Hubbs and Greene

(1928:380) were first to synonymize this form with *N. dorsalis*. Original description date 6 May 1885.

= *Notropis dorsalis* (Agassiz)

Notropis girardi Hubbs and Ortenburger 1929

Hubbs and Ortenburger 1929a:32-33. TYPE LOCALITY: Cimmaron R., 3 mi. NW of Kenton, Cimmaron Co., Oklahoma. HOLOTYPE: UMMZ 80439 (51.0), A. I. Ortenburger *et al.*, 2-7 July 1926. PARATYPES: UMMZ 80440 (94 originally, now 87), USNM 117564 (*ex* UMMZ 80440) (5), BMNH 1933.1.24.1-2 (*ex* UMMZ 80440) (2), UOMZ 6211 (90±), paratopotypes; UMMZ 73019 (50), UMMZ 73042 (4), UMMZ 80416 (1), UMMZ 80426 (96 originally, now 91), MCZ 36082 (*ex* UMMZ 80426) (5), UMMZ 80460 (16), UMMZ 80464 (7), UMMZ 80465 (1181, now 1180), MCZ 32697 (*ex* UMMZ 80465) (1), UMMZ 80475 (1), UMMZ 80494 (6), UOMZ 6196 (1), UOMZ 6205 (215±), UOMZ 6217 (4), UOMZ 6252 (1000±).

REMARKS.—Original description date 16 March 1929.

= *Notropis girardi* Hubbs and Ortenburger

Leuciscus gracilis Agassiz 1850

Agassiz 1850:370. TYPE LOCALITY: "Lake Huron." SYNTYPES: MCZ 1752 (2, 102.0-110.0), L. Agassiz, August 1848.

REMARKS.—Jordan and Gilbert (1883:187) were first to synonymize this form with *N. cornutus* and, as first revisers, selected name *frontalis* over *gracilis* for the northern subspecies. Condition of types good, though slightly soft. Original description date (31 December) 1850.

= *Notropis cornutus* (Mitchill)

Hybopsis gracilis Agassiz 1854

See pages 21, 90-91.

Moniana gracilis Girard 1857

Girard 1857:201. TYPE LOCALITY: Acapulco, near Monterrey, Nuevo Leon, Mexico. SYNTYPES: USNM 116 (4, 35.0-36.0), ANSP 2992 (*ex* USNM 116) (1, 57.5), MCZ 1796 (*ex* USNM 116) (1, 32.2), Lt. D. N. Couch, winter 1852-1853.

REMARKS.—Girard (1859a:59) listed seven original syntypes. Fowler (1910: pl. 17, fig. 18) illustrated ANSP "cotype." Condition of USNM types good (tuberculate specimens); condition of ANSP type poor (soft). Counts for ANSP type: teeth 1,4-4,0; anal rays 9. Counts for MCZ type: teeth 4-4; anal rays 8 (rays difficult to count). Jordan (1885a:125) was first to synonymize this form with *N. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Photogenis grandipinnis Jordan 1877

Jordan 1877e:62-63. TYPE LOCALITY: Flint R., Georgia. SYNTYPES: None located. The type number listed in the original description is USNM 9296 ("numerous small specimens in poor condition," coll. Hugh M. Neisler), but the types of *Notropis thoreauanus* are now catalogued under that number.

REMARKS.—Jordan and Gilbert (1883:185) were first to synonymize this form with *N. hypselopterus*. Original description date (31 December) 1877.

= *Notropis hypselopterus hypselopterus* (Günther)

Notropis greenei Hubbs and Ortenburger 1929

Hubbs and Ortenburger 1929b:78-81. TYPE LOCALITY: Elk R. (trib. to Neosho R.), 7 mi. N of Grove, Delaware Co., Oklahoma. HOLOTYPE: UMMZ 80978 (42.0), A. I. Ortenburger *et al.*, 11 July 1927. PARATYPES: UMMZ 80979 (4), UOMZ 7733 (2), paratopotypes; UMMZ 60288 (1), UMMZ 80980 (2), UOMZ 7501 (2), FMNH 1511 (37).

REMARKS.—Hubbs and Ortenburger (1929b:78) listed only four paratopotypes, although a total

of six are now present in the UMMZ and UOMZ collections. Original description date 16 March 1929.

= *Notropis greenei* Hubbs and Ortenburger

Cyprinella gunnisoni Girard 1857

Girard 1857:197. TYPE LOCALITY: Cottonwood R., ca. 5 mi. NW of Durham, Marion Co., Kansas. (See REMARKS). SYNTYPES: USNM 139 (24, 25.4-54.0 + one set of pharyngeal arches in bone collection), F. Creutzfeldt, 3-4 July 1853.

REMARKS.—Girard (1858:267) listed only 12 original syntypes. Counts for types: teeth 4-4 (1), 0,4-4,1 (1, arches in bone collection); anal rays 9 (5). Types in very poor condition (desiccated). Jordan (1885a:123) synonymized this form with *N. bubalinus* and Hubbs and Ortenburger (1929a:34; 1929b:75) synonymized both with *N. lutrensis*.

The type localities for this and for two other species (*Cyprinella ludibunda* and *C. lugubris*), apparently collected simultaneously, have been confused. Girard (1857:197; 1858:271-272) gave the type locality as "Cottonwood Creek, Utah." Jordan and Evermann (1896:273) determined this to be in error, but gave no alternative possibility. Snyder (1921:27) suggested that this probably was a tributary of the Arkansas River, in Kansas; but Jordan, Evermann, and Clark (1930:130) "corrected" this to Cottonwood Creek, tributary to the Rio Grande, in Colorado. Based on Beckwith's (1855:16) account, table of distances (*op cit*: 115), the map (no. 2) appearing in volume 11 of the Railroad Survey reports, and the fish species collected, I believe (as did Snyder [*op. cit.*]) that this is the Kansas locality listed above.

Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Cyprinus haematopterus Rafinesque 1820

Rafinesque 1820a:6. TYPE LOCALITY: Hudson River system, New York. TYPES: None located.

REMARKS.—Gilbert (1964:141) synonymized this form with *N. cornutus*. Original description date 1 March 1820.

= *Notropis cornutus* (Mitchill)

Notropis harperi Fowler 1941

Fowler 1941:231-233, figs. 5-6. TYPE LOCALITY: small spring, ca. 220 yds. SE of Manatee Spring, off Suwannee R., ca. 7 mi W of Chiefland, Levy Co., Florida. HOLOTYPE: ANSP 69151 (32.0), Francis Harper, 24 June 1939. PARATYPES: ANSP 69152 (1) paratopotype; ANSP 69153-69157 (5).

REMARKS.—This species usually, but not always, has a barbel at each corner of the mouth. Herald and Strickland (1949:102) therefore referred it to the genus *Erimystax*, presumably on the advice of C. L. Hubbs. Bailey (1951:192) downgraded *Erimystax* to a subgenus of *Hybopsis*, in which species *harperi* remained until returned to *Notropis* by Gilbert and Bailey (1972:11). Hubbs and Crowe (1956:5) recognized two subspecies of *Hybopsis harperi* (*subterranea* and the nominate form), but unpublished data (Howell 1960) indicate these should not be so considered. Original description date 18 March 1941.

= *Notropis harperi* Fowler

Notropis henryi Fowler 1942

See page 22.

Albumops heterodon Cope 1865

Cope 1865a:281. TYPE LOCALITY: Two localities listed in original description: Lansing and Grosse Isle, Michigan. TYPES: None located. Types lost, according to Fowler (1918:20).

REMARKS.—Original description date 13 February 1865.

= *Notropis heterodon* (Cope)

Notropis heterolepis Eigenmann and Eigenmann 1893

Eigenmann and Eigenmann 1893a:152. TYPE LOCALITY: trib. to Qu'Appelle R. at Fort Qu'Appelle (50°46'N, 103°48'W), ca 2 mi SW of Melville, Saskatchewan, Canada. HOLOTYPE: BMNH 1892.12.30.532 (47.7), C. H. Eigenmann, August or September 1892.

REMARKS.—This species was long erroneously called *N. cayuga* (Jordan and Evermann 1896:260 [In part]; Forbes and Richardson 1920:133, pl. opp. p. 128, lowest fig.). Hubbs (1926:41) was first to clarify its status. Original description date 4 February 1893.

= *Notropis heterolepis* Eigenmann and Eigenmann

Notropis horatii Cockerell 1911 (emended spelling *Notropis horacei*)

Cockerell 1911:614-615. TYPE LOCALITY: small trib. (presumably) to S Platte R., near Julesburg, Sedgwick Co., Colorado. HOLOTYPE: USNM 70313 (43.5), Horace G. Smith.

REMARKS.—*N. horacei* proves to be a junior synonym of *N. dorsalis*, despite Cockerell's contention to the contrary. Counts for holotype: teeth 1,4-4,1; dorsal and anal rays both 8; lateral-line scales ca. 36; body circumference scales ca. 14-2-13; caudal-peduncle circumference scales 5-2-5. The type locality is in an area of intergradation between the presumed subspecies *N. d. dorsalis* and *N. d. ptpolepis*. The species was named for its collector, Horace G. Smith. Original description date 3 November 1911.

= *Notropis dorsalis* (Agassiz)

Clupea hudsonia Clinton 1824

Clinton 1824:49-50, fig. 1. TYPE LOCALITY: Hudson R., New York. TYPES: None located.

REMARKS.—Seaman (1968) reviewed species. This widely distributed, variable species comprises two distinct morphological types, both of which occur in the Hudson River system, New York. As this is the type locality of *Clupea hudsonia*, designation of a neotype seems desirable. Original description date (31 December) 1824.

= *Notropis hudsonius* (Clinton)

Ceratichthys hyalinus Cope 1868

See pages 21, 91.

Leuciscus hypselopterus Günther 1868

Günther 1868:255. TYPE LOCALITY: Mobile, Alabama. LECTOTYPE: UMMZ 162442 (43.0), Judge LeSene and Albert Stein. Bailey and Suttkus (1952:15) designated lectotype. LECTOPARATYPES: UMMZ 87183 (6), MCZ 1845 (24), paratopotypes. Bailey and Suttkus identified one other syntype (UMMZ 86863) as *N. signipinnis*.

REMARKS.—Günther (1868:255) proposed this as a substitute name for *Alburnus formosus* Putnam 1863, which was preoccupied in the genus *Leuciscus* by *Moniana formosa* Girard 1857. The types of *L. hypselopterus* are thus the same as for *A. formosus*. Original description date 14 March 1868.

= *Notropis hypselopterus hypselopterus* (Günther)

Notropis hypsilepis Suttkus and Raney 1955

Suttkus and Raney 1955b:161-170, figs. 1-2. TYPE LOCALITY: trib. to Soque R., 0.4 mi W of Soque R. and 1.5 mi W of Clarksville, on st. hwy. 115, Habersham Co., Georgia. HOLOTYPE: CU 17442 (51.0), E. C. Raney, R. D. Suttkus, R. H. Backus, and C. R. Robins, 1 April 1950. PARATYPES: CU 28237 (6), paratopotypes; CU 17138 (19), CU 17279 (3), CU 18102 (8), CU 19625 (9), CU 21138 (1), UMMZ 136088 (42 originally, now 39), UF 14610 (ex UMMZ 136086) (3), UMMZ 142910 (2), UMMZ 157957 (1).

REMARKS.—Swift (1970) reviewed species. Original description date 25 February 1955.

= *Notropis hypsilepis* Suttkus and Raney

Ceratichthys hypsinotus Cope 1870

See pages 21, 91.

Notropis spilopterus hypsisomatus Gibbs 1958

Gibbs 1958:195-198, fig. 4b-c. TYPE LOCALITY: bay at N end of Wonder Lake, McHenry Co., Illinois. HOLOTYPE: CU 28541 (68.6), J. N. Layne and Lois V. Linderoth, 2 July 1950. PARATYPES: CU 22305 (2), paratopotypes; CU 17931 (48), CU 17946 (15), CU 17960 (31), CU 17984 (6), CU 22326 (12), CU 22330 (33).

REMARKS.—This is a weakly defined form, differing from the nominate subspecies by slight differences in lateral-line scale count, body depth, and nuptial-tubercle development on the lower part of the caudal peduncle. It has been recognized in some publications (Larimore and Smith 1963:323). Original description date 10 January 1958.

= *Notropis spilopterus* (Cope)

Alburnops illecebrosus Girard 1857

Girard 1857:194. TYPE LOCALITY: Arkansas R., Fort Smith, Arkansas. LECTOTYPE: ANSP 3034 (58.5), Dr. George C. Shumard, 1853. Lectotype designated by Meek (in Jordan 1885a:123). LECTOPARATYPES: USNM 66 (18), MCZ 1783 (2), UMMZ 56286 (ex MCZ 1783) (1), FMNH 3142 (1), paratopotypes. In addition, five of the original USNM syntypes represent *N. boops* (see Hubbs and Ortenburger 1929a:29).

REMARKS.—Girard (1858:262-263; pl. 57, figs. 5-8) listed only 24 original syntypes and illustrated one of these. Some older references to *N. illecebrosus* refer to *N. boops* (Jordan and Evermann 1896:268-269; Forbes and Richardson 1920:140-141, fig. 35), as pointed out by Hubbs (1926:43) and Hubbs and Ortenburger (1929a:29), who first clarified the status of this species. Jordan and Gilbert (1883:192-193) synonymized *N. illecebrosus* and *N. shumardi* and, as first revisers, selected the latter name; however, this was generally overlooked until pointed out by Gilbert and Bailey (1962:809). It now appears that Jordan and Gilbert's action, though correct, was based on the assumption that both names apply to the species now called *N. boops* (R. D. Suttus, *in litt*). Original description date 25 April 1857.

= *Notropis shumardi* (Girard)

Notropis imeldae Cortés 1968

Cortés 1968:185-192, 1 fig. TYPE LOCALITY: Rio Atoyac, Juchatengo (16°20'N, 97°05'W), Oaxaca, Mexico. HOLOTYPE: IPN P-915 (59.9), Imelda Martinez and Lauro Gonzalez, 16 April 1965. PARATYPES: UMMZ 188317 (5), TU 55375 (5), 183 other specimens presumably all same institution as holotype; all paratopotypes.

REMARKS.—This species usually has a small barbel at each corner of the mouth. Original description date 30 July 1968.

= *Notropis imeldae* Cortés

Notropis ionthas Jordan and Gilbert 1886

See page 22.

Notropis ipni Alvarez and Navarro 1953

See page 22.

Hypsilepis iris Cope 1875

Cope, in Cope and Yarrow 1875:653-654; pl. 31, figs. 4-4a. Type locality: Rio Grande, at San Ildefonso, ca 10 mi E of Los Alamos, Santa Fe Co., New Mexico. SYNTYPES: USNM 16976 (116 total originally, now 111 total: 102, 28.2-52.3 [= *N. lutrensis*]; 9 = *Gila pandora*), MCZ 35927 (ex USNM 16976) (5, 28.3-31.0) [= *N. lutrensis*]; USNM 16977 (268 total: 188, 25.0-42.0 [= *N. lutrensis*]; 1 = *N. jemezianus*; 19 = *Gila pandora*; 50 = *Rhinichthys cataractae*; 10 = *Catostomus plebeius*), USNM 16980 (98 total: 34, 20.0-31.0 [= *N. lutrensis*]; 29 = *Gila pandora*; 6 = *Rhinichthys cataractae*; 29 = *Catostomus plebeius*), H. C. Yarrow and E. D. Cope, August 1874.

REMARKS.—Jordan (1885b:812) was first to synonymize this form with *N. lutrensis*. Contreras (1975) considered it to be a junior synonym of *N. l. lutrensis*. Condition of types poor (soft). Counts

for MCZ types: anal rays 9 in all. One of the largest specimens in USNM 16977 removed for possible designation as lectotype; counts for specimen are teeth 1,4-4,1 and anal rays 9. Original description date (31 December) 1875.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Notropis cornutus isolepis Hubbs and Brown 1927

Hubbs and Brown, in Ortenburger and Hubbs 1927:129-131. TYPE LOCALITY: Mountain Fork R., 10 mi SE of Broken Bow, McCurtain Co., Oklahoma. HOLOTYPE: UMMZ 73090 (101.0), A. I. Ortenburger *et al.*, June-July 1925. PARATYPES: UMMZ 73091 (4), UOMZ 5971 (5), paratopotypes; UMMZ 73048 (2), UMMZ 73097 (16 originally, now 14), MCZ 32696 (*ex* UMMZ 73097) (1), USNM 117561 (*ex* UMMZ 73097) (1), UOMZ 5969 (1), UOMZ 5970 (38), UOMZ 5972 (1), UOMZ 5973 (2).

REMARKS.—Gilbert (1964:167-172) reviewed this form. It was regarded as a subspecies of *N. cornutus* until 1961, when Gilbert (1961a) changed it to a subspecies of *N. chrysocephalus*. Menzel (1970, 1976) recommended elevation to a full species, based on analysis of serum protein characteristics. Wall (1968) and Clark (1974), in their analyses of morphometric and meristic characters in populations from southern and western tributaries of the lower Tennessee River, found what appears to be even and consistent intergradation between *chrysocephalus* and *isolepis*. This suggests a subspecific relationship, although this problem cannot be finally resolved until the serum protein patterns of these morphologically intermediate populations are studied. Original description date 1 January 1927.

= *Notropis chrysocephalus isolepis* Hubbs and Brown

Alburnellus jaculus Cope 1868

Cope, in Günther 1868:255-256. TYPE LOCALITY: Walker Cr., either Bland or Giles Co., Virginia; St. Joseph R. and Dowagiac Cr. (trib. to St. Joseph R.), Berrien Co., Michigan. SYNTYPES: BMNH 1868.1.10.24 (3, 43.0-58.0) (Walker Cr.), E. D. Cope, August-September 1867; ANSP 2577 (1, 42.0), MCZ 4688 (2, 50.6-55.2) (St. Joseph R. and Dowagiac Cr.), E. D. Cope.

REMARKS.—Although the Michigan localities were not specifically mentioned in the original description, these are still regarded as type localities and the specimens taken there as syntypes, for reasons discussed earlier in this paper. The original description specified the range of the species as including Michigan and Virginia. Jordan and Copeland (1877:154) synonymized this form with *Minnilus dinemus*, and Jordan and Evermann (1896:293) synonymized both with *N. atherinoides*. I subsequently identified the ANSP and MCZ syntypes of *A. jaculus* as *N. rubellus* (Agassiz). James Chambers (*in litt.*) confirmed that the syntypes in the BMNH are also this species, based on a comparison with fresh specimens of *N. rubellus* supplied by me. For further discussion of nomenclature of *A. jaculus* see account of *Leuciscus copii*. Original description date 14 March 1868.

= *Notropis rubellus* (Agassiz)

Episema jejuna Forbes 1878

Forbes, in Jordan 1878a:60-61. TYPE LOCALITY: Illinois R., at Henry, Marshall Co., Illinois. The Illinois R., at Pekin, Tazewell Co., Illinois, perhaps should also be considered a type locality (see below). SYNTYPES: INHS 26947(17, 31.8-58.6), CAS-SU 1278(3, 54.0-60.2) (label in jar says "Illinois River, Illinois"), CAS 29302 (old IU 4725) (2, 51.8-54.0) (label in jar says simply "Illinois"), Stephen A. Forbes, summer 1877. (Label in jar of INHS types says 1 November 1877). Also INHS 26946 (2, 55.5-58.9) from the Illinois R., Pekin, Tazewell Co., Illinois, are catalogued as "types," but label in jar indicates the specimens were collected 2 June 1880, which is subsequent to the original description.

REMARKS.—Hubbs (1926:43) was first to synonymize this form with *N. blennioides*. Hubbs and Bonham (1951:104) and Hubbs and Lagler (1958:82) regarded it as a valid subspecies, but this is not substantiated by the preliminary findings of Suttkus and Clemmer (1968). Counts for CAS

29302: teeth 2,4-4,2 and anal rays 7 in both; body circumference scales 13-2-11; caudal-peduncle circumference scales 5-2-5. Original description date (30) June 1878.

= *Notropis blennius* (Girard)

Alburnellus jemezianus Cope 1875

Cope, in Cope and Yarrow 1875:650-651; pl. 31, figs. 3-3a. TYPE LOCALITY: Rio Grande, at San Ildefonso, ca 10 mi E of Los Alamos, Santa Fe Co., New Mexico. SYNTYPES: USNM 16981 (7, 33.8-57.0), H. C. Yarrow and E. D. Cope, August 1874.

REMARKS.—Jordan (1885b:815) synonymized this form with *N. dilectus* (= *N. atherinoides*), which was followed until Hubbs (1940:6) revalidated the species, a decision based on unpublished studies by Hubbs and Myron Gordon. Types in rather poor condition. Counts: anal rays 9 (1) (rays difficult to count), 10 (7); one type with three rows of teeth. Original description date (31 December) 1875.

= *Notropis jemezianus* (Cope)

Notropis jordani Eigenmann and Eigenmann 1893 (emended spelling *Notropis jordani*)

Eigenmann and Eigenmann 1893b:592. TYPE LOCALITY: S. Saskatchewan R., Medicine Hat, Alberta, Canada. HOLOTYPE: BMNH 1892.12.30.531(53.5), C. H. Eigenmann, August or September 1892.

REMARKS.—The name *jordani* is a substitute name for *N. albeolus* Eigenmann and Eigenmann 1893, preoccupied in *Notropis* by *N. albeolus* Jordan 1889. The holotype for this form is thus the same as for the first *N. albeolus* above. For further remarks see account of *N. albeolus* Eigenmann and Eigenmann. Original description date 15 June 1893.

= *Notropis blennius* (Girard)

Moniana jugalis Cope 1871

Cope 1871:439-440. TYPE LOCALITY: Missouri R., at St. Joseph, Missouri. (See under REMARKS). LECTOTYPE: ANSP 3144 (51.7) Dr. William Stimpson. Fowler (1910: pl. 17, fig. 20) designated lectotype by illustrating "type" (ANSP 3144); calculated length 52.5 mm SL. LECTOPARATYPES: ANSP 3145-3150 (16), paratotypes.

REMARKS.—Jordan (1885b:812) was first to synonymize this form with *N. lutrensis*. Fowler (1910: pl. 17, fig. 20) illustrated "type" (ANSP 3144); calculated length 52.5 mm SL. Types in good condition for old specimens. Although Fowler (1910) listed only 7 syntypes (this number is also indicated on the jar label), there are actually 17 specimens in the jar. Inasmuch as all are in the same state of preservation and there is no record to indicate subsequent addition of specimens, one may assume that the original total (7) is in error. Counts for lectotype: teeth 1,4-4,1; anal rays 9. Type specimens may not have been collected exactly at St. Joseph, Missouri, but may have come from near there (see REMARKS under *Alburnellus percobromus*). Original description date (31 December) 1871.

= *Notropis lutrensis* (Baird and Girard)

Notropis kanawha Jordan and Jenkins 1889

Jordan and Jenkins, in Jordan 1889a:354-355; pl. 44, fig. 5. TYPE LOCALITY: Reed Cr., near Wytheville, Wythe Co., Virginia. LECTOTYPE: USNM 39928 (58.0), D. S. Jordan, O. P. Jenkins, B. W. Evermann, and S. E. Meek, summer 1888. Bailey and Gilbert (1960) designated lectotype. LECTOPARATYPES: USNM 179894 (ex USNM 39928) (3). Three other original syntypes (CAS-U 624) were reidentified by Bailey and Gilbert (1960:354-355) as *N. volucellus*.

REMARKS.—Bailey and Gilbert (1960) reviewed this form and determined that it was based on an interspecific hybrid. Counts for lectotype: teeth 1,4-4,0; anal rays 9. Original description date 5 July 1889.

= Hybrid: *Notropis rubellus* × *Notropis volucellus*

Notropis keimi Fowler 1909

Fowler 1909:533-535, pl. 27. TYPE LOCALITY: trib. of Allegheny R., S of Port Allegany,

McKean Co., Pennsylvania. HOLOTYPE: ANSP 31126 (48.0), T. D. Keim and H. W. Fowler, August 1904. PARATYPES: ANSP 24045-24047 (3).

REMARKS.—Hubbs and Greene (1928:381) regarded this form as a synonym of *N. dorsalis*, but later Hubbs and Lagler (1947:67; 1958:84) accorded it subspecific status. The former decision is usually followed. Original description date 28 January 1909.

= *Notropis dorsalis* (Agassiz)

Notropis kendalli Evermann and Cockerell 1909

Evermann and Cockerell 1909:186-187. TYPE LOCALITY: Cross Lake Thoroughfare (stream connecting Salmon and Cross lakes), Aroostook Co., Maine. HOLOTYPE: USNM 64150 (44.0), Dr. William C. Kendall, 9 July 1903.

REMARKS.—Hubbs (1926:42) originally synonymized this form with *N. bifrenatus*, but later Hubbs and Brown (1929:30) synonymized it with *N. heterolepis*. Counts for holotype: teeth 4-4; anal rays 8; predorsal scales 18; caudal-peduncle circumferential scales 7-2-5. Original description date 8 December 1909.

= *Notropis heterolepis* Eigenmann and Eigenmann

Ceraticthys labrosus Cope 1870

See pages 21, 91.

Hybopsis lacertosus Cope 1868

Cope 1868b:232. TYPE LOCALITY: Bear Cr., trib. to Middle Fk. of Holston R., Virginia. LECTOTYPE: ANSP 2835 (85.0), E. D. Cope. Fowler (1910: pl. 19, fig. 33) designated lectotype by illustrating "type" (ANSP 2835); calculated length 91.2 mm SL. LECTOPARATYPES: ANSP 2836-2839 (4), paratopotypes.

REMARKS.—Types in extremely poor condition, the specimens partly decomposed. Gilbert (1964:159-161) synonymized this form with *N. chrysocephalus chrysocephalus*. Original description date 2 December 1868.

= *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Moniana laetabilis Girard 1857

Girard 1857:200. TYPE LOCALITY: Hurrah Cr. (trib. to Pecos R.), ca 10 mi NE of Santa Rosa (35°05'23.7"N, 104°43'27.3"W), Guadalupe Co., New Mexico. SYNTYPES: USNM 120 (one set of pharyngeal arches in bone collection), MCZ 1691 (1, 34.5), ANSP 3029 (1, 35.0), H. B. Möllhausen, 24 September 1853.

REMARKS.—Girard (1858:275) listed 12 original syntypes (USNM 120). Condition of types fair to poor (discolored but firm). Counts: USNM 120 (teeth 4-4); ANSP 3029 (teeth 4-, anal rays 9); MCZ 1691 (teeth 4-4, anal rays 9). Jordan (1885a:125) was first to synonymize this form with *N. lutrensis*. Contreras (1975) regarded it as a junior synonym of *N. l. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Notropis leedsi Fowler 1942

Fowler 1942:2-4, figs. 3-4. TYPE LOCALITY: Ohoopsee R., ca 2½ mi N of Oak Park, Emanuel Co., Georgia. HOLOTYPE: ANSP 69969 (67.0), Francis Harper, 1 May 1933.

REMARKS.—Gibbs (1955) reviewed species. Original description date 16 September 1942.

= *Notropis leedsi* Fowler

Moniana leonina Girard 1857

Girard 1857:199. TYPE LOCALITY: Leon R. (= Leon Cr.), trib. to San Antonio R., Bexar Co., Texas. SYNTYPES: USNM 115 (one set of pharyngeal arches in osteological collection), MCZ 1687 (ex USNM 115) (1, 59.8), Dr. C. B. Kennerly, 1853.

REMARKS.—Girard (1858:273-274; pl. 59, figs. 6-10) listed 18 original syntypes (USNM 115) and illustrated one of these. Condition of MCZ type (a tuberculate male) good for old specimen. Counts: USNM 115 (teeth 4-4); MCZ 1687 (teeth 4-4, anal rays 9). Jordan and Evermann

(1896:272) were first to synonymize this form with *N. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Cyprinella lepida Girard 1857

Girard 1857:197-198. TYPE LOCALITY: Rio Frio (trib. to Rio Nueces), either Real or Uvalde Co., Texas. SYNTYPE: USNM 126 (one set of pharyngeal arches in osteological collection), Dr. C. B. Kennerly, 1853.

REMARKS.—Girard (1858:268-269; pl. 58, figs. 21-25) listed seven original syntypes (USNM 126) and illustrated one of these. Jordan and Evermann (1896:273) synonymized this form with *N. bubalinus*, and Hubbs and Ortenburger (1929a:34) synonymized the latter with *N. lutrensis*. Clark Hubbs (1954b:281-283, fig. 2) recognized *N. lepidus* as a valid species, and it was so listed by Bailey *et al.* (1970:22). Later he (Clark Hubbs 1972) relegated it, without comment, to the synonymy of *N. lutrensis*, but Lytle (1972) regarded it as a valid species most closely related to *N. proserpinus*. Counts for type: teeth 4-4. Original description date 25 April 1857.

= *Notropis lepidus* (Girard)

Alburnus lepidulus Girard 1857

Girard 1857:212. TYPE LOCALITY: Black Warrior R., Alabama. SYNTYPES: None located. Specimens collected by Prof. A. Winchell.

REMARKS.—Jordan and Evermann (1896:294) synonymized this form with *N. dilectus*, and Hubbs and Ortenburger (1929b:83) later synonymized *dilectus* with *N. atherinoides*. Smith-Vaniz (1968:43) also regarded *lepidulus* as a probable synonym of *N. atherinoides*. Original description date 25 April 1857.

= probably *Notropis atherinoides* Rafinesque

Notropis lermæ Evermann and Goldsborough 1902

Evermann and Goldsborough 1902:147-148, fig. 3. TYPE LOCALITY: Lake Lerma, near town of Lerma, state of Mexico, Mexico. HOLOTYPE: USNM 50003 (47.7), Dr. J. N. Rose, 9 August 1901. PARATYPES: USNM 50004 (32), USNM 126648 (formerly USFC reserve 977) (10), CAS-SU 6762 (10), paratopotypes. The last series was not listed in Böhlke's (1953) type catalogue.

REMARKS.—Counts for holotype: teeth 4-; anal rays 7; lateral-line scales 41. Original description date 3 May 1902.

= *Notropis salleyi* (Günther)

Photogenis leuciodus Cope 1868

Cope 1868a:165. TYPE LOCALITY: tribs. of Holston River, Virginia. LECTOTYPE: ANSP 2336 (62.0), E. D. Cope, Fowler (1910: pl. 20, fig. 45) designated lectotype by illustrating "type" (ANSP 2336); calculated length 62.4 mm SL. LECTOPARATYPES: ANSP 2337-2358 (22), MCZ 25161 (1). One specimen (ANSP 2359), representing either *N. chrysocephalus* or *N. coccogenis*, removed from original ANSP syntypic series and recatalogued.

REMARKS.—Types in fair to poor condition. Counts for lectotype: teeth 1,4-4,1; anal rays 8. Counts for ANSP lectoparatypes: teeth 1,4-4,1 (16); anal rays 8 (20), 9 (1). Counts for MCZ lectoparatype: teeth 1,4-4,1; anal rays 8. Original description date 11 May 1868.

= *Notropis leuciodus* (Cope)

Photogenis leucops Cope 1868

Cope, in Günther 1868:252. TYPE LOCALITY: Sinking Cr. (trib. to Kanawha [= New] R.), "near Austinville, Wythe Co.," Virginia. (See REMARKS below). LECTOTYPE: ANSP 2581 (83.0), E. D. Cope, August-September 1867. Fowler (1910: pl. 21, fig. 52) designated lectotype by illustrating "type" (ANSP 2581); calculated length 85.6 mm SL. This antedates Gilbert's (1971a:478) subsequent lectotype designation, which presumably was based on the same specimen. LECTOPARATYPES: ANSP 2582-2628 (46), ANSP 3017-3024 (8), ANSP 3063-3080 (20), BMNH 1868.1.10.10

(4), MNHN 4854. (1), paratopotypes. Two other original syntypes (ANSP 2629-2630) have been recatalogued as *N. spilopterus* and *N. rubellus*, respectively.

REMARKS.—*Photogenis leucops* was originally described, as a junior synonym of *Leuciscus photogenis*, in Gunther (1868:252), but the name is available under the provision of Article 11D of the International Code of Zoological Nomenclature (see Gilbert 1971a:476). Jordan (1878d: 297-298) was first to synonymize this form with *N. photogenis*. Gilbert (1971a:477-478) discussed the nomenclature of this form and status of the types. The location of Sinking Creek was given in the original description as "near Austinville, Wythe Co." Unless this stream is different from the one known by that name today, the type locality is neither close to Austinville nor is it in Wythe County (R. E. Jenkins, pers. comm.). Original description date 14 March 1868.

= *Notropis photogenis* (Cope)

Photogenis leucopus Jordan and Brayton 1878

Jordan and Brayton 1878:41-42. TYPE LOCALITY: Chattahoochee R., at Shallow Ford, NW of Gainesville, Hall Co., Georgia. LECTOTYPE: USNM 31124 (77.8), D. S. Jordan and C. H. Gilbert, summer 1877. Lectotype designated by Bailey and Gibbs (1956:2). LECTOPARATYPES: USNM 163963 (1), MCZ 35935 (1), paratopotypes.

REMARKS.—Jordan and Evermann (1896:277) synonymized this form with *N. eurystomus*; Bailey, Winn, and Smith (1954:128) synonymized *eurystomus* with *N. venustus*; and Gibbs (1957:189-190) synonymized both with *N. venustus cercostigma*. Original description date (31 December) 1878.

= *Notropis venustus cercostigma* (Cope)

Hybopsis lineapunctata Clemmer and Suttkus 1971

See pages 21, 91-92.

Alburnus lineolatus Agassiz 1863

Agassiz, in Putnam 1863:9. TYPE LOCALITY: Osage R., Missouri. SYNTYPES: None located. Specimens collected by George Stolley in 1854 supposedly at MCZ. A specimen (44.0 mm SL) in the British Museum (BMNH 1867.4.12.15), which was sent by the MCZ to the Liverpool Museum and later transferred to the BMNH, likely is a syntype, but this cannot be established positively.

REMARKS.—C. L. Hubbs identified the above BMNH specimen as *N. deliciosus* auct. (= *N. stramineus*) in 1958. Suttkus (1958:313) discussed status of this specimen, and listed *Alburnus lineolatus* as a possible senior synonym of *N. stramineus*. Original description date 28 April 1863.

= a probable senior synonym of *Notropis stramineus* (Cope)

Nototropis lirus Jordan 1877

Jordan 1877c:342. TYPE LOCALITY: tribs. of Etowah R., near Rome, Floyd Co., Georgia. LECTOTYPE: ANSP 19842 (41.5), D. S. Jordan and C. H. Gilbert, July 1876. Lectotype herein designated by F. F. Snelson, Jr. LECTOPARATYPES: USNM 17876 (6), USNM 20138 (2), USNM 101158 (5), BMNH 1880.1.21.7-8;24 (3), MNHN A. 1303 (3).

REMARKS.—Snelson (1970) reviewed species. Name first appeared as a *nomen nudum* (*Lythrus lirus*) in Jordan and Copeland (1877:152). Fowler (1910: pl. 21, fig. 55) illustrated "cotype." Original description date (30) June 1877.

= *Notropis lirus* (Jordan)

Hybopsis longiceps Cope 1868

Cope 1868b:231. TYPE LOCALITIES: headwaters of Roanoke R., Montgomery Co., Virginia; and headwaters of James R., Giles Co., Virginia. LECTOTYPE: ANSP 4108 (58.0), E. D. Cope, July 1867. Fowler (1910: pl. 16, fig. 9) designated lectotype by illustrating "type" (ANSP 4108); calculated length 56.5 mm SL. LECTOPARATYPES: ANSP 4109-4122 (14). Three additional original syntypes reidentified as *N. volucellus* and recatalogued under that name.

REMARKS.—This form was erroneously synonymized by Jordan and Copeland (1877:150) with

Hybopsis (= *Notropis*) *microstomus*, and by Jordan (1885b:811) with *N. deliciosus* (= *N. stramineus*). Jordan and Evermann (1896:264) were first to synonymize it with *N. procne*. Raney (1947) considered it to be a valid subspecies of *N. procne*, but Snelson (1971:461) indicated this may not be so. Original description date 2 December 1868.

= *Notropis procne* (Cope)

Alburnops longirostris Hay 1881

Hay 1881:504. TYPE LOCALITY: Chickasawha R., Enterprise, Clarke Co., Mississippi. SYNTYPES: USNM 27440 (11, 37.0-43.2), USNM 101118 (24, 30.0-47.2), O. P. Hay, March-April 1880.

REMARKS.—Original description date 23 February 1881.

= *Notropis longirostris* (Hay)

Notropis louisae Fowler 1940

Fowler 1940:2-4, color pl. 1 (left fig.). TYPE LOCALITY: stream near Punta Gorda, Charlotte Co., Florida. HOLOTYPE: ANSP 69131 (43.5), C. C. G. and L. C. Chaplin, May 1940. PARATYPES: ANSP 69132-69140 (9).

REMARKS.—Bailey, Winn, and Smith (1954:129) were first to synonymize this form with *N. maculatus*. Original description date 3 October 1940.

= *Notropis maculatus* (Hay)

Notropis louisianae Evermann 1898

Evermann, in Jordan and Evermann 1898:2801. TYPE LOCALITY: Atchafalaya R., Melville, St. Landry Psh., Louisiana. HOLOTYPE: USNM 48902 (58.0), Fred M. Chamberlain, 5 May 1897. PARATYPE: USNM 125607 (1), paratopotype.

REMARKS.—This form apparently has not heretofore been formally synonymized with *N. atherinoides*. Original description date (30) November 1898.

= *Notropis atherinoides* Rafinesque

Luxilus lucidus Girard 1857

Girard 1857:203. TYPE LOCALITY: 20 mi. W of Choctaw Agency, Oklahoma. This locality is either San Bois Cr. or a branch thereof, 20 mi W of Scullyville, Haskell Co., Oklahoma. (See under REMARKS). LECTOTYPE: ANSP 4536 (ex USNM 56) (50.0), H. B. Möllhausen, 31 July-1 August 1853. Lectotype designated by Snelson and Pflieger (1975:233). LECTOPARATYPES: ANSP 4537 (1) (Snelson and Pflieger [1975:233] erroneously listed catalogue number as ANSP 4547), MCZ 1782 (1), paratopotypes.

REMARKS.—Girard (1858:282; pl. 60, figs. 9-12) listed a total of 24 original syntypes from two localities (12 from USNM 55 [Coal Cr., trib. to S. Fk. of Canadian R., Oklahoma] and 12 from USNM 56 [W of Choctaw Agency]) and illustrated one of these. As the lectotype was originally part of USNM 56, the type locality is restricted on that basis. Locality data with ANSP 4536-4537 says "Coal Creek," but as the specimens were said to have come from USNM 56, these data are assumed to be in error. (For further discussion see Snelson and Pflieger [1975:233-234]). Location of type locality and date of collection were determined by reference to Whipple's (1854:10-12) itinerary of the expedition on which the types were taken and from the localities listed in Appendix D (Whipple 1856:70-71). Jordan (1885a:122) was first to synonymize this form with *N. umbratilis* (Girard 1857), and in so doing selected the name *umbratilis*; he thus qualifies as first reviser. Original description date 25 April 1857.

= *Notropis umbratilis umbratilis* (Girard)

Cyprinella ludibunda Girard 1857

Girard 1857:199. TYPE LOCALITY: Cottonwood R., ca 5 mi NW of Durham, Marion Co., Kansas. SYNTYPES: ANSP 2841 (ex USNM 132) (1, 31.5) (= *Notropis stramineus*), MCZ 1799 (ex USNM 132) (1, 30.0) (= *Notropis volucellus*), F. Creutzfeldt, 3-4 July 1853.

REMARKS.—For discussion of correct type locality see REMARKS under *Cyprinella gunnisoni*.

Girard (1858:271-272). listed seven original syntypes (USNM 132). *Cyprinella ludibunda* is a senior synonym of both *N. stramineus* and *N. volucellus*, a fact that was overlooked by Suttkus (1958). If one of the above syntypes should be designated as lectotype it would result in a name change for the affected species, assuming that the western forms of one or both of these species are indistinguishable from those to the east. Inasmuch as systematic studies on these species have not yet been completed, I consider it best to defer action on the problem at this time. Original description date 25 April 1857.

= a senior synonym of *Notropis stramineus* (Cope) and *Notropis volucellus* (Cope)

Cyprinella lugubris Girard 1857

Girard 1857:199. TYPE LOCALITY: Cottonwood R., ca. 5 mi. NW of Durham, Marion Co., Kansas. HOLOTYPE: USNM 141 (one set of pharyngeal arches in bone collection), F. Creutzfeldt, 3-4 July 1853.

REMARKS.—For discussion of correct type locality see REMARKS under *Cyprinella gunnisoni*. Girard (1858:271) listed one type, which is thus the holotype. Counts: teeth 2,4-4,1, with well-developed hooks; no serrations; the lesser teeth long and slender. In addition to the above tooth count, Girard (*op. cit.*: 271) listed 9 or 10 anal rays (his method of listing counts is difficult to interpret) and an elongate, subfusiform body. Based on these counts and observations and Cross's (1967) range maps, *C. lugubris* most likely is a synonym of *N. rubellus*, with *N. pilsbryi* the next best possibility. *C. lugubris* was erroneously synonymized by Jordan and Gilbert (1883:177) with *Cyprinella macrostoma* (= *Notropis amabilis*). Original description date 25 April 1857.

= most likely *Notropis rubellus* (Agassiz), but possibly *Notropis pilsbryi* Fowler

Hydrophlox lutipinnis Jordan and Brayton 1878

Jordan and Brayton 1878:36-37. TYPE LOCALITY: headwaters of Oconee R. (at Sulphur Springs and Fuller's Mills), Hall Co., Georgia. SYNTYPES: USNM 31090 (6, 43.1-55.8), MCZ 24386 (1, 37.0), CAS-SU 2500 (1, 58.5), BMNH 1880.1.21.3 (1, 38.0), D. S. Jordan and A. W. Brayton, summer 1877.

REMARKS.—Counts: USNM 31090 (teeth 2,4-4,2 in one; anal rays 8 in six); MCZ 24386 (anal rays 8). Original description date (31 December) 1878.

= *Notropis lutipinnis* (Jordan and Brayton)

Leuciscus lutrensis Baird and Girard 1853

Baird and Girard 1853:391. TYPE LOCALITY: Otter Cr., trib. to N. Fk. of Red R., either Kiowa or Tillman Co., Oklahoma. (Locality erroneously given in original description as being in Arkansas). SYNTYPE: USNM 104 (1, 44.8), R. B. Marcy and G. B. McClellan, 1852.

REMARKS.—Girard (1858:272-273) listed five original syntypes (USNM 104). He also listed 10 specimens (USNM 107) from Gypsum Creek, a tributary of the Canadian River, but these were not collected till late August 1853 (Whipple 1854:18-19; 1856: appendix D), and thus almost certainly could not have been examined by Baird and Girard when preparing the original description. *Leuciscus bubalinus*, which was originally described in the same paper as *Leuciscus lutrensis*, was found by Hubbs and Ortenburger (1929a:34) to be identical with that species. As first revisers they selected the name *lutrensis* over *bubalinus*. Contreras (1975) reviewed species in Mexico and the Rio Grande basin. Counts for extant syntype: teeth 4-4; anal rays 9. Original description date 5 September 1853.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Cyprinella luxiloides Girard 1857

Girard 1857:198. TYPE LOCALITY: San Pedro Cr., trib. to Rio San Antonio, Texas. TYPES: None located. Girard (1859a:55) listed two specimens (USNM 131), collected by Dr. C. B. Kennerly in 1854.

REMARKS.—Although this species cannot be positively identified, it most likely is a synonym of *N. amabilis* (Girard). Jordan and Gilbert (1883:177) so indicated this when they synonymized

C. luxiloides with *Cyprinella macrostoma* (= *Notropis amabilis*). Hubbs, Kuehne, and Ball (1953:226), however, regarded *luxiloides* as a subspecies of *N. lutrensis*. Girard's (1859a: pl. 31, fig. 13) illustration of *C. luxiloides* is very similar to those of *C. macrostoma* (*op. cit.*: pl. 31, fig. 5) and *Alburnellus amabilis* (*op. cit.*: pl. 29, fig. 10), particularly with regard to scale size (only five visible body-circumference scales above lateral line), number of anal rays (nine), large eye size, relative positions of the fins, and pigmentation pattern. The only other species of *Notropis* in the Rio San Antonio drainage to which the above characters could possibly apply is *N. volucellus*, but the number of anal rays in that species is almost always eight. Original description date 25 April 1857.

= probably *Notropis amabilis* (Girard)

Notropis lythrurus Jordan 1884

Jordan, in Jordan and Meek 1884:476. TYPE LOCALITY: Grand River (or tributary thereof), Lansing, Ingham Co., Michigan. SYNTYPES: Possibly ANSP 3054-3055 (2, 49.0-50.0). These specimens bear only the data "Michigan, E. D. Cope." and there is no positive indication that they actually are types.

REMARKS.—The name *lythrurus* was first proposed in a footnote (Jordan and Meek 1884:476), as follows: "*Notropis lithrurus*, Jordan, nom. sp. nov. = *Minnilus diploemius*, Jordan and Gilbert, Synopsis Fish. N. Am., p. 197 = *Hypsilepis diploemius*, Cope, not *Semotilus diploemius*, Rafinesque." The incorrect spelling was emended to *lythrurus* in the "List of Corrections" on introductory page VIII in the original volume. Although this does not, by itself, constitute a description, the new species name is available (according to Article 16a, International Code of Zoological Nomenclature) as a substitute name for Cope's *Hypsilepis diploemius*, which is a species presumably different from Rafinesque's *Semotilus diploemius*. Cope's (1868a:162-163) account stands as the original description of *N. lythrurus*, which in turn is a junior synonym of *N. umbratilis-cyanocephalus* (Copeland 1877). Jordan and Evermann's (1896:300) designations of White River, Indianapolis, Indiana as the type locality and USNM 20115 as the type specimen of *N. lythrurus* are invalid. Snelson and Pflieger (1975:235-236) also have discussed this situation. Original description date 23 October 1884.

= *Notropis umbratilis cyanocephalus* (Copeland)

Notropis macdonaldi Jordan and Jenkins 1889

Jordan and Jenkins, in Jordan 1889a:354; pl. 44, fig. 4. TYPE LOCALITY: Shenandoah River, at Waynesboro, Augusta Co., Virginia; North River, Loch Laird, Virginia; and Buffalo Creek, near Lexington, Virginia. Type locality here restricted to Shenandoah River. LECTOTYPE: USNM 39859 (93.0), D. S. Jordan and C. H. Gilbert, summer 1888. Lectotype herein designated. LECTOPARATYPES: USNM 214481 (1), paratopotype; CAS 29303 (old IU 7817) (18, plus one specimen of *N. procerne*). CAS-SU 597 (1), which Böhlke (1953:35) listed as a "paratype," is not so regarded here, because the listed locality (Luray, Virginia) was not one of the localities cited in the original description.

REMARKS.—Hubbs and Moore (1940:96) were first to identify *N. macdonaldi* as a hybrid. Original description date 5 July 1889.

= Hybrid: *Notropis cornutus* × *Notropis rubellus*

Notropis macrolepidotus Forbes 1885

Forbes 1885:138. TYPE LOCALITY: "Illinois" (no precise locality given). TYPES: None located. Forbes listed one specimen in original description.

REMARKS.—Snelson (1973) reviewed the status of this form. The original description could apply either to *N. fumeus* or *N. umbratilis cyanocephalus*, but the high predorsal scale count (19) is outside the range of either species. Forbes (1884:76) first introduced the name *macrolepidotus* as a *nomen nudum*, and stated that the species was rare and known only from the Illinois River. *N. fumeus* is not known today from that river system (although *N. umbratilis* does occur there), but conceivably could have lived there in the past. Original description date (31) March 1885.

= either *Notropis umbratilis cyanocephalus* (Copeland) or a senior synonym of *Notropis fumeus* Evermann

Cyprinella macrostoma Girard 1857

Girard 1857:198. TYPE LOCALITY: Devils River, probably just above mouth into Rio Grande (or possibly ca 45 mi upstream), Val Verde Co., Texas; and Rio San Juan, near China, Nuevo Leon, Mexico. SYNTYPES: USNM 129 (3, 36.6-48.0) (from Devils River), John H. Clark, 1851; USNM 130 (one right pharyngeal arch only) and MCZ 1798 (ex USNM 130) (1, 45.0) (from China), Lt. D. N. Couch, 1853.

REMARKS.—Girard (1859a:54) listed three original syntypes for USNM 130. Although *Cyprinella macrostoma* was generally considered to be a valid species for many years following its original description, the last literature reference appears to be that by Jordan, Evermann, and Clark (1930:131). The types have been examined independently by Carl L. Hubbs, Robert R. Miller, and myself, and all of us agree that they represent the species called *N. amabilis*, which was described by Girard (1857:193) in the same paper. Miller (1976:11), as first reviser, formally selected the name *amabilis*, thus relegating *C. macrostoma* to the synonymy of that species. Although Contreras (1967:6-7) did not at first indicate that *N. amabilis* occurred in the state of Nuevo Leon, he later (Contreras 1974:192) listed it among those species that apparently have become extirpated from the area. This lends credence to the provenance of Couch's material, which had formerly been in doubt. Counts for MCZ 1798: teeth 2.4-4.2; anal rays 10. Counts for USNM 129: teeth 2.4- in largest specimen, anal rays 9 (1), 10 (2). Original description date 25 April 1857.

= *Notropis amabilis* (Girard)

Hemitremia maculata Hay 1881

Hay 1881:505-506. TYPE LOCALITY: Chickasawha R. (and tributaries), near Enterprise, Clarke Co., Mississippi. SYNTYPES: USNM 27438 (3, 27.7-30.5) (= *N. volucellus*), USNM 101174 (1, 45.3) (= *N. maculatus*), O. P. Hay, March-April 1880. Jordan and Evermann (1896:259) also listed USNM 32245 as comprising a syntypic series, but since neither this catalogue number nor the locality from which the series came (Jackson, Mississippi) were included by Hay in his original description, Jordan and Evermann's action is considered to be erroneous.

REMARKS.—The extant types of this species are in extremely poor condition. The three syntypes in USNM 27438 were identified as *N. volucellus* by R. D. Suttkus on 23 June 1954, a diagnosis with which I concur. The other specimen (USNM 101174), which is erroneously labelled a "paratype," was catalogued (without explanation) into the USNM collection on 9 November 1935. Although nothing indicates that it was removed from USNM 27438, it is considered a valid type because of its condition (similar to that of the other three syntypes) and the presence of Hay's original label in the jar. The main diagnostic character of *N. maculatus* (a well developed caudal spot) is not evident in this specimen, but this is believed to be the result of the caudal fin having been broken off anterior to where the spot occurs. Both pharyngeal arches are missing (they were not located in the osteological collection), and the anal rays, though difficult to count, appear to be eight in number (the count listed by Hay). There are about 20 body-circumference scales and about 14 predorsal scales (Hay listed 16 predorsal scales in the original description). Perhaps most importantly, the mouth is small and moderately oblique, with its posterior margin falling well short of the eye. The melanophores in the region of the lateral stripe are of the same distribution and intensity as in specimens examined of *N. maculatus*. Despite its poor condition, I identify this specimen as *N. maculatus* (as presently recognized), and recommend that it be chosen as lectotype of *Hemitremia maculata*. Original description date 23 February 1881.

= *Notropis maculatus* (Hay)

Alburnellus matutinus Cope 1870

Cope 1870:465. TYPE LOCALITY: Neuse R., Wake Co., North Carolina. SYNTYPES: Two syntypes (ANSP 3844-3845) are listed in the ANSP catalog, but these cannot be located.

REMARKS.—*N. matutinus* was until recently considered a valid species. Recent unpublished

studies by F. F. Snelson, Jr. indicate that this form is not even subspecifically distinct from *N. ardens*. Original description date 21 November 1870.

= *Notropis ardens* (Cope)

Notropis mearnsi Snyder 1915

Snyder 1915:582-584, fig. TYPE LOCALITY: San Bernardino R., trib. to Yaqui R., Sonora, Mexico (near international boundary monument 77). HOLOTYPE: USNM 76163 (39.2), Dr. E. A. Mearns, 6 October 1893. PARATYPES: USNM 76164 (4), paratopotypes.

REMARKS.—Miller and Simon (1943) regarded this as a questionably valid species, and Carl Hubbs (1954:293) and Minckley (1973:138-139) called it a subspecies of *N. formosus*. It has usually been considered a junior synonym of *N. formosus* (Girard), which Contreras (1975), in turn, now regards as a subspecies of *N. lutrensis* (Baird and Girard). Counts: teeth 4-4 in holotype and paratypes. Original description date 23 December 1915.

= *Notropis lutrensis formosus* (Girard)

†*Notropis megalepis* Smith 1962

Smith 1962:511-512, fig. 4. TYPE LOCALITY: Ogallala Formation, marl deposit located in Sec. 7, T.11S, R.37W, Logan Co., Kansas. (Pliocene age). HOLOTYPE: KU F849, a complete fossil specimen, 91 mm SL, Claude W. Hibbard *et al.*

REMARKS.—This is the only fossil cyprinid species currently assigned to *Notropis*. In the original description, Smith stated that the generic assignment was tentative and was based on the large scales, general shape and appearance of the body, and absence of other distinctive characters. Original description date 28 September 1962.

= †*Notropis megalepis* Smith

Cyprinus megalops Rafinesque 1817

Rafinesque 1817:121. TYPE LOCALITY: Hudson R. system, New York. TYPES: Not located.

REMARKS.—The name *megalops* was not used for many years after its original proposal, until Jordan (1885a:123) resurrected it as a senior synonym of *Cyprinus cornutus* Mitchell, on the grounds that Mitchell's (1817:289) preliminary account of that species did not constitute an adequate description. Jordan and Evermann (1896:281-282) subsequently reversed this decision, and the name *cornutus* has been used since (see Jordan 1916:28, and Gilbert 1964:142-143). Original description date (31) December 1817.

= *Notropis cornutus* (Mitchell)

Alburnus megalops Girard 1857

Girard 1857:193. TYPE LOCALITY: San Felipe Cr., near Del Rio, Val Verde Co., Texas. SYNTYPES: USNM 36529 (*ex* USNM 69) (1, 40.2), ANSP 3246 (*ex* USNM 69) (1, 36.5), MCZ 1682 (*ex* USNM 69) (2, 35.0-39.5), John H. Clark, 1851. (Label in jar of MCZ types says "1853").

REMARKS.—Girard (1859a: pl. 29, figs. 1-4) illustrated one of the syntypes and listed 20 specimens in the original type series (USNM 69) (*op. cit.*: 52). Fowler (1910: pl. 20, fig. 44) illustrated the ANSP "cotype." Jordan (1885a:123) substituted the species name *swaini* for *megalops*, which is preoccupied in *Notropis* by *Cyprinus megalops* Rafinesque 1817. Hubbs, Kuehne, and Ball (1953:226) indicated that specimens recorded as *N. swaini* by Jordan and Gilbert (1886:24) and Evermann (1892:79) from the Guadalupe River system are *N. amabilis*. This apparently was the first time that *megalops* was synonymized with *amabilis* (both were described in the same paper) but as they said nothing about the relationships of these two forms throughout their overall ranges, Hubbs, Kuehne, and Ball cannot properly be regarded as first revisers. For further discussion see account of *Alburnus amabilis*.

Counts for ANSP 3246: teeth 2,4-4,2; anal rays 9. Counts for MCZ 1682: teeth 2,4-4,2; predorsal scales 16; body-circumference scales 13-2-9 (larger specimen); teeth -4,2; anal rays 10; predorsal scales 15; body-circumference scales 11-2-10 (smaller specimen).

Original description date 25 April 1857.

= *Notropis amabilis* (Girard)

Trycherodon megalops Forbes 1883

Forbes, in Jordan and Gilbert 1883:247. TYPE LOCALITY: Illinois R. (Long Lake), Pekin, Illinois. LECTOTYPE: USNM 28406 (40.4), S. A. Forbes, 27 October 1879. Gilbert and Bailey (1972:21) designated lectotype. LECTOPARATYPE: CAS 13513 (old IU 4734) (1).

REMARKS.—Jordan (1884b:821) was first to synonymize *Trycherodon megalops* with *Opsopoeodus emiliae*. Schrenkeisen (1938:107) and Hubbs and Lagler (1947:64-65) subsequently regarded it as the northern subspecies of *Opsopoeodus emiliae*. Gilbert and Bailey (1972:13) again relegated *megalops* to the synonymy of *emiliae*. Original description date 1 April 1883.

= *Notropis emiliae emiliae* (Hay)

Notropis mekistocholas Snelson 1971

Snelson 1971:449-462, fig. 1a-b. TYPE LOCALITY: Rocky R., at st. hwy. 902 bridge, 7.0 air mi SW center of Pittsboro, Chatham Co., North Carolina. HOLOTYPE: USNM 205299 (ex NCSM 4928) (55.7), tuberculate adult male, F. F. Snelson, Jr. and W. M. Palmer, 2 June 1968 (orig. no. FFS 68-31). PARATYPES: USNM 205300 (8), UMMZ 197680 (7), UF 17303 (7), CU 64397 (7), TU 63272 (7), paratopotypes.

REMARKS.—Original description date 3 September 1971.

= *Notropis mekistocholas* Snelson

Cyprinus melanurus Rafinesque 1817

Rafinesque 1817:121. TYPE LOCALITY: Hudson R. system, New York. TYPES: None located.

REMARKS.—Jordan (1877d:12) was first to synonymize this form with *N. cornutus*. Original description date (31) December 1817.

= *Notropis cornutus* (Mitchill)

Notropis metallicus Jordan and Meek 1884

Jordan and Meek 1884:475-476. TYPE LOCALITY: Alapaha R., tributary to Suwannee R., at Nashville, Berrien Co., Georgia. This river was erroneously said to be the Altamaha in the original description. SYNTYPES: USNM 28511 (6, 22.5-34.2), CAS-SU 2527 (1, 29.0), W. J. Taylor.

REMARKS.—Fowler (1941:234) seems to be the first to have synonymized this form with *N. hypselopterus*. Original description date 23 October 1884.

= *Notropis hypselopterus hypselopterus* (Günther)

Aztecula mexicana Meek 1902

Meek 1902:81-82; pl. 18, upper fig. TYPE LOCALITY: Rio Moctezuma, San Juan del Rio, Queretaro, Mexico. HOLOTYPE: FMNH 3606 (58.6), S. E. Meek and Frank Eugene Lutz, 16 May 1901. PARATYPES: FMNH 80452 (90), UMMZ 162462 (ex FMNH 80452) (10), paratopotypes.

REMARKS.—Contreras (1974) listed *Notropis mexicanus* as a valid species, but Miller (1976:10) tentatively synonymized it with *N. sallei*. Original description date (31) May 1902.

= *Notropis sallei* (Günther)

Alburnellus micropteryx Cope 1868

Cope 1868b:233. TYPE LOCALITY: Holston R., Virginia. LECTOTYPE: ANSP 2842 (54.9), E. D. Cope, October 1867. Fowler (1910: pl. 21, fig. 54) designated lectotype by illustrating "type" (ANSP 2842); calculated length 57.7 mm SL. LECTOPARATYPE: ANSP 2843 (1), paratopotype.

REMARKS.—Condition of types fair to poor for old specimens (fins broken, but characters recognizable). Counts: teeth 2,4-4,2 (lectotype), 1,4-4,2 (lectoparatype); anal rays 10 (lectotype), 9 (lectoparatype). This form was long called a valid species (Kuhne 1939:49), but more recently has been called a subspecies of *N. rubellus* (Smith-Vaniz 1968:49) or synonymized with that species (Moore 1957: 125). The systematics of the *N. rubellus* complex have not yet been adequately studied. Original description date 2 December 1868.

= *Notropis rubellus* (Agassiz)

Minnilus microstomus Rafinesque 1820

Rafinesque 1820b:47. TYPE LOCALITY: Kentucky R., Kentucky. TYPES: None located.

REMARKS.—This form cannot be identified with certainty. Jordan (1876a:94; 1876b:282) considered it to be a valid species, and initially synonymized *Hybopsis gracilis* Agassiz and *Hybopsis longiceps* Cope with it. Later, he (Jordan 1885b:811) wrote, "The identification of Rafinesque's *Minnilus microstomus* is too uncertain to warrant the use of his name." *M. microstomus* was said to be a small species with a straight lateral line, olivaceous back and head, a few black dots on the sides, a small mouth, and with eight rays in both the dorsal and anal fins. This description fits *N. stramineus* or *N. volucellus* as well as any species known from northern Kentucky. Original description date (31) May 1820.

= identification uncertain. Possibly a senior synonym of either *Notropis stramineus* (Cope) or *Notropis volucellus* (Cope)

Hybopsis missuriensis Cope 1871

Cope 1871:437-438. TYPE LOCALITY: tributary to Missouri R., near St. Joseph, Missouri. LECTOTYPE: ANSP 4374 (40.0), Dr. William Stimpson. Fowler (1910: pl. 15, fig. 6) designated lectotype by illustrating "type" (ANSP 4374); calculated length 40.2 mm SL. LECTOPARATYPES: ANSP 4375-4377 (3), paratopotypes.

REMARKS.—Counts for original syntypes: teeth 4 (1); anal rays 7 (4); predorsal scales 13 (1), 14 (2), 15 (1). Hubbs and Greene (1928:377) synonymized *Hybopsis scylla* and *H. missuriensis*, which were both described in the same paper; as first revisers, they chose the latter name. Bailey and Allum (1962:64-68) showed this form to be a valid subspecies, although the type locality lies in the zone of intergradation between the subspecies *stramineus* and *missuriensis*. Original description date (31 December) 1871.

= *Notropis stramineus missuriensis* (Cope)

Hybopsis montanus Meek 1885

Meek 1885:526-527. TYPE LOCALITY: upper Missouri River basin (no further data). SYNTYPES: USNM 36882 (3, 46.4-54.6), Dr. F. V. Hayden.

REMARKS.—Syntypes in fairly good condition for old specimens. Counts: teeth 1,4-4,1 (2), 4,1 (1); anal rays 8 in all (fin in one specimen with one of middle rays missing); predorsal scales absent (2) or present over posterior third of area (1). Bailey and Allum (1962:68) erroneously synonymized this form with *N. stramineus missuriensis*. Original description date 25 February 1885.

= *Notropis dorsalis* (Agassiz)

Cliola montiregis Cope 1885

Cope 1885:168. TYPE LOCALITY: Monterrey, Nuevo Leon, Mexico. HOLOTYPE: ANSP 19344 (37.5), E. D. Cope, November 1883.

REMARKS.—The type of this species is apparently unique and thus is considered the holotype. Fowler (1910: pl. 17, fig. 21) illustrated "type;" calculated length 38.1 mm SL. Counts for holotype: teeth 1,4-4,0; anal rays 8. Jordan and Evermann (1896:272) were first to synonymize this form with *N. lutrensis*. Original description date 7 March 1885.

= *Notropis lutrensis lutrensis* (Baird and Girard)

Notropis moralesi DeBuen 1956

DeBuen 1956:527-541, fig. 1. TYPE LOCALITY: dentro del Rio Tepelneme, tributary to Rio Santo Domingo (tributary of Rio Papaloapan), Presa de El Capulin, near pueblo de Tepelneme, Oaxaca, Mexico. HOLOTYPE: Instituto de Biología (Mexico) uncat. (?) (60.0), Salvador Morales and Dr. Fernando deBuen, 24 February 1955. PARATYPES: UMMZ 172459 (13); remaining 20 paratypes divided among la Comision del Papaloapan, la Comision de Piscicultura Rural de la Direccion General de Pesca e Industrias Conexas, and el Instituto Politecnico.

REMARKS.—This species frequently has a barbel at each corner of the mouth. Original description date 20 June 1956.

= *Notropis moralesi* deBuen

Notropis muskoka Meek 1899

Meek 1899:308. TYPE LOCALITY: lower part of Gull Lake, near Cravenhurst, Ontario, Canada. HOLOTYPE: FMNH 2964 (59.5), S. E. Meek, mid-September 1899. PARATYPES: FMNH 2964a (20), USNM 126873 (ex FMNH 2964a) (2), CAS-SU 21483 (ex FMNH 2964a) (4), paratopotypes.

REMARKS.—Hubbs (1926:41) was first to synonymize this form with *N. heterolepis*. Original description date (30) November 1899.

= *Notropis heterolepis* Eigenmann and Eigenmann

Nototropis nazas Meek 1904

Meek 1904: 70, fig. 19. TYPE LOCALITY: headwaters of Rio Nazas, Santiago Papasquiara, Durango, Mexico. HOLOTYPE: FMNH 4375 (49.8), S. E. Meek, 25 May 1903. PARATYPES: FMNH 33572-33704 (133), paratopotypes.

REMARKS.—Original description date (31) August 1904.

= *Notropis nazas* (Meek)

Notropis altipinnis neusensis Hubbs and Raney 1948

Hubbs and Raney 1948:8-10, pl. 1. TYPE LOCALITY: trib. of Trent R., 7 mi. WSW of New Bern, Craven Co., North Carolina. HOLOTYPE: UMMZ 136152 (43.7), E. C. Raney, E. A. Lachner, and R. A. Pfeiffer, 30 March 1941. PARATYPES: UMMZ 136153 (4), paratopotypes; UMMZ 136154 (6), CU 9658 (2), CU 10579 (58 originally, now 56).

REMARKS.—This form and others described in the same paper are not generally regarded as valid, though they have never been formally synonymized. Original description date 26 April 1948.

= *Notropis altipinnis* (Cope)

Minnilus nigripinnis Gilbert 1884

Gilbert 1884c:14. TYPE LOCALITY: Shunganunga Cr. (trib. to Kansas R.), near Topeka, Kansas. HOLOTYPE: USNM 36613 (59.7), F. W. Cragin, 1884. PARATYPES: USNM 36608 (2), paratopotypes. (Only one paratype is mentioned in original description.)

REMARKS.—Gilbert (1885:513-514) subsequently republished original description verbatim "for convenience of reference." Jordan (1885b:814) was first to synonymize this form with *N. umbratilis*. Snelson and Pflieger (1975:236) discussed the status of this form. Original description date (30) September 1884.

= *Notropis umbratilis umbratilis* (Girard)

Graodius nigrotaeniatus Günther 1868

Günther 1868:485-486. TYPE LOCALITY: Atlisco, Mexico. SYNTYPES: BMNH 1868.3.3.19-21 (3, 68.5-76.0), M. Boucard.

REMARKS.—Jordan (1880a:226) discussed the syntypes and suggested that the unusual dentition represents an aberrant condition. Meek (1904:68) was first to synonymize this form with *N. boucardi* (based on observations of C. Tate Regan, who examined the types of both), and as first reviser, selected the latter name. Original description date 14 March 1868.

= *Notropis boucardi* (Günther)

Alburnus nitidus Kirtland 1854

Kirtland 1854:44-45, fig. TYPE LOCALITY: Rocky River, near Cleveland, Ohio. TYPES: None located. The original description mentioned an undetermined number of syntypes, collected by J. P. Kirtland on 9-12 October 1853, as having been presented to Cleveland Academy of Science at meeting of 21 March 1854.

REMARKS.—Jordan and Gilbert (1883:202) erroneously synonymized this form with *Minnilus* (= *Notropis*) *rubellus*. Jordan and Evermann (1896:293) were first to synonymize it with *N. atherinoides*. Original description date 1 February 1854.

= *Notropis atherinoides* Rafinesque

Moniana nitida Girard 1857

Girard 1857:201. TYPE LOCALITY: Rio Monterrey (trib. to Rio San Juan), Cadereyta (= Cadereyta), Nuevo Leon, Mexico. SYNTYPES: USNM 96 (one set of pharyngeal teeth in bone collection), USNM 39657 (2, 47.5-52.4), Lt. D. N. Couch, winter 1852-1853.

REMARKS.—Girard (1859a:58) listed only two original syntypes. Possibly the set of pharyngeal arches (USNM 96) was removed from one of the specimens now comprising USNM 39657, inasmuch as the arches are missing from one of the two syntypes. Counts for USNM 96: teeth 1, 4-4, 0. Counts for USNM 39657: teeth 4-4 (1); anal rays 7 in both. Jordan and Gilbert (1883:175) erroneously synonymized this form with *Cliola deliciosa* (= *N. stramineus*), but it was later revaluated by Jordan (1885b:811). Jordan and Evermann (1896:264-265) pointed out that *Moniana nitida* is preoccupied in *Notropis* by *Alburnus nitidus* Kirtland 1854, and therefore proposed *N. braytoni* as a substitute name for Girard's species. Original description date 25 April 1857.

= a preoccupied senior synonym of *Notropis braytoni* Jordan and Evermann

Hybopsis niveus Cope 1870

Cope 1870:460-461. TYPE LOCALITY: Upper waters of Catawba R., North Carolina. LECTOTYPE: ANSP 2930 (51.0), E. D. Cope, Autumn 1869. Fowler (1910: pl. 18, fig. 27) designated lectotype by illustrating "type" (ANSP 2930); calculated length 52.7 mm SL. LECTOPARATYPES: ANSP 2931-2947 (17), paratopotypes.

REMARKS.—Gibbs (1955) reviewed species. Condition of types fair to poor. Fowler (1910:282) listed 19 syntypes, but only 17 were subsequently found. Counts for largest syntype: teeth 4-4; anal rays 8. Original description date 21 November 1870.

= *Notropis niveus* (Cope)

Notropis nocomis Jordan and Gilbert 1886

Jordan and Gilbert 1886:23-24. TYPE LOCALITY: Rio Comal, at New Braunfels, Comal Co., Texas. LECTOTYPE: USNM 36531 (39.6), D. S. Jordan, C. H. Gilbert, J. Swain, and S. E. Meek; July, August, or September 1884. Hubbs (1951a:11-12) designated lectotype. LECTOPARATYPES: USNM 93516 (55), paratopotypes; USNM 36514 (9), USNM 46219 (11).

REMARKS.—This name first appeared (Jordan 1885b:812) as a *nomen nudum*. It was subsequently suppressed by Jordan and Gilbert (1886:23-24), who regarded it as identical to *N. deliciosus* (= *N. stramineus*), but at the same time they gave diagnostic characters for their rejected species. The name *nocomis* could have remained without standing, according to the International Code of Zoological Nomenclature (1964: Article 11d), but Hubbs (1951a) elected to resurrect it as a subspecies of *N. volucellus*. This action served to make *N. nocomis* Evermann 1892 a junior primary subjective homonym, for which the name *N. amnis* Hubbs and Greene, in Hubbs 1951, was substituted. The nomenclatural origin of *N. nocomis* Jordan and Gilbert closely parallels that of *N. ionthas*, a name that was similarly rejected in the same paper (Jordan and Gilbert 1886:11), but which has since been found to represent a valid species. Unlike *nocomis*, however, the name *ionthas* still has no legal nomenclatural standing (see Snelson and Jenkins 1973:293). Although *N. volucellus nocomis* is not indicated below as being a valid subspecies, subsequent study may prove it to be so.

Original description date 17 September 1886.

= *Notropis volucellus* (Cope)

Notropis nocomis Evermann 1892

Evermann 1892:78-79. TYPE LOCALITY: Trinity R., Magnolia Point, 10 mi SW of Palestine, Anderson Co., Texas. LECTOTYPE: USNM 45556 (45.0), B. W. Evermann, R. R. Gurley, and J. A. Singley, 23 November 1891. Evermann and Kendall (1894: pl. 17) designated lectotype by illustrating "type." This specimen is also the holotype of *N. amnis pinnosa* Hubbs and Bonham. LECTOPARATYPES: USNM 93517 (20), USNM 125175 (apparently ex USNM 93517) (21), CAS-SU 21146 (apparently ex USNM 93517) (24), CAS 13517 (old IU 9041) (4), paratopotypes. Other syntypes (USNM 58792) were identified by Hubbs (1951a:12) as *Dionda episcopa couchi*.

REMARKS.—This form is a junior homonym of *N. nocomis* Jordan and Gilbert (1886), as a result of Hubbs' (1951a) action revalidating the latter species (see preceding account). It also is a senior synonym of *N. amnis pinnosa*, but Clemmer (1970) found that subspecies not to be valid. Original description date 25 May 1892.

= a preoccupied senior synonym of *Notropis amnis* Hubbs and Greene

Notropis norrisi Fowler 1945

Fowler 1945:235-236, figs. 114 and 116. TYPE LOCALITY: basin of Altamaha R., near Fitzgerald, Georgia. (This locality very likely is Osewichee Springs, 14.5 mi. N of Fitzgerald, Wilcox County.) HOLOTYPE: ANSP 70705 (39.0), Robert Norris, 1941. PARATYPES: ANSP 70706-70710 (5), paratopotypes.

REMARKS.—Suttkus and Raney (1955a:84) were first to synonymize this form with *Hybopsis harperi* (= *N. harperi*). Contrary to their opinion that the types of *N. norrisi* are probably from the Suwannee River system, they are more likely from the Altamaha system, as stated in the original description. Original description date 25 October 1945.

= *Notropis harperi* Fowler

Cyprinella notata Girard 1857

Girard 1857:198. TYPE LOCALITY: Rio Seco (= Seco Creek), at D'Hanis, Medina Co., Texas. LECTOTYPE: USNM 136 (38.5), Dr. C. B. Kennerly, 1853. Gibbs (1957:180-181) designated lectotype. Despite statement by Clark Hubbs (1954b:280), Jordan (1885a:124) did not designate lectotype for this species. LECTOPARATYPE: USNM 163955 (1). Third syntype is *N. lutrensis* and is recatalogued under that name.

REMARKS.—Girard (1858:270; pl. 58, figs. 16-20) listed only two original syntypes and illustrated one of these. Moore (1952) used the specific name *notatus* for the blacktail shiner, based on the then current nomenclatorial rule of line priority. Clark Hubbs (1954b:280) was first to synonymize this form with *N. venustus*, and, as first reviser, selected latter name. Original description date 25 April 1857.

= *Notropis venustus venustus* (Girard)

Notropis notemigonoides Evermann 1892

Evermann 1892:81-82. TYPE LOCALITY: Neches R., ca 14 mi E of Palestine, Anderson County, Texas (at Palestine and Rusk RR bridge). LECTOTYPE: USNM 125183 (50.5), B. W. Evermann, J. T. Scovell, R. R. Gurley, and J. A. Singley, 24 November 1891. Evermann and Kendall (1894: pl. 18) designated lectotype, by illustrating "type." This antedates Jordan and Evermann's listing of USNM 45559 as the "type." LECTOPARATYPE: USNM 203330 (1). The other four syntypes are all *N. fumeus*; one was taken with the above specimens of *N. umbratilis*, and the other three were collected from Sims Bayou, near Houston, Texas.

REMARKS.—Ortenburger and Hubbs (1927:131) pointed out the close similarity of *N. notemigonoides* to *N. fumeus* and *N. umbratilis*, but did not synonymize it with either species. Snelson (1973:169-170) and Snelson and Pflieger (1975:236) discussed the status of *N. notemigonoides* and gave reasons for synonymizing it with *N. umbratilis* rather than *N. fumeus*. Original description date 25 May 1892.

= *Notropis umbratilis cyanocephalus* (Copeland)

Alburnops nubilus Forbes 1878

Forbes, in Jordan 1878b:56-57. TYPE LOCALITY: Rock R., at Oregon, Ogle County, Illinois. SYNTYPES: INHS 26945 (6, 46.6-55.3), Stephen A. Forbes, 6 May 1877. Jordan and Evermann listed USNM 28410 as "type," but I have not located this series. Böhlke (1953:30) erroneously considered this to constitute a lectotype designation. Böhlke (1953) also listed SU 1280 (= CAS-SU 1280) as "paratypes" (actually syntypes), but the three specimens involved are from Belvidere, Illinois, a locality not included in Forbes' original description.

REMARKS: *N. nubilus* was long assigned to the genus *Dionda*, based on a long gut tract. Swift (1970:3081-B) was the first to place it in *Notropis*. Original description date. (30) June 1878.

= *Notropis nubilus* (Forbes)

Notropis nux Evermann 1892

Evermann 1892:77-78. TYPE LOCALITY: Trinity R., at Magnolia Point, 10 mi SW of Palestine, Anderson County, Texas. See REMARKS. LECTOTYPE: USNM 45555 (45.6), B. W. Evermann, J. T. Scovell, and R. R. Gurley, 23 November 1891. Evermann and Kendall (1894: pl. 17, top fig.) designated lectotype by illustrating "type." See REMARKS. LECTOPARATYPES: USNM 125166 (10) (from Neches R., near Palestine, Texas). A single paratype from Long Lake, also near Palestine, Texas, cannot be located.

REMARKS.—The correct type locality and source of the lectotype designation for *N. nux* are confused. Although Suttkus (1958:308) designated a lectotype (USNM 45555), his action was superceded by that of Evermann and Kendall (1894: pl. 17, top fig.), whose illustration of the "type" fulfills the requirements for a lectotype designation, as enumerated in Article 74b of the International Code. According to Evermann and Kendall (1894), the specimen illustrated is from the "Neches River, Palestine, Texas," whereas the specimen designated by Suttkus (1958) is from the Trinity River, also near Palestine, Texas. This would suggest that the individual illustrated is from the series now catalogued as USNM 125166 (from the Neches R.), but Jordan and Evermann (1900:3241, pl. 47, fig. 117) gave the locality for the same figure appearing in Evermann and Kendall (1894) as the Trinity River. Furthermore, the following information appears in the fish catalogue with the entry for USNM 45555: "*Notropis nux* (type) Trinity River, Palestine, Texas. November 23, 1891. alc. Recd. from U. S. Fish Comm. collected by B. W. Evermann. Catalogued Oct. 26, 1894. 1 spec. 'Drawn'." An old label in the jar itself contains the above locality information, together with the notation "Specimen drawn." Although there is neither a scale of measurement nor other indication of length of the illustration in plate 17, examination of the specimen catalogued as USNM 45555 and comparison with the drawing indicate that it is the one Evermann and Kendall illustrated, despite the discrepancy in locality data. Finally, the Trinity River specimen (no. 45555) is larger and in better condition than any of those in the other series. Based on the above, it seems plausible to assume that the locality data given by Evermann and Kendall (1894: pl. 17) is in error, the Trinity River is the correct type locality, and that the lectotype designations by Evermann and Kendall and by Suttkus are based on the same specimen. Bailey, Winn, and Smith (1954:126) were first to synonymize *N. nux* with *N. roseus* (= *N. texanus*). Original description date 25 May 1892.

= *Notropis texanus* (Girard)

Leuciscus obesus Storer 1845

Storer 1845:48. TYPE LOCALITY: Florence, Alabama. TYPES: None located.

REMARKS.—Status indeterminable. Possibly not a *Notropis*, but if so, most likely *Notropis chrysocephalus chrysocephalus*. Original description date 31 December 1845.

= a questionable junior synonym of *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Notropis ochoterenai Hubbs and Gordon 1937

See page 22.

Notropis xaenocephalus octoradius Baughman 1950

See page 22.

Alburnus oligaspis Cope 1865

Cope 1865a:282-283. TYPE LOCALITY: "Kansas" (according to original description). This was subsequently emended to "Platte River, near Fort Riley" (Cope 1865b). See REMARKS. LECTOTYPE: ANSP 2753 (40.5), Dr. A. W. Hammond. Fowler (1910: pl. 20, fig. 48) designated lectotype by illustrating "type" (ANSP 2753); calculated length 40.0 mm SL. LECTOPARATYPE: ANSP 2754 (1), paratopotype.

REMARKS.—The type locality for this species is confused. Inasmuch as the Platte River does not enter Kansas, the emended type locality given by Cope (1865b) cannot possibly be correct. Cross (1967:226) wrote as follows about this: "Hammond was stationed temporarily at Fort Riley. The fishes that he collected were delivered from that base to the Academy of Natural Sciences of Philadelphia, but the precise localities of their capture are uncertain. Many were taken on an expedition in 1856, through areas now within the states of Nebraska and Wyoming." Jordan (1885a:122) was first to synonymize this form with *Alburnus dilectus*, which in turn was synonymized with *N. atherinoides* by Hubbs and Ortenburger (1929b:83). Original description date 13 February 1865.

= *Notropis atherinoides* Rafinesque

Notropis orca Woolman 1894

Woolman 1894:56. TYPE LOCALITY: Rio Grande, at El Paso, Texas. SYNTYPES: CAS-SU 2278 (4, 51.7-61.7), USNM 212260 (ex CAS-SU 2278) (2, 56.9-63.4), A. J. Woolman, summer 1891.

REMARKS.—Condition of types very good to excellent. Counts: anal rays 8 in all specimens; pharyngeal teeth 2,4-4,2 in one specimen examined. Miller (1976:11) noted differences between individuals in the type series of *N. simus* and *N. orca* but indicated that these characters grade together throughout the overall range. A possible subspecific relationship is also refuted by the close proximity of their type localities (the Rio Grande in Texas and New Mexico, respectively). Clark Hubbs (1957:6) recognized only *N. simus* from Texas, thereby tacitly synonymizing the two. Original description date 2 May 1894.

= *Notropis simus* (Cope)

Codoma ornata Girard 1857

Girard 1857:195. TYPE LOCALITY: Rio Chihuahua and tributaries, near Chihuahua City, Chihuahua, Mexico. SYNTYPES: USNM 91 (2, 51.2-54.2), MCZ 1791 (ex USNM 91) (1, 50.6) John Potts, 1855.

REMARKS.—Girard (1859a:53; pl. 29, figs. 22-25) listed four original syntypes and illustrated one of these. Condition of syntypes soft, but not bad for specimens of their age. Counts: teeth 4-4 (MCZ and one of USNM types); anal rays 7 (MCZ type). Teeth of USNM type in osteological collection. Contreras (1975) and Miller (1976) tentatively placed this species in a separate genus, *Codoma*. Original description date 25 April 1857.

= *Notropis ornatus* (Girard)

Notropis ortenburgeri Hubbs 1927

Hubbs, in Ortenburger and Hubbs 1927:127. TYPE LOCALITY: Mountain Fork R., 10 mi SE of Broken Bow, McCurtain County, Oklahoma. HOLOTYPE: UMMZ 73092 (43.0), Univ. of Oklahoma Mus. of Zool. field crew, June-July 1925.

REMARKS.—Original description date 1 January 1927.

= *Notropis ortenburgeri* Hubbs

Opsopoeodus osculus Evermann 1892

Evermann 1892:82-83. TYPE LOCALITY: Buffalo Bayou, 6 mi N of Houston, Harris County, Texas. LECTOTYPE: USNM 45560 (43.0), B. W. Evermann, J. T. Scovell, and R. R. Gurley, 16 November 1891. Evermann and Kendall (1894: pl. 19, lowermost fig.) designated lectotype by illustrating "type." LECTOPARATYPES: USNM 205205(3), paratopotypes; USNM 125143(36), CAS 13514 (old IU 9042) (4), CAS-SU 1127 (1). Evermann (1892:82) listed 82 original syntypes from six localities, of which 40 cannot now be located.

REMARKS.—Gilbert and Bailey (1972:21-22) discussed status of this form. Original description date 25 May 1892.

= *Notropis emiliae emiliae* (Hay)

Notropis oxyrhynchus Hubbs and Bonham 1951

Hubbs and Bonham 1951:93-97; pl. 2 figs. 2-3. TYPE LOCALITY: Brazos R., Wellborn Cross-

ing, Brazos County, Texas. HOLOTYPE: UMMZ 129829 (50.8), Kelshaw Bonham and party, 21 October 1938. PARATYPES: UMMZ 129830 (230 originally, now 220), UF 14613 (ex UMMZ 129830) (10), paratopotypes; UMMZ 132054 (10), UMMZ 138238 (11), UMMZ 159363 (3), UMMZ 159364 (144), UMMZ 159365 (45), UMMZ 159366 (138), UMMZ 159367 (84).

REMARKS.—Original description date 30 March 1951.

= *Notropis oxyrhynchus* Hubbs and Bonham

Notropis ozarcanus Meek 1891

Meek 1891:129. TYPE LOCALITY: North Fork of White R., S of Cabool, Baxter County, Arkansas. SYNTYPES: USNM 43230 (old U. S. Fish Comm. 3710) (4, 37.5-45.0), CAS 29305 (old IU 8531) (7, 36.8-37.1), S. E. Meek, Louis Rettger, and F. M. Drew, 3 August 1889.

REMARKS.—A discrepancy arises regarding the number of syntypes of this species. Although in his original description Meek (1891) listed only 10 specimens, the two type series combined contain 11. The data on the original labels in the jars are in accord with Meek's description, but the uniform condition of the types now present suggests they were all preserved at the same time. Meek probably miscounted the number of specimens in preparing his original description. Original description date 19 June 1891.

= *Notropis ozarcanus* Meek

Notropis emiliae peninsularis Gilbert and Bailey 1972

Gilbert and Bailey 1972:23-26; pls. 1b, 2b. TYPE LOCALITY: St. Johns R., at Fort Gates Ferry, T12S, R26E, Ocala National Forest, Putnam County, Florida. HOLOTYPE: UMMZ 197672 (44.5), C. L. Hubbs and party, 5 April 1941. PARATYPES: UMMZ 163356 (9), paratopotypes; UMMZ 106421 (5), UMMZ 106424 (1), UMMZ 101682 (2), UMMZ 126288 (3), UMMZ 158564 (36), UMMZ 158637 (1), UMMZ 180659 (35), UF 179 (1), UF 180 (19), UF 228 (2), UF 546 (10), UF 4472 (1), UF 6258 (33), UF 6259 (12), UF 6260 (27), UF 6261 (35), UF 6262 (9), UF 6264 (42), UF 6265 (42), UF 6266 (46), UF 6267 (52), UF 6268 (5), UF 6269 (35), UF 6270 (5), UF 6271 (13), UF 6273 (2), UF 6274 (8), UF 6275 (146), UF 6276 (81), UF 6277 (11), UF 6279 (2), UF 6281 (4), UF 6282 (2), UF 6284 (17), UF 6286 (67), FSU 1421 (3), FSU 1861 (2) (erroneously listed in original description as 1661), FSU 2139 (3).

REMARKS.—Counts for holotype: pharyngeal teeth 5-4; anal rays 8; lateral-line scales 38; caudal-peduncle circumferential scales 5-2-5=12; predorsal scales 18; body circumferential scales 12-2-11=26; pectoral rays 15-15; pelvic rays 8-8. Original description date 9 March 1972.

= *Notropis emiliae peninsularis* Gilbert and Bailey

Alburnellus percobromus Cope 1871

Cope 1871:440. TYPE LOCALITY: "St. Joseph, Missouri." (This locality probably is in eastern Kansas, but may be central Missouri, as discussed below.) LECTOTYPE: ANSP 2993 (39.5), Dr. William Stimpson. Fowler (1910: pl. 21, fig. 50) designated lectotype by illustrating "type" (ANSP 2993); calculated length 40.1 mm SL. LECTOPARATYPES: ANSP 2994-3009 (13), paratopotypes.

REMARKS.—The nomenclature and taxonomic status of this form have been confused. Jordan (1885b:815) originally synonymized it with *N. rubrifrons* (= *N. rubellus*), which stood for 60 years until Hubbs (1945:16-17) determined that *N. percobromus* was a valid species, most closely related to *N. atherinoides*. Hubbs and Bonham (1951:93) discussed the situation further, pointing out that Hubbs and Ortenburger's (1929b:83-85) earlier acceptance of *percobromus* as the name for the southwestern form of *N. rubellus* was in error, and resulted largely from Fowler's (1910:290; pl. 21, fig. 50) description of *N. rubrifrons*, which was based in part on Cope's syntypes of *Alburnellus percobromus*. Bailey and Allum (1962:56-60) disputed Hubbs' (1945) recognition of *N. percobromus* as a valid species, and synonymized it with *N. atherinoides*.

I reexamined the 14 syntypes of *A. percobromus* which, although slightly soft, are in good condition for old specimens. All are *N. rubellus*. Especially diagnostic are the small eye, sharply pointed snout, relative positions of the dorsal and pelvic fins (dorsal fin more posteriorly situ-

ated in *N. rubellus*), number of anal-fin rays (10 in 11 of the 14 types vs. usually 11 in *atherinoides*), and number of body-circumference scales (26 to 28), which are higher than the counts (23 to 25) usually found in *N. atherinoides* (Snelson 1968:792). Thus Jordan's (1885b) original synonymization of *percobromus* with *rubrifrons* was correct, as was Hubbs and Ortenburger's (1929b) application of the name *percobromus* to the southwestern population of *rubellus*. Although *N. percobromus* (as now understood) may well be a valid form, either as a species or subspecies, final judgment must await further study. It is tentatively regarded here as a junior synonym of *N. rubellus*.

The type locality for *Alburnellus percobromus* probably is in error, as St. Joseph, Missouri, is outside the present range of *N. rubellus* (Cross 1967:104; Pflieger 1971:485, map 46). On the first page of the paper in which *percobromus* was described, Cope (1871:432) stated "a few species from the neighborhood of St. Joseph, Northwestern Missouri, are added." This indicates that the locality "St. Joseph, Missouri," which subsequently appeared in the account of *percobromus*, should not be taken literally. *N. rubellus* occurs today in Kansas within about 75 miles of St. Joseph; the closest locality in Missouri is slightly over 100 miles away. Inasmuch as Kansas localities for this species are slightly closer, it is more likely that the original specimens came from that state (if so, presumably from the Kansas River drainage) rather than from Missouri. Possibly a detailed morphological comparison of populations from these areas with the types will help resolve this problem. Original description date (31 December) 1871.

= *Notropis rubellus* (Agassiz)

Notropis perpallidus Hubbs and Black 1940

Hubbs and Black 1940:46-49. TYPE LOCALITY: Saline R., 5 mi N of Warren, Bradley County, Arkansas. HOLOTYPE: UMMZ 125991 (30.0), John D. and Ruby Y. Black, 20 June 1939. PARATYPE: UMMZ 125992 (1), paratopotype.

REMARKS.—Snelson and Jenkins (1973) reviewed this species. They showed (1973:293) that the name *N. ionthas*, which was earlier introduced by Jordan and Gilbert (1886:11), was based on this species, but as it appeared as a junior synonym and was not used subsequently, it has no legal nomenclatural standing (International Code, articles 11(d) and 16(b)(ii)). Original description date 30 March 1940.

= *Notropis perpallidus* Hubbs and Black

Notropis petersoni Fowler 1942

Fowler 1942:1-2, figs. 1-2. TYPE LOCALITY: Crane Cr., below U.S. hwy. 1 bridge, Moore Co., North Carolina. HOLOTYPE: ANSP 69967 (50.0), C. Bernard Peterson, G. A. Coventry, and F. A. Ulmer, Jr., 23 August 1940. PARATYPES: ANSP 69968 (1), paratopotype.

REMARKS.—Swift (1970) reviewed this species. Original description date 16 September 1942.

= *Notropis petersoni* Fowler

Hybopsis phaenna Cope 1865

Cope 1865a:279. TYPE LOCALITY: tribs. of Delaware R., near Trenton, New Jersey. LECTOTYPE: ANSP 4389 (85.0), Dr. Charles C. Abbott. Fowler (1910: pl. 16, fig. 15) designated lectotype by illustrating "type" (ANSP 4389); calculated length 86.8 mm SL. LECTOPARATYPES: ANSP 4390-4391 (2), paratopotypes.

REMARKS.—Jordan (1876b:281) was first to synonymize this form with *Hybopsis* (= *Notropis*) *hudsonius*. Original description date 13 February 1865.

= *Notropis hudsonius* (Clinton)

Notropis phenacobius Forbes 1885

Forbes 1885:137. TYPE LOCALITY: Illinois R., at Peoria, Illinois. SYNTYPES: None located. Ten specimens were originally present in the INHS collection, but nine of these were lost prior to 1920 (Forbes and Richardson 1920:139). The remaining type was not listed by Smith and Bridges (1960), and now is also presumed to be lost. The absence of any types of this species from the

INHS collection was recently reconfirmed by P. W. Smith (*in litt.*, 4 February 1974). Six specimens catalogued as *N. phenacobius* and labelled as questionable types are in the Field Museum of Natural History (FMNH 70579). The provenance of these specimens cannot be determined, and their identification (by me) as *N. stramineus* is at variance with the original description of *N. phenacobius* (see REMARKS). I conclude, therefore, that the six specimens in question are not part of the original syntypic series.

REMARKS.—Jordan and Evermann (1896:263) were first to synonymize this form with *N. scylla* (= *N. stramineus*), an action that has since been followed by others (e.g. Suttkus 1958:313). Re-examination of the original description of *N. phenacobius*, as well as the subsequent description and illustration (head only) by Forbes and Richardson (1920:138-139, fig. 33), strongly suggests that this form is, in fact, a senior synonym of *Notropis amnis* Hubbs and Greene 1951.

First, the descriptions in Forbes (1885) and Forbes and Richardson (1920) agree well with that of *N. amnis* in nearly all important features (mouth small, inferior, and horizontal; nose long; head square; eye unusually large; anal rays 1-8; dorsal fin before ventrals; lateral-line scales 35 to 36; predorsal scales 13 to 14). These characters could also apply to *N. stramineus*, with the one important exception of anal-ray count (almost always 7 in that species). The illustration of the head in Forbes and Richardson (1920:138, fig. 33) bears a much stronger resemblance to *N. amnis* than to *N. stramineus*, with the tiny, horizontal, inferior mouth being particularly diagnostic. The one morphological character at variance with that usually found in *N. amnis* is pharyngeal-tooth count, which was recorded by Forbes (1885) and Forbes and Richardson (1920) as 4-4. Although the usual pharyngeal-tooth count in *N. amnis* is 1,4-4,1, the tooth in the lesser row is small and fragile (thus easily broken), and sometimes is missing altogether (Glenn H. Clemmer, *pers. comm.*); this could easily account for the apparent discrepancy in count.

Second, Forbes and Richardson were familiar with *N. stramineus* in Illinois, inasmuch as they treated that species (under the name *N. blennius*) in the account immediately preceding that of *N. phenacobius*. It might be argued that *N. phenacobius* is a synonym of *N. volucellus*, a species usually having eight anal rays and which otherwise shares certain features with *N. amnis*. As *N. volucellus* is common and widespread throughout the midwestern United States and was not separated specifically from the very similar appearing *N. stramineus* until later (Hubbs and Greene 1928:375-379), it is far more likely that Forbes and Richardson's "*N. blennius*" actually was a complex of *N. stramineus* and *N. volucellus*.

Finally, the rarity in Illinois of *N. phenacobius*, which was known to Forbes and Richardson only from the 10 syntypes from the Illinois River at Peoria, is concordant with the rarity of *N. amnis* from the area. Hubbs and Greene (*in* Hubbs 1951a:7) recorded *amnis* only from two widely separated localities in the Illinois River drainage: the Sangamon River in Champaign County, Illinois; and the Iroquois River (above Peoria) in northwestern Indiana. The type locality for *N. phenacobius* thus is within the known geographic range of *N. amnis*.

In summary, circumstantial evidence strongly indicates that *N. phenacobius* Forbes 1885 is not a junior synonym of *N. stramineus* (Cope 1865), as previously thought, but rather is a senior synonym of *N. amnis* Hubbs and Greene 1951. Three courses of action are open under these circumstances: (1) change the specific name of *amnis* to *phenacobius*, (2) petition the International Commission to rule the name *phenacobius* unavailable in the genus *Notropis*, or (3) postpone action of any kind, as no types of *N. phenacobius* are known to exist and thus its identity cannot be categorically established. The last course of action is the one presently being followed. Original description date (31) March 1885.

= a probable senior synonym of *Notropis amnis* Hubbs and Greene

Squalius photogenis Cope 1865

Cope 1865a:280. TYPE LOCALITY: Youghiogeny R., Pennsylvania. LECTOTYPE: ANSP 22280 (39.0), E. D. Cope (specimen lost). Fowler (1909:544-545) designated lectotype and subsequently illustrated the "type" (Fowler 1910: pl. 21, fig. 51). Standard length of lectotype calculated

from Fowler's drawing. See Gilbert (1971a) for further remarks on lectotype designation. LECTOPARATYPE: ANSP 22281 (1). This specimen cannot presently be located. For further discussion see REMARKS.

REMARKS.—This species has had an extremely complicated nomenclatural history, which I reviewed earlier (Gilbert 1971a:477-478). Thus only a brief summary is necessary here.

Despite the indication above, both specimens in the type jar (ANSP 22280-22281) are *N. spilopterus*. I (1971a) assumed this to have resulted from misplacement of the syntypes, inasmuch as Fowler's (1910: pl. 21, fig. 51) illustration of ANSP 22280 is clearly not *N. spilopterus*, but rather is a reasonably good representation of *N. photogenis* as presently recognized. The true syntypes (actually the lectotype and lectoparatype) cannot be located, but may still be present in the ANSP collection. Finally, reexamination of Cope's (1865a:280) original account definitely shows that *N. photogenis*, and not *N. spilopterus*, was the species on which his description was based. Original description date 13 February 1865.

= *Notropis photogenis* (Cope)

Notropis pilsbryi Fowler 1904

Fowler 1904b:245-246, fig. TYPE LOCALITY: White R. system, at Rogers, Benton County, Arkansas. HOLOTYPE: ANSP 24514 (72.5), H. A. Pilsbry, April 1903. PARATYPES: ANSP 24515-24520 (6), paratopotypes.

REMARKS.—This species was synonymized with the closely related *N. zonatus* by Hubbs and Ortenburger (1929b:81-82), as well as by Hubbs and Brown (1929:37). Hubbs and Moore (1940) subsequently elevated it to a subspecies of *N. zonatus*, where it remained until I (Gilbert 1964:133-136) restored it to full species status. The fish listed by Forbes and Richardson (1920:149) as *N. pilsbryi* was based on a hybrid: *N. cornutus* × *N. rubellus* (Hubbs and Brown 1929:37; Hubbs and Moore 1940:96). Original description date 7 April 1904.

= *Notropis pilsbryi* Fowler

Notropis amnis pinnoosa Hubbs and Bonham 1951

Hubbs and Bonham, in Hubbs 1951a:17-25; pl. 1, figs. 3-5. TYPE LOCALITY: Trinity R., Magnolia Point, 10 mi SW of Palestine, Anderson County, Texas. HOLOTYPE: USNM 45556 (45.0), B. W. Evermann, R. R. Gutley, and J. A. Singley, 23 November 1891. This specimen is also the lectotype of *N. nocomis* Evermann 1892. PARATYPES: USNM 93517 (20), paratopotypes; USNM 36475 (1), USNM 69335 (1), USNM 93514 (7), UMMZ 160277 (7). The series USNM 36475 and 69335 were not listed as paratypes by Hubbs (1951a), but are so indicated in the USNM fish catalogue. Other paratypes were said to be present in the University of Texas and Texas A & M collections.

REMARKS.—This form was previously described by Evermann (1892:78-79) as *N. nocomis*. However, the specific name *nocomis* had earlier been used (Jordan and Gilbert 1886:23-24) for a southwestern population of *N. volucellus*, although it first appeared as a *nomen nudum* and thus had no legal status. Hubbs' (1951a:11-12) subsequent action provided such status, with the result that *N. nocomis* Evermann 1892 was now preoccupied and required a new name, which Hubbs and Bonham proposed. Recent studies by Clemmer (1970) indicate the subspecies *pinnoosa* is not valid. Original description date 14 March 1951.

= *Notropis amnis* Hubbs and Greene

Photogenis piptolepis Cope 1871

Cope 1871:438-439. TYPE LOCALITY: Red Cloud Cr., tributary to North Platte R., (Wyoming?). TYPES: None located.

REMARKS.—Although the types of *Photogenis piptolepis* are apparently lost, study of the original description, together with consideration of the type locality, clearly indicates this is the species presently called *N. dorsalis*. The form *piptolepis* may be a valid subspecies, but final clarification must await further study. Original description date (31 December) 1871.

= *Notropis dorsalis* (Agassiz)

Rutilus plargyrus Rafinesque 1820

Rafinesque 1820b:50-51. TYPE LOCALITY: "Kentucky." TYPES: None located.

REMARKS.—The identification of this form cannot be determined with certainty. The species to which the rather ambiguous description most logically applies is *N. chrysocephalus*, and I referred it questionably to that species (Gilbert 1964:158). Original description date (31) May 1820.

= possibly *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Alburnops plumbeolus Cope 1865

Cope 1865a:282. TYPE LOCALITY: Saginaw R., Flint, Michigan. LECTOTYPE: ANSP 2061 (40.5), E. D. Cope. Gilbert (1964:160) designated lectotype (as ANSP 2055). For additional discussion see REMARKS below. LECTOPARATYPES: ANSP 2056-2060 (5), paratopotypes. The seventh original syntype (ANSP 2055) is *N. heterodon*, and has been recatalogued under that name (also see discussion below).

REMARKS.—Although I (Gilbert 1964:160) designated the lectotype indicated above (as ANSP 2055), it was subsequently found that Fowler (1910: pl. 18, fig. 30) had made an earlier lectotype designation by illustrating the "type" (ANSP 2055). Unfortunately, his illustrated specimen, the largest in the type series, proves to be the lone individual of *N. heterodon* (Cope), a species that was originally described as *Alburnops heterodon* in the same paper as *A. plumbeolus*. Should Fowler's lectotype designation be allowed to stand, *plumbeolus* and *heterodon* would become synonyms, and, as they were described simultaneously, the former name conceivably could supplant the latter, depending upon the action of the first reviser. As Cope's original description of *A. plumbeolus* clearly was based on *N. chrysocephalus* (represented by the other six specimens in the syntypic series) and not *N. heterodon*, I (Gilbert 1977) have petitioned the International Commission to suppress Fowler's lectotype designation. As both Fowler and I used the same catalogue number (ANSP 2055) for two different specimens, I have also requested that this number henceforth be restricted to Fowler's lectotype, and that mine be changed to ANSP 2061. Original description date 13 February 1865.

= *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Notropis potteri Hubbs and Bonham 1951

Hubbs and Bonham 1951:100-109; pl. 3, figs. 1-3. TYPE LOCALITY: Waco Cr., near Waco, McLennan County, Texas. HOLOTYPE: UMMZ 120228 (45.3), C. L. Hubbs and family, Leo T. Murray, 21 June 1938. PARATYPES: UMMZ 120227 (12 originally, now 10; 22 erroneously listed in original description), USNM 117568 (ex UMMZ 120227) (2), paratopotypes; UMMZ 92109 (1), UMMZ 92131 (1), UMMZ 101801 (1), UMMZ 110531 (2), UMMZ 110592 (3), UMMZ 110593 (1), UMMZ 112477 (2), UMMZ 129831 (68), UMMZ 129843 (1), UMMZ 132051 (18), UMMZ 159374 (102), UMMZ 159375 (24, plus 10 to G. E. Potter), UMMZ 159376 (34).

REMARKS.—This species first appeared (under the above name), as a labelled illustration only, in Potter's (1938) zoology textbook, and by name only in Baughman's (1950) checklist of Texas fishes. Neither qualifies as a valid description, according to Article 25, Item C, of the International Rules. Suttkus and Clemmer (1968:35-38) discussed the status and relationships of this species. Original description date 30 March 1951.

= *Notropis potteri* Hubbs and Bonham

Hybognathus procne Cope 1865

Cope 1865a:283. TYPE LOCALITY: Conestoga R. (trib. to Susquehanna R.), Pennsylvania. LECTOTYPE: ANSP 3152 (41.0), Jacob Stauffer. Fowler (1909:532) designated lectotype, although it should be noted that in the text and illustration in his later paper he (Fowler 1910:275; pl. 15, fig. 8) referred only to "cotypes." LECTOPARATYPES: ANSP 3153-3162 (9), paratopotypes.

REMARKS.—Condition of types poor, but pertinent characters evident. Counts: pharyngeal teeth 4-4 and anal rays 7 in all specimens examined. Fowler (1910:275) listed 11 syntypes, but only 10 of these now seem to be extant. He also illustrated a "cotype" (Fowler 1910: pl. 15, fig. 8); estimated standard length 40.5 mm. This is very close to the largest individual present in the

jar of syntypes, and this specimen (which I have segregated from the remainder of the series) is considered to be the lectotype. Original description date 13 February 1865.

= *Notropis procne* (Cope)

Moniana proserpina Girard 1857

Girard 1857:200. TYPE LOCALITY: Devils R., probably just above mouth into Rio Grande, Val Verde County, Texas. SYNTYPES: USNM 117 (9[10 listed in USNM catalogue], 29.8-45.8, plus one right pharyngeal arch in osteological collection), ANSP 3026 (ex USNM 117) (1, 39.0), MCZ 1688 (ex USNM 117)(2, 33.7-37.7), BMNH 1883.12.14.216(ex USNM 117)(1, 40.1), John H. Clark, 1851.

REMARKS.—Girard (1859a:59) listed 10 syntypes for USNM 117, but the total number of extant syntypes is 12. *Moniana proserpina* and *Moniana aurata*, which were described in the same paper and on the same page by Girard (1857), were first synonymized (under the former name) by Jordan (1885a:125), who thus qualifies as first reviser. This action was later confirmed by Hubbs and Ortenburger (1929b:75), following examination of types. Condition of types fairly good for old specimens. Counts: pharyngeal teeth 4-4, anal rays 8 in both ANSP and MCZ syntypes. Lytle (1972) reviewed species. Original description date 25 April 1857.

= *Notropis proserpinus* (Girard)

Moniana pulchella Girard 1857

Girard 1857:200. TYPE LOCALITY: Sugar Loaf Cr., tributary to Poteau R., about 20-25 mi S Fort Smith, Arkansas, vicinity of Poteau, Oklahoma. Locality is very near the Oklahoma-Arkansas state line and could be either in Le Flore County, Oklahoma, or Sebastian County, Arkansas. SYNTYPES: None located. Girard (1858:276) listed a single specimen (USNM 122) from the above locality, collected by H. B. Möllhausen in 1853, but this apparently is no longer extant.

REMARKS.—Some confusion attends the status of the type specimens of *Moniana pulchella*. Girard (1858:276) listed, in addition to the single specimen (USNM 122) above, a series of 18 specimens (USNM 121), collected by Dr. George G. Shumard in 1853 from the Arkansas River near Fort Smith, Arkansas. Although not specifically stated in Girard's 1858 paper, these specimens conceivably could be presumed to comprise a second syntypic series. They have been so labelled in the jars (the original series was divided between the USNM, ANSP, MCZ, and possibly other collections) and were also regarded as types by Hubbs and Ortenburger (1929b:74), who studied the two individuals now in the MCZ. It is possible that Girard did, in fact, intend USNM 121 to represent a second type series; unfortunately, they cannot be so regarded, inasmuch as neither they nor the locality from which they came were mentioned in the original description of the species (Girard, 1857:200). Girard (1858: pl. 58, figs. 11-15) illustrated *M. pulchella*, but there is no indication from which series the specimen came on which the illustration is based.

The specimens still remaining from USNM 121 are recorded here, although they are no longer regarded as valid syntypes: USNM 121 (three pharyngeal arches only, in osteological collection), ANSP 4085 (ex USNM 121) (1, 45.5), MCZ 1797 (ex USNM 121) (2, 43.5-48.2). Counts: pharyngeal arches 4-4 (1), 4-? (USNM 121); 4-4 (ANSP 4085); 4-4 and 0.4-4.1 (MCZ 1797); anal rays 9 in all three specimens examined.

Jordan (1885b:812) was first to synonymize this form with *N. lutrensis*, an action Hubbs and Ortenburger (1929b:74) confirmed after examining the presumed syntypes in the MCZ. Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Minnilus punctulatus Hay 1881

Hay 1881:508-509. TYPE LOCALITY: tributary to Tuscumbia R., near Corinth, Alcorn County, Mississippi. LECTOTYPE: USNM 27430 (38.6), O. P. Hay, March-April 1880. Snelson and Pflieger (1975:235) designated lectotype. LECTOPARATYPES: CAS-SU 4076 (4), paratopotypes.

REMARKS.—This form was regarded as a questionably valid subspecies (Jordan and Ever-

mann 1896:301-302) or species (Jordan, Evermann, and Clark 1930:126) for many years. It apparently was first formally synonymized with *N. umbratilis* by Cook (1959:122). Original description date 23 February 1881.

= *Notropis umbratilis cyanocephalus* (Copeland)

Photogenis pyrrhomelas Cope 1870

Cope 1870:463-464. TYPE LOCALITY: tributary of upper Catawba R., North Carolina. LECTOTYPE: ANSP 2631 (66.0), E. D. Cope, Autumn 1869. Fowler (1910: pl. 18, fig. 29) designated lectotype by illustrating "type" (ANSP 2631); calculated length 69.2 mm SL. LECTOPARATYPES: ANSP 2632-2725 (94), paratopotypes. Counts for lectotype: pharyngeal-teeth 1,4-4,1; anal rays 10. Gibbs (1955) reviewed species. Original description date 21 November 1870.

= *Notropis pyrrhomelas* (Cope)

Notropis rasconis Jordan and Snyder 1899

See page 22.

Notropis heterolepis regalis Hubbs and Lagler 1949

Hubbs and Lagler 1949:119-123; pl. 2, fig. 3. TYPE LOCALITY: Harvey Lake, Isle Royale, Keweenaw County, Michigan. HOLOTYPE: UMMZ 100027 (81.0), Walter Koelz, 1 September 1929. PARATYPES: UMMZ 100028 (108), paratopotypes; UMMZ 144474 (23).

REMARKS.—The subspecies *regalis* is not generally recognized, although it has never been formally synonymized. Original description date (28) February 1949.

= *Notropis heterolepis* Eigenmann and Eigenmann

Notropis reticulatus Eigenmann and Eigenmann 1893

Eigenmann and Eigenmann 1893a:152-153. TYPE LOCALITY: Fort Qu'Appelle, Saskatchewan; and Assiniboine R., Brandon, Manitoba. SYNTYPES: USNM 64727 (1, 33.5), BMNH 1892.12.30.533-542 (10, 36.0-46.0), Brandon; USNM 125158 (1, 38.6), BMNH 1892.12.30.560-567 (8, 35.0-53.5), CAS-SU 541 (1, 40.6), Fort Qu'Appelle, C. H. Eigenmann, 1892.

REMARKS.—A total of 13 and 24 specimens were originally recorded from Brandon and Fort Qu'Appelle, respectively. Counts for USNM 64727 and USNM 125158: pharyngeal teeth 4-4 in both; anal rays 7 in both. Hubbs and Greene (1928:375-376) were first to synonymize *N. reticulatus* with *N. deliciosus* (= *N. stramineus*). Original description date 4 February 1893.

= *Notropis stramineus* (Cope)

Notropis heterodon richardsoni Hubbs and Greene 1926

Hubbs and Greene, in Hubbs 1926:39-40; pl. 3, fig. 2. TYPE LOCALITY: Fox R., opposite Lock 25, Columbia County, Wisconsin. HOLOTYPE: UMMZ 66536 (44.0), C. Willard Greene and Harmon S. Jones, 26 August 1925. PARATYPES: UMMZ 66537 (34) (seven additional specimens, originally included among paratypes; were subsequently reidentified as *N. chalybaeus* and removed by C. C. Swift), USNM 93426 (ex UMMZ 66537) (1), paratopotypes; UMMZ 73436 (1), UMMZ 73450 (3), UMMZ 73493 (16), UMMZ 73524 (2), UMMZ 73574 (1), UMMZ 73632 (1), UMMZ 73637 (7), UMMZ 73662 (12), UMMZ 73684 (2), UMMZ 73701 (31), UMMZ 73712 (6), UMMZ 73730 (1), UMMZ 73800 (2), UMMZ 73826 (1), UMMZ 73857 (2), UMMZ 73912 (9).

REMARKS.—Bailey, Winn, and Smith (1954:126) were first to synonymize this form with *N. roseus* (= *N. texanus*). Original description date 7 July 1926.

= *Notropis texanus* (Girard)

Notropis robustus Meek 1902

Meek 1902:82-83; pl. 19, upper fig. TYPE LOCALITY: Rio Conchos, Jimenez, Chihuahua, Mexico. HOLOTYPE: FMNH 3548 (46.8), S. E. Meek and F. E. Lutz, April-June 1901. PARATYPES: FMNH 3549 (16), paratopotypes; FMNH 3534 (3).

REMARKS.—Hubbs and Hubbs (1958:300) were first to synonymize this form with *N. braytoni*. Original description date (31) May 1902.

= *Notropis braytoni* Jordan and Evermann

Notropis roseipinnis Hay 1885

Hay, in Jordan 1885b:815. TYPE LOCALITY: Chickasawha R. (and tributaries), at Enterprise, Clarke County, Mississippi. LECTOTYPE: USNM 27420 (43.0), O. P. Hay, March-April 1880. Snelson (1972:46) designated lectotype. LECTOPARATYPES: USNM 203325 (16), paratopotypes. One additional specimen from the original syntypic series represents an unidentified species of *Notropis* (not *N. roseipinnis*) and is not included among the lectoparatypes.

REMARKS.—The species name *roseipinnis* is a replacement name for *Minnilus rubripinnis* Hay 1881, which is preoccupied in the genus *Notropis*. According to Article 72d, International Code, the types for *rubripinnis* must also serve as the types for the replacement name. Snelson (1972:45-58) reviewed species. Original description date 2 October 1885.

= *Notropis roseipinnis* Hay

Luxilus roseus Jordan 1877

Jordan 1877e:61. TYPE LOCALITY: Natalbany R., near Tickfaw, Tangipahoa Parish, Louisiana. LECTOTYPE: USNM 17831 (53.5), T. H. Bean and O. P. Maxson, December 1876. Suttkus and Raney (1955c:31) designated lectotype. LECTOPARATYPES: USNM 171788 (7). Three other species, comprising a total of 11 specimens, were included in original syntypic series. Two other specimens (MCZ 35908) from the original syntypic series have also been examined; neither is *N. roseus* (= *N. texanus*) as presently understood.

REMARKS.—Suttkus (1958) reviewed the status of *Luxilus roseus* in relation to its senior synonym *Cyprinella texana* Girard 1857. Original description date (31 December) 1877.

= *Notropis texanus* (Girard)

Alburnus rubellus Agassiz 1850

Agassiz 1850:364-366; pl. 3, figs. 1-3. TYPE LOCALITY: Lake Superior, at Sault Ste. Marie, either Michigan or Ontario. HOLOTYPE: MCZ 1749 (58.0), L. Agassiz, 27 June 1848. PARATYPES: MCZ 1749A (4), UMMZ 87100 (ex MCZ 1749A) (1), paratopotypes.

REMARKS.—*Alburnus rubellus* was long regarded a junior synonym of *N. atherinoides* Rafinesque 1818 (see Jordan 1878a:422). Hubbs and Brown (1929:35), in clarifying its status, pointed out that the nine specimens listed by Agassiz (1850) from "the Pic" are *N. atherinoides*, whereas the five from Sault Ste. Marie are *N. rubellus*. One specimen from the latter locality, which was tintagged and separated from the other types, clearly formed the basis (as determined by a physical abnormality) for Agassiz's description and illustration. It was consequently regarded by Hubbs and Brown as the holotype of *Alburnus rubellus*. The holotype is bleached and the body soft, but otherwise is in relatively good condition for a specimen its age. Counts for holotype: pharyngeal teeth, 2,4-4,2; anal rays 10. Original description date (31 December) 1850.

= *Notropis rubellus* (Agassiz)

Rutilus? *ruber* Rafinesque 1820

Rafinesque 1820b:52. TYPE LOCALITY: tributaries of Elkhorn Cr. (Kentucky R. drainage), near Lexington, Kentucky. TYPES: None located.

REMARKS.—This form cannot be identified with certainty, particularly as Rafinesque (1820b:52), in the original description, stated that he personally had not yet seen the fish. Snelson and Pflieger (1975:233) suggested that it might be *N. umbratilis*, but the closely related *N. ardens* is abundant in the drainage, and Jordan (1877d:32) believed this was the most likely possibility. Other possibilities are *N. rubellus* and *Phoxinus erythrogaster*. Original description date (31) May 1820.

= Not definitely identifiable, but most likely *Notropis ardens*.

Hybopsis rubricroceus Cope 1868

Cope 1868b:231-232; pl. 24, fig. 4. TYPE LOCALITY: near mouth of Tumbling Cr., trib. to North Fork of Holston R., Virginia. LECTOTYPE: ANSP 2907 (58.5), E. D. Cope, October 1867. Fowler (1910: pl. 19, fig. 34) designated lectotype by illustrating "type" (ANSP 2907); calculated length 59.3 mm SL. LECTOPARATYPES: ANSP 2908-2917 (10), paratopotypes. Remaining three

specimens in original syntypic series (*N. chrysocephalus*) have been removed and recatalogued under that name.

REMARKS.—Condition of types fair, with all important features present. Counts: pharyngeal teeth 2,4- (left arch only examined) in four specimens checked; anal rays 8 in 10, 9 in 1. Original description date 2 December 1868.

= *Notropis rubricroceus* (Cope)

Alburnus rubrifrons Cope 1865

Cope 1865b:85. TYPE LOCALITY: Kiskiminitas R. (trib. to Allegheny R.), Pennsylvania. LECTOTYPE: ANSP 4035 (50.0), E. D. Cope. Fowler (1909:543) designated lectotype and later (Fowler 1910: pl. 21, fig. 49) also illustrated the "type" (ANSP 4035); calculated length 45.9 mm SL. LECTOPARATYPES: ANSP 4036-4039 (4), MNHN 2682 (1), paratopotypes.

REMARKS.—Some confusion exists regarding Fowler's lectotype designation of *Alburnus rubrifrons*. Although Fowler (1909:543) designated and subsequently illustrated the "type" (Fowler 1910: pl. 21, fig. 49), he made no such reference in the text of the latter paper (1910:290), in which he merely referred to five "cotypes." The estimated length of the individual illustrated is only 45.9 mm SL, which is shorter than at least three of the five syntypes (range 48-50 mm SL). (The heads are broken off the other two.) The discrepancy between calculated and actual length of the largest individual is more than for most specimens Fowler illustrated in his 1910 paper, but it is not great enough to cast serious doubt that the illustration of *A. rubrifrons* (1910: pl. 21, fig. 49) was based on one of the types. Counts for original syntypes: pharyngeal teeth 2,4- (one specimen); anal rays 10 (three specimens). Hubbs and Brown (1929:34-35) were first to synonymize this species with *N. rubellus*. Original description date 7 August 1865.

= *Notropis rubellus* (Agassiz)

Nocomis rubrifrons Jordan 1877

See pages 21,92.

Argyreus rubripinnis Heckel 1843

Heckel 1843:1040, fig. (pharyngeal teeth only). TYPE LOCALITY: "Boreal America." TYPES: None located. Specimens said to have been sent to MNHN "par Msr. Milbert de New-York," but Jordan (1880a) did not list them as being there.

REMARKS.—Girard (1857:196) was first to synonymize this form with *Plargyrus cornutus* (= *N. cornutus*). Original description date (31 December) 1843.

= *Notropis cornutus* (Mitchill)

Cyprinella rubripinna Garman 1881

Garman 1881:91. TYPE LOCALITY: Lago del Muerto, near Parras, Coahuila, Mexico. SYNTYPES: MCZ 24891 (2, 53.0-56.0) MCZ 24892 (20, 27.8-54.0), UMMZ 86663 (ex MCZ 24892) (6, 40.0-56.0), USNM 120257 (6, 35.5-51.3), Dr. E. Palmer, 1880.

REMARKS.—As the species name *rubripinnis* was preoccupied in *Notropis* by *Argyreus rubripinnis* Heckel 1843, Jordan (1885b:813) proposed *garmani* as a substitute name for *Cyprinella rubripinna*. According to Article 72d of the International Code, the types for the last species must also serve as the types for the replacement name. For comments on and counts for the syntypes, see *N. garmani*. Original description date 31 January 1881.

= *Notropis lutrensis garmani* Jordan

Minnilus rubripinnis Hay 1881

Hay 1881:509-510. TYPE LOCALITY: Chickasawha R. (and tribs.), Enterprise, Clarke County, Mississippi. LECTOTYPE: USNM 27420 (43.0), O. P. Hay, March-April 1880. Snelson (1972:46) designated lectotype. LECTOPARATYPES: USNM 203325 (16), paratopotypes. One additional specimen from the original syntypic series represents an unidentified species of *Notropis* (not *N. roseipinnis*), and is not included among the lectoparatypes.

REMARKS.—As the species name *rubripinnis* is preoccupied in *Notropis*, Hay (in Jordan

1885b:815) proposed *roseipinnis* as a substitute name. According to Article 72d of the International Code, the types for *Minnilus rubripinnis* must also serve as the types for the replacement name. Original description date 23 February 1881.

= *Notropis roseipinnis* Hay

Moniana rutila Girard 1857

Girard 1857:201. TYPE LOCALITY: Rio Monterrey (trib. to Rio San Juan), Cadereita (= Cadereyta) Nuevo Leon, Mexico. SYNTYPES: USNM 95 (two sets of pharyngeal arches in osteological collection), MCZ 1794 (ex USNM 95) (1, 46.6), ANSP 4086 (ex USNM 95) (1, not measurable [In several pieces]), Lt. D. N. Couch, 1853.

REMARKS.—Girard (1859a:58) listed 10 original syntypes (USNM 95), but only those listed above can now be found. Condition of MCZ 1794 relatively good for its age. Specimen with heavy tuberculation on top of head, none before or below eyes. Counts for MCZ 1794: pharyngeal teeth 4-4; anal rays 8. Counts for USNM 95: pharyngeal teeth 4-4. Lytle (1972), who reviewed species, said *N. rutilus* is most closely related to *N. proserpinus*. Original description date 25 April 1857.

= *Notropis rutilus* (Girard)

Notropis sabinae Jordan and Gilbert 1886

Jordan and Gilbert 1886:15. TYPE LOCALITY: Sabine R., 5 mi S of Longview, Gregg County, Texas. SYNTYPES: USNM 36484 (5, 19.8-39.8), CAS-SU 1071 (1, 34.3), D. S. Jordan, C. H. Gilbert, Joseph Swain, and S. E. Meek, July-September 1884.

REMARKS.—Original description date 17 September 1886.

= *Notropis sabinae* Jordan and Gilbert

Notropis saladonis Hubbs and Hubbs 1958

Hubbs and Hubbs 1958:297-307, fig. 1. TYPE LOCALITY: Rio Salado, 1 mi W of Manuel Martinez Parela and 10 mi S of Anahuac, Nuevo Leon, Mexico. HOLOTYPE: UMMZ 173132 (32.0), Luciano Val Guerra, 11 June 1951. PARATYPES: UMMZ 173133 (7), paratopotypes; UMMZ 130349 (5), UMMZ 173134 (2), USNM 175276 (12), FMNH 62160 (11), FMNH 62169 (7), CAS-SU 50173 (6), TNHC 1680 (16), TNHC 1722 (1), IPN (uncat.) (31).

REMARKS.—Original description date 22 December 1958.

= *Notropis saladonis* Hubbs and Hubbs

Ceratichthys sallaei Günther 1868

Günther 1868:484. TYPE LOCALITY: Cuernavaca, Mexico. SYNTYPES: BMNH 1868.3.3.1-3 (3, 64.0-72.0), M. Boucard.

REMARKS.—Species named for Señor Sallé. Counts: pharyngeal teeth 4-4; anal rays 7. For further remarks on this species see Miller (1976:10). Original description date 14 March 1868.

= *Notropis sallaei* (Günther)

Alburnops saldanus Jordan and Brayton 1878

Jordan and Brayton 1878:16-18. TYPE LOCALITY: Saluda R., at Farr's Mill, west of Greenville, Greenville County, South Carolina. SYNTYPES: USNM 31128 (4, 66.0-87.5), D. S. Jordan, A. W. Brayton, C. H. Gilbert *et al.*, summer 1877.

REMARKS.—This form has frequently been regarded as a valid subspecies of *N. hudsonius*, and differs from typical *hudsonius* in several ways (pharyngeal tooth count, development of caudal spot, head and body depth), but Seaman (1968) found that the perplexing morphological variation in the region where the two forms come together makes even a subspecific differentiation untenable. Original description date (31 December) 1878.

= *Notropis hudsonius* (Clinton)

Notropis santamariae Evermann and Goldsborough 1902

Evermann and Goldsborough 1902:147, fig. 2. TYPE LOCALITY: small pool near Lake Santa

Maria, Chihuahua, Mexico. HOLOTYPE: USNM 50002 (33.3), E. W. Nelson, September 1899. PARATYPE: USNM 126485 (ex BCF 964) (1), paratopotype.

REMARKS.—Contreras (1975) recently elevated this form to a subspecies of *N. lutrensis*, and considered it closely related to *N. lutrensis formosus*. Count for holotype: anal rays 8. Original description date 3 May 1902.

= *Notropis lutrensis santamariae* Evermann and Goldsborough

Notropis santarosaliae Meek 1902

Meek 1902:85; pl. 19, lower fig. TYPE LOCALITY: Rio Nonava, Santa Rosalia, Chihuahua, Mexico. HOLOTYPE: FMNH 3535 (37.2), S. E. Meek and F. E. Lutz, April-June 1901. PARATYPES: FMNH 59532 (17), paratopotypes.

REMARKS.—Miller (1976:11-12) synonymized this form with *N. jemezanus*. Counts for eight paratypes (FMNH 59532): pharyngeal teeth 2,4-4,2 (2); anal rays 9 (6), 10 (2). Original description date (31) May 1902.

= *Notropis jemezanus* (Cope)

Photogenis scabriceps Cope 1868

Cope 1868a:166. TYPE LOCALITIES: tribs. of Kanawha (= New) R. (Sinking Cr., Walkers Cr., and others), and near Austinville, Virginia. SYNTYPES: ANSP 7588-7589 (2, 55.8-58.8) (Sinking Cr.); ANSP 2726-2746 (22, 33.5-60.3) (Sinking Cr.); ANSP 2904-2906 (3, 38.5-60.3) (Walkers Cr.); ANSP 3039-3044 (6, 42.0-52.4) (unnamed creek in Wythe County, Virginia); ANSP 4160-4161 (2, 31.5-37.9) (Sinking Cr.), E. D. Cope, August-September 1867.

REMARKS.—Although Fowler (1910:288) listed ANSP 7588 as "type," this cannot be considered a lectotype designation as he did not include an illustration nor an indication of standard length. Fowler made no mention of the other syntypic series listed above, but data on the labels in the jars show they should be so considered. Counts for ANSP 7588-7589: pharyngeal teeth 2,4-4,2, anal rays 8, predorsal scales 13, caudal-peduncle scales 5-2-5 (larger specimen); pharyngeal teeth 1,4-4,1, anal rays 8, predorsal scales 15, caudal-peduncle scales 5-2-5 (smaller specimen). Counts for ANSP 3039-3044: pharyngeal teeth 2,4-4,1 (1), 2,4-4,2 (5); anal rays 8 (4), 9 (2). Counts for ANSP 4160-4161: pharyngeal teeth 2,4-4,2 (both); anal rays 8 (both). Counts for ANSP 2904-2906: pharyngeal teeth 2,4-? (1), ?-4,2 (1); anal rays 8 (3).

Jordan and Evermann (1896:268) erroneously synonymized this species with *N. shumardi*. Several early references (Jordan 1876b:289; Jordan 1882:850-851; *et al.*) indicate a much wider geographic range for this species than it actually has. Original description date 11 May 1868.

= *Notropis scabriceps* (Cope)

Minnilus szepticus Jordan and Gilbert 1883

Jordan and Gilbert 1883:200-201. TYPE LOCALITY: Saluda R., near Farr's Mill, W of Greenville, Greenville County, South Carolina. SYNTYPES: USNM 31081 (21, 44.0-57.4) (in two jars, of which one contains one specimen), CAS-SU 2529 (1, 50.7), BMNH 1883.12.14.212 (1, 57.0), BMNH 1880.1.21.83 (1, 46.5); MNHN A.1288 (5, 54.0-59.6), D. S. Jordan and A. W. Brayton, summer 1877.

REMARKS.—Counts: anal rays 10 in two specimens counted (USNM 31081 and CAS-SU 2529). Hubbs (1941) reviewed species. Original description date 1 April 1883.

= *Notropis szepticus* (Jordan and Gilbert)

Notropis scopiferus Eigenmann and Eigenmann 1893

Eigenmann and Eigenmann 1893a:153. TYPE LOCALITIES: Winnipeg, Manitoba; Brandon, Manitoba; Fort Qu'Appelle, Saskatchewan; Medicine Hat, Alberta. SYNTYPES: USNM 125160 (2, 60.4-66.5) (Fort Qu'Appelle), BMNH 1892.12.30.500-509 (38, 41.0-81.0) (Fort Qu'Appelle), BMNH 1892.12.30.497-499 (3, 26.0-56.0) (Brandon), BMNH 1892.12.30.510-517 (8, 23.0-57.5) (Medicine Hat), BMNH 1892.12.30.518-527 (23, 20.0-53.0) (Winnipeg), CU 1877 (2,50.0-63.0) (Fort Qu'Appelle), C. H. Eigenmann, August or September 1892.

REMARKS.—This species name has sometime been incorrectly spelled *scopifer*, as by Jordan and Evermann (1896:291-292). Woolman (1896:351) was first to synonymize it with *N. hudsonius*. Original description date 4 February 1893.

= *Notropis hudsonius* (Clinton)

Hybopsis scylla Cope 1871

Cope 1871:438. TYPE LOCALITY: Red Cloud Cr., trib. to North Platte R. (Wyoming?). TYPES: None located.

REMARKS.—Jordan and Gilbert (1883:168) synonymized this form with *Cliola lineolata* (Agassiz), which in turn is a probable senior synonym of *N. stramineus* (Cope). Hubbs and Greene (1928:377) restricted this to the subspecies *missuriensis*. Inasmuch as *Hybopsis missuriensis* and *H. scylla* were described in the same paper (Cope 1871:437-438), Hubbs and Greene's choice of the former name qualifies them as first revisers. Bailey and Allum (1962:65-68) confirmed the allocation of *H. scylla* to the synonymy of *N. stramineus missuriensis* and provided a clearer indication of the subspecies' range. Original description date (31 December) 1871.

= *Notropis stramineus missuriensis* (Cope)

Luxilus selene Jordan 1877

Jordan 1877e:60-61. TYPE LOCALITY: Lake Superior and tribs., near Bayfield, Bayfield County, Wisconsin. TYPES: None located.

REMARKS.—Jordan (1877e), in his original description, said: "Many specimens in United States National Museum; collected near Bayfield, Wis., by J. W. Milner," but he later (1885a:127) indicated that only one specimen was involved, and at the same time synonymized *selene* with *Notropis hudsonius*. Original description date (31 December) 1877.

= *Notropis hudsonius* (Clinton)

Notropis semperasper Gilbert 1961

Gilbert 1961c:450-456, fig. 1. TYPE LOCALITY: Potts Cr., just above junction with Jackson (James) R., at st. hwy. 18 bridge, near Covington, Alleghany County, Virginia. HOLOTYPE: UMMZ 174815 (59.0), Carter R. Gilbert and John W. Moule, 14 June 1956. PARATYPES: UMMZ 174816 (4), UMMZ 175100 (10), paratopotypes; UMMZ 95199 and UMMZ 95458 (9), UMMZ 175076 (6), UMMZ 175118 (14), UMMZ 175133 (4), USNM 162868 (10).

REMARKS.—Jenkins and Burkhead (1975) reviewed species. Original description date 19 December 1961.

= *Notropis semperasper* Gilbert

Alburnops shumardi Girard 1857

Girard 1857:194. TYPE LOCALITY: Arkansas R., near Fort Smith, Arkansas. SYNTYPES: USNM 68 (one set of pharyngeal teeth only), George C. Shumard, 1853.

REMARKS.—Girard (1858:261-262; pl. 57, figs. 1-4) listed two original syntypes (USNM 68) and illustrated one of them. Counts for set of existing pharyngeal teeth: 2,4-4,2. *A. illecebrosus*, which was described on the same page of the same paper as *A. shumardi*, was regarded as identical to that species by Jordan and Gilbert (1883:192-193), who, as first revisers, selected the name *shumardi*. It now appears that Jordan and Gilbert's action, though correct, was based on the assumption that both names apply to the species now called *N. boops* (R. D. Suttkus, *in litt.*). Gilbert and Bailey (1962) reviewed the status and distribution of this species. Original description date 25 April 1857.

= *Notropis shumardi* (Girard)

Notropis signipinnis Bailey and Suttkus 1952

Bailey and Suttkus 1952:1-15, pls. 1 and 2B. TYPE LOCALITY: Maletts Spring Branch, trib. to Rocky Cr. and Escatawpa R. (Pascagoula R. drainage), 6.6 mi SE of Lucedale, George County, Mississippi. HOLOTYPE: UMMZ 157117(49.5), Marian K. and Reeve M. Bailey, 4 April 1948. PARA-

TYPES: UMMZ 155447 (erroneously listed as 155477 at one place in paper) (173 originally, now 153), USNM 163256 (ex UMMZ 155447) (20), TU-1133 (164), paratopotypes.

REMARKS.—Original description date 17 October 1952.

= *Notropis signipinnis* Bailey and Suttkus

Alburnellus simus Cope 1875

Cope, in Cope and Yarrow 1875:649-650; pl. 31, figs. 2-2a. TYPE LOCALITY: Rio Grande, at San Ildefonso, ca 10 mi E of Los Alamos, Santa Fe County, New Mexico. SYNTYPES: USNM 15800 (5, 25.5-43.0), USNM 16982 (72, 22.0-64.0), MCZ 35933 (2, 49.0-70.0), E. D. Cope and H. C. Yarrow, August 1874.

REMARKS.—Label on jar containing two MCZ specimens reads "pools of Rio Grande, Rio de Acama, New Mexico." As "Rio de Acama" is not mentioned in the original description, the two MCZ specimens possibly are not from the original syntypic series, and when a lectotype is designated one of the USNM syntypes should be selected.

Above syntypes all appear to represent the same species. Counts for USNM 15800 (four specimens): pharyngeal teeth 1,4-4,1 (3), 2,4-4,2 (1); anal rays 9 (4). Counts for MCZ syntypes: pharyngeal teeth 2,4-4,2 (1), 2,4-4,1 (1); anal rays 9 (1), 10 (1); lateral-line scales 37 (1). Fins sharply pointed. Miller (1976) discussed status of species. Original description date (31 December) 1875.

= *Notropis simus* (Cope)

Alburnus socius Girard 1857

Girard 1857:193. TYPE LOCALITY: Liveoak Cr. (tributary to Pecos R.), ca 8 mi NE of Sheffield, Crockett County, Texas. SYNTYPES: USNM 70 (17, 42.2-47.3, plus one set of pharyngeal arches in bone collection) (also one specimen of *N. colucellus* earlier removed by R. D. Suttkus), USNM 39654 (2, 42.8-56.0), ANSP 2848 (ex USNM 70) (1, 48.7), MCZ 1683 (ex USNM 70) (2, 41.5-50.8), John H. Clark 1851.

REMARKS.—The label in MCZ 1683 indicates three specimens as being present. Girard (1859a:52; pl. 29, figs. 14-17) listed only 20 original syntypes and illustrated one of these. Jordan (1885a:123) regarded this form as distinct from *N. swaini* (= *N. amabilis*); and Evermann and Kendall (1894:83), Jordan and Evermann (1896:292), and Jordan, Evermann, and Clark (1930:124) also recognized it as valid. There appear to be no subsequent references to this species, nor any indication of its being synonymized with any currently recognized species. Thus the present synonymization of this form with *N. amabilis* appears to be the first time that this relationship has been definitely established.

Counts for ANSP 2848: teeth 2,4-4,2; anal rays 9. Counts for MCZ 1683: teeth 2,4-4,2 (larger specimen), 1,4-4,1 (smaller specimen); anal rays 9 in both; predorsal scales 15 and 16 (larger and smaller specimens, respectively); caudal-peduncle scales 6-2-5 and 5-2-5 (larger and smaller specimens, respectively); body-circumferential scales 12-2-11 (larger specimen). Counts for USNM 39654: teeth 1,4-4,1 (smaller specimen); teeth missing from larger individual); anal rays 9 in both; caudal-peduncle scales 5-2-5 in both. Counts for USNM 70: teeth 1,4-4,1 (1), 2,4-4,1 (2); anal rays 9 (3). All types in fair to poor condition. Original description date 25 April 1857.

= *Notropis amabilis* (Girard)

Hybopsis spectrunculus Cope 1868

Cope 1868b:231; pl. 22, fig. 3. TYPE LOCALITY: Bear Cr., trib. to Middle Fork of Holston R., Smyth County, Virginia. SYNTYPES: ANSP 4363-4373 (11, 41.0-47.0), E. D. Cope, October 1867.

REMARKS.—Fowler (1910:275) listed ANSP 4363 as "type," but did not illustrate specimen, give an indication of its length, nor segregate it from the remainder of the syntypic series. Under the circumstances, this is not regarded as a lectotype designation. Counts: pharyngeal teeth 4-? (1), anal rays 9 (1). Original description date 2 December 1868.

= *Notropis spectrunculus* (Cope)

Leuciscus spilopterus Cope 1868

Cope, in Günther 1868:254. TYPE LOCALITY: St. Joseph R., Michigan (southwestern part of state). LECTOTYPE: ANSP 22901 (46.0), E. D. Cope. Gibbs (1958:193) designated lectotype.

REMARKS.—The original description of this species (as *Photogenis spilopterus*) was long considered to date from Cope (1869:378), but I (Gilbert 1971a) recently showed that this was preceded by the earlier description (as *Leuciscus spilopterus*) in Günther (1868:254). This species was long regarded as either a junior synonym of *N. whipplei* or subspecifically distinct. Hubbs and Lagler (1943:78-79) first pointed out their specific distinctness. Fowler (1910: pl. 18, fig. 28) illustrated the "cotype." Gibbs (1958) reviewed species. Original description date 14 March 1868.

= *Notropis spilopterus* (Cope)

Notropis spilurus Gilbert and Swain 1885

See page 22.

Leuciscus spirlingulus Valenciennes 1844

Valenciennes, in Cuvier and Valenciennes 1844:321-323. TYPE LOCALITY: "New Jersey." HOLOTYPE: MNHN 3892 (85.3). PARATYPES: MNHN 1709 (2).

REMARKS.—Jordan (1880a:225) was first to synonymize this form with *Luxilus* (= *Notropis cornutus*). Original description date (31) July 1844.

= *Notropis cornutus* (Mitchill)

Photogenis stigmaturus Jordan 1877

Jordan 1877c:337. TYPE LOCALITY: trib. of Etowah R. (probably Silver Cr.), near Rome, Floyd County, Georgia. LECTOTYPE: USNM 17891 (84.4), D. S. Jordan, July 1876. Gibbs (1957:192) designated lectotype. LECTOPARATYPES: USNM 163938 (ex USNM 17891) (10), USNM 20125 (1), ANSP 19820-19827 (8), MCZ 24371 (1), MNHN A.1283 (2).

REMARKS.—Syntypes came from tributaries of Coosa and Oostanaula rivers, in addition to Etowah River. Gibbs (1957:192) restricted type locality by designating lectotype. Fowler (1910: pl. 17, fig. 24) illustrated one of ANSP "cotypes." Bollman (1887:462) was first to call this form a subspecies of *N. venustus*, though most authors (Jordan and Evermann 1896:255; Jordan, Evermann, and Clark 1930:130) continued to regard it as a valid species. Bailey, Winn, and Smith (1954:128) synonymized *stigmaturus* with *N. venustus*. Gibbs (1957), in his review of *N. venustus*, recognized *stigmaturus* as a valid subspecies. Original description date (30) June 1877.

= *Notropis venustus stigmaturus* (Jordan)

Nototropis stilbius Jordan 1877

Jordan 1877c:343. TYPE LOCALITIES: tribs. of Etowah, Oostanaula, and Coosa rivers, near Rome, Floyd County, Georgia. SYNTYPES: USNM 17879 (2, 50.2-50.7) (Etowah R.) (not USNM 31132, as listed by Jordan and Evermann [1896:293]), ANSP 18701-18702 (53.0-59.0) (Etowah R.), CAS-SU 2528 (3, 50.2-62.4) (Etowah R.), BMNH 1880.1.21.16 1, 60.0) ("Alabama R."), MNHN A.1297 (1, 57.5) (Etowah R.), D. S. Jordan and C. H. Gilbert, summer 1876.

REMARKS.—Condition of syntypes fair (ANSP) to good (others). Counts for ANSP 18701: larger specimen with pharyngeal teeth 2,4-4,2, anal rays 10; CAS-SU 2528: pharyngeal teeth 2,4-4,2 (1), 1,4- (1), anal rays 10 (3); USNM 17879: anal rays 10 in both. Fowler (1910: pl. 20, fig. 46) illustrated larger ANSP "cotype." Original description date (30) June 1877.

= *Notropis stilbius* (Jordan)

Notropis stonei Fowler 1921

Fowler 1921:391-393, fig. TYPE LOCALITY: Pocatigo R., near Manning, Clarendon County, South Carolina. Moore (1957:129) questioned the type locality because, according to him, recent collections from this river system have failed to yield the species. HOLOTYPE: ANSP 50118 (ca 30.0), Witmer Stone, May 1917. PARATYPES: ANSP 50119-50121 (3), paratopotypes.

REMARKS.—Types not located by me at ANSP, but believed by J. E. Böhlke (pers. comm.)

not to be lost. Bailey and Suttkus (1952:13) and Suttkus (1955:98) regarded this form as a distinct species. Moore (1957:129) seems to have been the first to note its conspecificity with *N. hypselopterus*. It was not regarded as a distinct species in either the 1960 or 1970 AFS checklists (Bailey *et al.* 1960, 1970). Original description date 4 March 1921.

= *Notropis hypselopterus stonei* Fowler

Hybognathus stramineus Cope 1865

Cope 1865a:283. TYPE LOCALITY: Detroit R., Grosse Isle, Michigan. LECTOTYPE: ANSP 4131 (51.0), Prof. Manly Miles. Fowler (1910: pl. 15, fig. 5) designated lectotype by illustrating "type" (ANSP 4131); calculated length 53.3 mm SL. LECTOPARATYPES: ANSP 4132-4136 (5), paratopotypes.

REMARKS.—This species was often erroneously called *N. blennioides* in the early literature; Fowler (1910:274-276) first demonstrated, and Hubbs (1926:42-43) subsequently confirmed, that *blennioides* is a distinct species. The form *stramineus* was regarded either as a subspecies (Jordan 1885b:811; Hubbs 1926:37, 43) or a junior synonym of *N. deliciosus* until Suttkus (1958) showed that the lectotype of *Moniana deliciosa* earlier designated by Clark Hubbs (1954a) represents the species now called *N. texanus* (Girard). It should be noted that none of the extant syntypes of *M. deliciosa* are *N. stramineus*, although some specimens of this species may have been present in the original series. Bailey and Allum (1962:65) showed the subspecific separation of *deliciosus* and *stramineus* proposed by Hubbs (1926:37, 43) to be invalid, but at the same time they demonstrated (1962:64-68) the subspecific distinctness of *stramineus* and *missouriensis*. *N. stramineus* and *N. volucellus* also were variously regarded as subspecies (Jordan 1885b:811), synonyms, or as distinct species in the early literature; Hubbs and Greene (1928:375) were the first to demonstrate conclusively their specific distinctness. *Alburnus lineolatus* Agassiz 1863 likely is a senior synonym of *N. stramineus*, but inasmuch as no unquestioned types appear to be extant, this cannot be proved conclusively. One of the two extant syntypes of *Cyprinella ludibunda* Girard 1857 represents *N. stramineus*; the other syntype is *N. volucellus* (Cope 1865). Original description date 13 February 1865.

= *Notropis stramineus stramineus* (Cope)

Cyprinella suavis Girard 1857

Girard 1857:197. TYPE LOCALITY: near San Antonio, Texas. SYNTYPES: USNM 138 (one set of pharyngeal teeth in osteological collection), ANSP 2769-2770 (*ex* USNM 138) (2, 26.5-34.5), MCZ 1694 (*ex* USNM 138) (2, 28.3-34.5), Dr. C. B. Kennerly, 1853. Two other syntypes (USNM 138) are supposedly present in the USNM, but these cannot presently be located.

REMARKS.—Girard (1858:268) listed 24 original syntypes (USNM 138) but provided no illustration. Counts for USNM 138: pharyngeal teeth 4-4. Counts for ANSP 2769-2770: pharyngeal teeth 4-4 (1), 4-? (1); anal rays 9 in both. Counts for MCZ 1694: pharyngeal teeth 4-4 in both; anal rays 9 in both. Jordan (1885a:124) was first to synonymize this form with *N. lutrensis*. Carl L. Hubbs (1954:292) and Clark Hubbs (1954b:282-283) called it a subspecies of *N. lutrensis*. Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Hybopsis harperi subterranea Hubbs and Crowe 1956

Hubbs and Crowe 1956:3-5. TYPE LOCALITY: Jerome Sink, S of High Springs, Alachua County, Florida. HOLOTYPE: UMMZ 133551 (33.8), R. R. Miller, B. W. Walker, and N. A. Marshall, 4 April 1941. PARATYPES: UMMZ 197700 (99) (not 111 as stated in original description), paratopotypes.

REMARKS.—Howell (1960) demonstrated that this form is not a valid subspecies. Original description date 24 August 1956.

= *Notropis harperi* Fowler

Notropis swaini Jordan and Gilbert 1885

Jordan and Gilbert, in Jordan 1885a:123. TYPE LOCALITY: San Felipe Cr., near Del Rio, Val Verde County, Texas. SYNTYPES: USNM 36529 (ex USNM 69) (1, 40.2), ANSP 3246 (ex USNM 69) (1, 36.5), MCZ 1682 (ex USNM 69) (2, 35.0-39.5), John H. Clark, 1851. (Label in jar of MCZ types says "1853").

REMARKS.—Jordan and Gilbert (in Jordan 1885a:123) proposed this as a substitute name for *Alburnus megalops* Girard 1857, which is preoccupied in the genus *Notropis* by *Cyprinus megalops* Rafinesque 1817. Girard (1859a: pl. 29, figs. 1-4) listed 20 original syntypes of *A. megalops* (USNM 69) and illustrated one of these. Hubbs, Kuehne, and Ball (1953:226) indicated that records of *N. swaini* from the Guadalupe River system are based on *N. amabilis*, but did not formally synonymize the two forms in that paper. For other remarks see account of *A. megalops*. Original description date 19 June 1885.

= *Notropis amabilis* (Girard)

Notropis altipinnis tarenis Hubbs and Raney 1948

Hubbs and Raney 1948:13-14. TYPE LOCALITY: small stream, 4.5 mi E of Surl, on US hwy. 158, Person County, North Carolina. HOLOTYPE: UMMZ 136148 (42.2), E. C. Raney, E. A. Lachner, and R. A. Pfeiffer, 2 April 1941. PARATYPES: UMMZ 138526 (4), CU 10570 (25), CU 9840 (1), paratopotypes.

REMARKS.—This subspecies and others described in the same paper (Hubbs and Raney 1948) are not generally regarded as valid, although they have never been formally synonymized. Original description date 26 April 1948.

= *Notropis altipinnis* (Cope)

Leuciscus telescopus Cope 1868

Cope, in Günther 1868:252-253. TYPE LOCALITY: Holston R. and tribs., Virginia. LECTOTYPE: ANSP 2157 (67.0), E. D. Cope, October 1867. Gilbert (1969:487) designated lectotype. LECTOPARATYPES: ANSP 2158-2254 (97) (Holston R.), ANSP 2330-2335 (6) (tribs. of Holston R.), MCZ 25160 (1), BMNH 1868.1.10.18 (7), MNHN 4855 (1).

REMARKS.—This species was long considered to have been described originally by Cope (1868a) as *Photogenis telescopus*, but I (Gilbert 1971a) showed Cope's description was preceded by the one appearing in Günther (1868). *N. telescopus* was regarded as a valid species until Kuhne (1939:49) downgraded it to a subspecies of *N. ariommus*. I (Gilbert 1969) later re-elevated it to a full species. Fowler (1910:289) listed ANSP 2157 as the "type" number, but this cannot be considered a lectotype designation because he did not illustrate a specimen, segregate one from the remaining syntypes, nor provide an indication of body length. Counts for lectotype: pharyngeal teeth 2,4-4,2; anal rays 10. Gilbert (1969) reviewed species. Original description date 10 March 1868.

= *Notropis telescopus* (Cope)

Cyprinella texana Girard 1857

Girard 1857:198. TYPE LOCALITY: Salado Cr., just E of San Antonio, Bexar County, Texas. LECTOTYPE: USNM 128 (46.3), John H. Clark, 1851. Pharyngeal arches from lectotype previously removed and now in USNM osteological collection, also bearing catalogue number USNM 128 (Suttkus 1958:316). Clark Hubbs (1954a) designated lectotype. LECTOPARATYPES: USNM 162721 (3), paratopotypes. The original syntypes (USNM 162722 [2], ANSP 3010 [1], and MCZ 1693 [1]) were identified by Suttkus (1958:308) as *Notropis volucellus*.

REMARKS.—Girard (1859:55; pl. 31, figs. 9-12) listed 10 original syntypes of *C. texana* and illustrated one of these. Nine syntypes are from Salado Creek, Texas, and the other from Turkey Creek, Texas. Clark Hubbs (1954a) erroneously considered the lectotype and three lectoparatypes of *C. texana* to be *N. venustus*; these were subsequently reidentified by Suttkus (1958). Jordan (1885a:124) synonymized *C. texana* with *N. notatus* (= *N. venustus*), and it was so con-

sidered prior to publication of Suttks's (1958) paper. *N. texanus*, as now recognized, was called *N. roseus* before 1958. Counts for lectotype of *C. texana*: pharyngeal teeth 2,4-4,2; anal rays 6 (aberrant count for species, which usually has 7 rays). Counts for lectoparatypes: pharyngeal teeth 2,4-4,1 (2), 2,4-4,2 (1); anal rays 7 (3). Swift (1970) reviewed species. Original description date 25 April 1857.

= *Notropis texanus* (Girard)

Cliola (Hybopsis) topeka Gilbert 1884

Gilbert 1884c:13. TYPE LOCALITY: Shunganunga Cr., trib. to Kansas R., Shawnee County, Kansas. SYNTYPES: USNM 36609 (4, 47.0-49.6), MCZ 35931 (1, 49.8), F. W. Cragin, 1884.

REMARKS.—Gilbert (1885:513) subsequently republished original description verbatim "for convenience of reference." Minckley and Cross (1959) reviewed species. Counts for USNM syntypes: pharyngeal teeth 4-4 (1); anal rays 7 (1). Counts for MCZ 35931: pharyngeal teeth 4-4; anal rays 7. Condition of syntypes good. Original description date (30) September 1884.

= *Notropis topeka* (Gilbert)

Codoma trichroistia Jordan and Gilbert 1878

Jordan and Gilbert, in Jordan and Brayton 1878:50-51. TYPE LOCALITY: tributary of Etowah R., Georgia. (Probably near Rome, Floyd County, Georgia). LECTOTYPE: USNM 31131 (54.4), D. S. Jordan and C. H. Gilbert, summer 1877. Howell and Williams (1971:63) designated lectotype. LECTOPARATYPES: USNM 163956 (ex USNM 31131) (6), paratopotypes; MCZ 24393 (1), MNHN A.1280 (1).

REMARKS.—Gibbs (1955) reviewed species. Howell and Williams (1971) mapped distribution, illustrated nuptial tubercle pattern, presented meristic data, and discussed differences between this species and the closely related *N. gibbsi*. Original description date (31 December) 1878.

= *Notropis trichroistius* (Jordan and Gilbert)

Moniana tristis Girard 1857

Girard 1857:201. TYPE LOCALITY: Unknown. TYPES: None located. Girard (1858:278) listed five specimens (USNM 93), supposedly collected in 1854 by Dr. Creutzfeldt, who had been killed the preceding October.

REMARKS.—Inasmuch as Girard (1857, 1858) neither illustrated nor adequately described this form, no types apparently remain, and the provenance of the types remains in doubt; a positive identification cannot be made. Jordan and Evermann (1896:272) regarded it as a questionable synonym of *N. proserpinus*, but this is highly improbable as the route followed by the Gunnison party (which collected the specimens) was outside the range of that species. Furthermore the combined characters of a slender body, a long caudal peduncle of nearly uniform depth, and seven anal rays further eliminate *N. proserpinus* from consideration. This form most likely is a species of *Notropis*, but even this cannot be determined categorically. Original description date 25 April 1857.

= Not definitely identifiable.

Cyprinus trivittatus Rafinesque 1820

Rafinesque 1820a:6. TYPE LOCALITY: Fish and Wallkill creeks, New York. TYPES: None located.

REMARKS.—I (Gilbert 1964:141) synonymized this form with *N. cornutus*. Original description date 1 March 1820.

= *Notropis cornutus* (Mitchill)

Notropis tropicus Hubbs and Miller 1975

Hubbs and Miller 1975:121-131, figs. 1-2. TYPE LOCALITY: Rio Guayelejo, at Llera, Tamalipas, Mexico. HOLOTYPE: UMMZ 193804 (30.5), Rezneat M. Darnell *et al*, 20 June 1968. PARATYPES: UMMZ 192897 (49), paratopotypes; UMMZ 97409 (1), UMMZ 97410 (1), UMMZ 97411

(1), UMMZ 97412 (2), UMMZ 124324 (1), UMMZ 124344 (1), UMMZ 161656 (1), UMMZ 162109 (3), UMMZ 164710 (28), UMMZ 169498 (1), UMMZ 180033 (46), UMMZ 193806 (2).

REMARKS.—Original description date 15 May 1975.

= *Notropis tropicus* Hubbs and Miller

Plargyrus typicus Girard 1857

Girard 1857:196. TYPE LOCALITY: "Kentucky." TYPES: None located.

REMARKS.—This name was proposed to replace *Rutilus plargyrus*, which was earlier described by Rafinesque (1820b:50-51). According to Girard (1857:195), "Since Rafinesque's genera are to be restored, his genus *Plargyrus* is to take precedence over the genus *Hypsolepis* of more modern coining. The name of *Plargyrus* was provided for in the *Ichthyologia Ohiensis* to replace that of *Rutilus* in the eventuality that *Cyprinus rutilus* of Europe, which was the type of the genus *Rutilus*, should prove generically distinct from *Rutilus plargyrus* and similar American species, and which is the case." Original description date 25 April 1857.

= *Notropis chrysocephalus chrysocephalus* (Rafinesque)

Alburnus umbratilis Girard 1857

Girard 1857:193. TYPE LOCALITY: Sugarloaf Cr., trib. to Poteau R., about 20-25 mi S of Fort Smith, Arkansas, vicinity of Poteau, Oklahoma. Locality is very near the Oklahoma-Arkansas state line, and could either be in Le Flore County, Oklahoma or Sebastian County, Arkansas (See REMARKS below). LECTOTYPE: USNM 73 (56.4), H. B. Möllhausen, probably 25 July 1853. Snelson and Pflieger (1975:233) designated lectotype. LECTOPARATYPES: USNM 203328 (ex USNM 73) (39) (seven additional original syntypes, representing two other species, removed and recatalogued), USNM 2678 (ex USNM 73) (one pair of pharyngeal arches in osteological collection), MCZ 1786 (ex USNM 73) (2) (not seen by me).

REMARKS.—The type locality was said by Girard (1857:193; 1858:260) to be in Arkansas, and was so listed by Snelson and Pflieger (1975:233), but Gibbs (1963:513) said that this actually was in Oklahoma. Girard (1858:260) listed only 24 original syntypes. Snelson and Pflieger (1975) reviewed species. Jordan (1885a:122) synonymized *Luxilus lucidus* Girard 1857 with *N. umbratilis*, and as first reviser selected the latter name. Original description date 25 April 1857.

= *Notropis umbratilis umbratilis* (Girard)

Notropis umbrifer Hay 1887

Hay 1887:245. TYPE LOCALITY: Saline R., about 5 mi N of Wa Keeney, Trego County, Kansas; and Solomon River, at Beloit, Mitchell County, Kansas. TYPES: None designated. One specimen was listed from Beloit and four from Wa Keeney. These were not located by me, although they may be present in the general (non-type) collection of the USNM under a different name. The specimens were collected by O. P. Hay and M. J. Thompson in July 1885.

REMARKS.—The five specimens upon which this name was based were initially identified by Hay (1887:244-245) as *N. macrostoma* (Girard), with *umbrifer* being proposed in the same paper as a substitute name "in case future investigations should prove that these specimens are not to be referred to Girard's species." Hay also stated "at first view these have a striking resemblance to *Notropis topeka* Gilbert." Cross (1967:125) included Hay's record of *N. macrostoma* in the synonymy of *N. lutrensis*, thus in effect synonymizing *N. umbrifer* with that species. This presumably was based largely on the pharyngeal-tooth and anal-ray counts (1,4-4,1 and 9, respectively) listed by Hay in his description as only two species of Kansas Cyprinidae (*N. lutrensis* and *N. camurus*) have this combination of counts, and of these only the former is known to occur in the northwestern part of the state. Further study of the description, considered with other factors, raises serious doubts that Cross' interpretation is correct. In the first place, Hay was very familiar with *N. lutrensis*, and he mentioned collecting numerous specimens at both the Beloit and Wa Keeney localities. It seems unlikely, therefore, that he would have misidentified specimens of such an abundant and widespread species. Beyond this, a number of characters listed

in the description of "*N. macrostoma-umbrifer*" are not concordant with those of *N. lutrensis*. These include (a) an extremely oblique mouth (mouth moderately oblique in *N. lutrensis*); (b) strongly serrated edges on the pharyngeal teeth (edges slightly crenulate in *N. lutrensis*); (c) a dusky to dark stripe along the sides of the body and caudal peduncle (not present in *N. lutrensis*); (d) snout shorter than eye (longer than eye in *N. lutrensis*); and (e) eye contained three times in length of head (contained at least four times in head in *lutrensis*).

Assuming that the above interpretation is correct, it seems that *N. umbrifer* is (a) a valid species that is either extinct or, if living, has not been collected since 1885; or (b) is based on a hybrid, one or both parents of which may no longer occur in northwestern Kansas or perhaps elsewhere in the state (see Hubbs 1951b). Of these, the latter possibility is much more likely. In view of the alleged similarity in appearance to *N. topeka* (a species having 4-4 teeth and 7 anal rays), that species is suggested as one possible parent. If so, the other parent would logically be a species having 2,4-4,2 teeth and 10 or 11 anal rays, such as *N. umbratilis*, *N. rubellus*, or *N. atherinoides*; none of these species occur today in northwestern Kansas (Cross 1967:102, 104, 108), but may have occurred there in the past. Until some or all of Hay's original specimens are located, the identity of the parental forms (if, in fact, *N. umbrifer* is of hybrid origin) can only be surmised. Inasmuch as a number of other series of specimens collected by Hay and reported upon by him in his 1887 paper are still extant, there is a good chance that the types of *Notropis umbrifer* will eventually be found, most likely in the USNM general (non-type) collection. Original description 2 July 1887.

= Identity uncertain. Most likely based on a hybrid, one parent of which may be *Notropis topeka*.

Cyprinella umbrosa Girard 1857

Girard 1857:197. TYPE LOCALITY: Coal Cr., trib. to South Fk. of Canadian R., N of McAlester, Pittsburg County, Oklahoma. SYNTYPES: USNM 133 (6, 51.8-58.8), USNM 134 (one set of pharyngeal arches in bone collection), ANSP 2830 (1, 55.7), MCZ 1800 (1, 53.7), H. B. Möllhausen, 7-8 August 1853.

REMARKS.—Types in relatively good condition. Counts: USNM 134 (pharyngeal teeth 1,4-4,0; lesser tooth in left arch represented by a small hole); ANSP 2830 (pharyngeal teeth 1,4-?; anal rays 10); MCZ 1800 (pharyngeal teeth ?-4; anal rays 9. Jordan (1885a:123) was first to synonymize this form with *N. hubalinius* (= *N. lutrensis*). Original description date 25 April 1857.

= *Notropis lutrensis* (Baird and Girard)

Notropis universitatis Evermann and Cockerell 1909

Evermann and Cockerell 1909:187. TYPE LOCALITY: Boulder Cr. (trib. to South Platte R.), Boulder, Boulder County, Colorado. HOLOTYPE: USNM 64151 (51.0), T. D. A. Cockerell, 1907.

REMARKS.—Hubbs (1926:46) was first to synonymize this form with *N. cornutus frontalis* (= *N. cornutus*). Original description date 8 December 1909.

= *Notropis cornutus* (Mitchill)

Notropis uranoscopus Suttkus 1959

Suttkus 1959:7-11, fig. 1. TYPE LOCALITY: Cahaba River, 2.2 mi N of Centreville, Bibb County, Alabama. HOLOTYPE: TU 15289 (44.7), R. D. Suttkus, R. J. and H. C. Miller, and J. DeAbate, 17 March 1957. PARATYPES: TU 18551 (18), paratopotypes; TU 18569 (2), TU 18570 (8), TU 18674 (8), TU 19410 (21), UMMZ 171147 (2), UMMZ 171747 (12), UAIC 404 (3), UAIC 408 (1).

REMARKS.—Original description date 17 April 1959.

= *Notropis uranoscopus* Suttkus

Cliola urostigma Jordan and Meek 1884

Jordan and Meek 1884:474-477. TYPE LOCALITY: San Saba R. (trib. to Colorado R.), at Fort McKavit (= McKavett), ca. 45 air mi SE of San Angelo, Menard County, Texas. LECTOTYPE: USNM 20446 (76.3), W. W. Anderson. Gibbs (1957:181) designated lectotype. LECTOPARATYPES:

USNM 163952 (8), MCZ 35903 (1, completely disintegrated), paratopotypes; USNM 17812 (7), MCZ 35948 (1).

REMARKS.—Type locality restricted by Gibbs (1957:181) by lectotype designation. Other original syntypes (USNM 17812 and MCZ 35948) are from Clear Creek, Waller County, Texas, collected by Kumlein and Earll. Jordan (1885a:124) was first to synonymize *Cliola urostigma* with *N. cercostigma*, and Gibbs (1957:179-181) synonymized the former with *N. venustus venustus*. Original description date 23 October 1884.

= *Notropis venustus venustus* (Girard)

Cyprinella venusta Girard 1857

Girard 1857:198. TYPE LOCALITY: Rio Sabinal, at Sabinal, Uvalde County, Texas. LECTOTYPE: ANSP 3035 (ex USNM 140) (49.5), C. B. Kennerly, 1853. Gibbs (1957:180) designated lectotype. LECTOPARATYPES: ANSP 3036 (ex USNM 140) (1), USNM 140 (one pair of pharyngeal arches in bone collection), MCZ 1695 (ex USNM 140) (2), paratopotypes.

REMARKS.—Girard (1859a:55; pl. 31, figs. 1-4) listed 15 original syntypes and illustrated one of them. Condition of types fair to poor (bodies soft), but pertinent characters evident. Counts: anal rays 8 (ANSP 3035 and ANSP 3036); pharyngeal teeth 1,4-4,1 (USNM 140). Moore (1952:5), following then existing rules regarding line priority, used (without comment) the name *Notropis notatus* instead of *N. venustus*, both forms having been described in the same paper. Clark Hubbs (1954b:280), as first reviser, chose the name *venustus* over *notatus*. Gibbs (1957) reviewed species. Original description date 25 April 1857.

= *Notropis venustus venustus* (Girard)

Leuciscus vittatus DeKay 1842

DeKay 1842:212; pl. 34, fig. 108. TYPE LOCALITY: Chittenonda Cr. (trib. to Mohawk R.), New York. TYPES: None located.

REMARKS.—Jordan and Evermann (1896:282) were first to synonymize this form with *N. cornutus*. Original description date (31 December) 1842.

= *Notropis cornutus* (Mitchill)

Codoma vittata Girard 1857

Girard 1857:195. TYPE LOCALITY: Valley of Mexico. SYNTYPES: USNM 92 (one set of pharyngeal arches in osteological collection), John Potts, 1855.

REMARKS.—Girard (1859a:53-54; pl. 29, figs. 18-21) listed 10 original syntypes (USNM 92) and illustrated one of them. Counts for the one set of extant pharyngeal arches (USNM 92):4-4. Jordan (1885a:123) referred this species to the genus *Notropis*. Jordan and Evermann (1896:258) were first to point out that it was preoccupied in *Notropis* by *Leuciscus vittatus* DeKay, and thus used the name *N. aztecus* Woolman for the species. Original description date 25 April 1857.

= *Notropis valleii* (Günther)

Hybognathus volucellus Cope 1865

Cope 1865a:283-284. TYPE LOCALITY: Detroit R., at Grosse Ile, Wayne County, Michigan. TYPES: None located. Fowler (1910, 1918) made no mention of these being in the ANSP collection.

REMARKS.—*N. stramineus* and *N. volucellus* were variously regarded as subspecies (Jordan 1885b:811), synonyms, or as distinct species in the early literature; Hubbs and Greene (1928:375) were the first to demonstrate conclusively their specific distinctness. At least two undescribed species are presently going under the species name *volucellus*. John Ramsey (unpubl. ms) is currently reviewing species. Original description date 13 February 1865.

= *Notropis volucellus* (Cope)

Notropis waccamanus Fowler 1942

Fowler 1942:6-8, figs. 7-8. TYPE LOCALITY: Lake Waccamaw, Columbus County, North Caro-

lina. HOLOTYPE: ANSP 69972 (56.5), Francis Harper, 22 May 1939. PARATYPES: ANSP 69973-69978 (5), paratopotypes.

REMARKS.—Frey (1951:16-18) demonstrated that *N. petersoni* and *N. waccamanus* are synonyms. Both forms were described by Fowler (1942) in the same paper, and Frey (1951), as first reviser, selected the name *petersoni* over *waccamanus*. Six paratypes presumably were present originally. Counts for holotype: pharyngeal teeth 2,4-4,2; anal rays 7. Original description date 16 September 1942.

= *Notropis petersoni* Fowler

Notropis welaka Evermann and Kendall 1898

Evermann and Kendall 1898:126-127; pl. 6, fig. 2. TYPE LOCALITY: St. Johns R., near Welaka, Putnam County, Florida. HOLOTYPE: USNM 48786 (36.3), W. C. Kendall, 19 March 1897. PARATYPES: USNM 48785 (6), USNM 127014 (ex USFC 529) (16), UMMZ 172294 (ex USNM 127014) (2), CAS-SU 9053 (14) (plus one specimen of *N. petersoni* removed), paratopotypes.

REMARKS.—CAS-SU 9053 erroneously listed as SU 5773 in original description. Pharyngeal teeth of holotype now in USNM osteological collection. The pharyngeal tooth count was erroneously listed in the original description as 4-4, but it was subsequently found, upon re-examination of the holotype, to be 1,4-4,1. This species was not recognized as valid for many years after its original description, and Bailey, Winn, and Smith (1954:129) synonymized it with *Notropis maculatus*. Cook (1959:126-127) apparently was the first to resurrect *N. welaka* as a valid species. Original description date 8 February 1898.

= *Notropis welaka* Evermann and Kendall

Cyprinella whipplei Girard 1857 (emended spelling *Cyprinella whipplei*)

Girard 1857:198. TYPE LOCALITY: Sugarloaf Cr., trib. to Poteau R., about 20-25 mi S of Fort Smith, Arkansas, vicinity of Poteau, Oklahoma. Locality is very near the Oklahoma-Arkansas state line, and could either be in Le Flore County, Oklahoma, or Sebastian County, Arkansas (see REMARKS under *Alburnus umbratilis*). HOLOTYPE: USNM 137 (58.7), H. B. Möllhausen, probably 25 July 1853. Gibbs (1963:513) designated this specimen as "lectotype," but inasmuch as it apparently was the only specimen collected (Girard 1858:270), it should properly be considered the holotype.

REMARKS.—Girard (1858:270; pl. 58, figs. 6-10) listed one type specimen, which he illustrated. Right pharyngeal arch of holotype in USNM osteological collection; count -4,1. *N. whipplei* was long regarded as either a senior synonym of *N. spilopterus* or subspecifically distinct. Hubbs and Lagler (1943:78-79) were the first to point out their specific distinctness. Gibbs (1963) reviewed species. Original description date 25 April 1857.

= *Notropis whipplei* (Girard)

Notropis altipinnis whitei Hubbs and Raney 1948

Hubbs and Raney 1948:15-17. TYPE LOCALITY: Morgan Cr. (trib. to Cape Fear R.), near Chapel Hill, 1 mi upstream from bridge on road to Pittsboro, Orange County, North Carolina. HOLOTYPE: UMMZ 128914 (37.1), A. McLaren White, 3 June 1933. PARATYPES: UMMZ 138528 (26), CU 8535 (21), paratopotypes, UMMZ 138529 (81), UMMZ 139742 (46), UMMZ 145266 (10), CU 3228 (2), CU 3537 (9), CU 10075 (50). An undetermined number of paratypes were designated in the original description, including 49 paratopotypes. Not all of these can be accounted for.

REMARKS.—This form and others described in the same paper are not generally regarded as valid, although they have never been formally synonymized. Original description date 26 April 1948.

= *Notropis altipinnis* (Cope)

Notropis volucellus wickliffi Trautman 1931

Trautman 1931:468-474, fig. 1. TYPE LOCALITY: Mouth of Miami R. at confluence with Ohio

R., extreme SW Miami Twp., Hamilton County, Ohio. HOLOTYPE: UMMZ 92411 (48.0), M. B. Trautman and R. B. Foster, 25 May 1931. PARATYPES: UMMZ 92412 (13), paratopotypes; UMMZ 76791 (1), UMMZ 76806 (30), UMMZ 78090 (12), UMMZ 78146 (1), UMMZ 78166 (27), UMMZ 78204 (4), UMMZ 78255 (5), UMMZ 78284 (6), UMMZ 81321 (13), UMMZ 86010 (2), UMMZ 87516 (17), UMMZ 87600 (4), UMMZ 91548 (1), USNM 93427 (ex UMMZ 76806) (1), USNM 117571 (ex UMMZ 76806) (3), OSM 10409 (9), OSM 10410 (109), OSM 10423 (31).

REMARKS.—Although this has been regarded as a valid subspecies since its original description, J. S. Ramsey now thinks (pers. comm.) that it deserves full species status. Original description date (30) November 1931.

= *Notropis wickliffi* Trautman

Notropis williami Fowler 1945

Fowler 1945:236-237, figs. 117-119. TYPE LOCALITY: Brier Cr. (trib. to Savannah R.), ca 20 mi SW of Augusta, Richmond County, Georgia. HOLOTYPE: ANSP 70702 (60.0), William B. Harper, 5 July 1933. PARATYPES: ANSP 70703-70704 (2), paratopotypes.

REMARKS.—Suttkus and Raney (1955a:84) synonymized this form with *N. petersoni*. Counts for holotype: pharyngeal teeth 2,4-4,2; anal rays 7. Original description date 25 October 1945.

= *Notropis petersoni* Fowler

Hybopsis winchelli Girard 1857

See pages 21, 92.

Notropis altipinnis wrighti Hubbs and Raney 1948

Hubbs and Raney 1948:11-13. TYPE LOCALITY: Steele Cr. (trib. to Santee R.), Rock Hill, York County, South Carolina. HOLOTYPE: UMMZ 94551 (30.2), Donald Ameel, 11 November 1931. PARATYPES: UMMZ 94552 (3), paratopotypes; CU 10577 (23). Original description listed 10 other paratypes, but their disposition is unknown.

REMARKS.—This form and others described in the same paper are not generally regarded as valid, although they have never been formally synonymized. Original description date 26 April 1948.

= *Notropis altipinnis* (Cope)

Hybopsis xanocephalus Jordan 1877

Jordan 1877c:334-335. TYPE LOCALITY: Trib. of Etowah R., near Rome, Floyd County, Georgia. LECTOTYPE: USNM 20116 (50.1), D. S. Jordan and C. H. Gilbert, summer 1876. Suttkus and Raney (1955c:30) designated lectotype. LECTOPARATYPES: USNM 17886 (2), paratopotypes; CAS-SU 3875 (1), ANSP 19828-19829 (2), MCZ 24394 (1). Remaining seven ANSP types represent two other species, and have been recatalogued under those names.

REMARKS.—Fowler (1910: pl. 20, fig. 42) illustrated one of ANSP "cotypes." The species name *xanocephalus* first appeared as a *nomen nudum* in Jordan and Copeland (1877:151). Although recognized as valid since its original description, *N. xanocephalus* was frequently confused with other forms of *Notropis*, particularly *N. texanus* and *N. petersoni*, and many references to "*N. xanocephalus*" are based on misidentifications involving those species. Bailey, Winn, and Smith (1954:125-126) were the first to diagnose *N. xanocephalus* clearly and define its range, and this was further amplified by Suttkus and Raney (1955c). Counts for holotype: pharyngeal teeth 2,4-4,2; anal rays 7. Original description date (30) June 1877.

= *Notropis xanocephalus* (Jordan)

Minnilus xanurus Jordan 1877

Jordan 1877b:79. TYPE LOCALITY: S. Fk. of Ocmulgee R., at Flat Shoals, DeKalb County, Georgia. LECTOTYPE: USNM 17862 (66.0), D. S. Jordan and C. H. Gilbert, summer 1876. Lectotype herein designated by R. H. Gibbs, Jr. LECTOPARATYPES: USNM 163937 (ex USNM 17862) (4), CAS-SU 1996 (1), MCZ 24365 (1), BMNH 1880.1.21.82 (1), MNHN A.1313 (2), paratopotypes.

REMARKS.—Condition of types good for old specimens. Counts for CAS-SU 1996: pharyngeal

teeth 1,4-; anal rays 10. Counts for MCZ 24365: anal rays 10. Gibbs (1955) reviewed species. Original description date 17 April 1877.

= *Notropis xaenurus* (Jordan)

Notropis xanthicara Minckley and Lytle 1969

Minckley and Lytle 1969:491-502, fig. 1. TYPE LOCALITY: Rio Puente Colorado, 8.5 km S and 0.7 km W of Cuatro Ciénegas, Coahuila, Mexico. HOLOTYPE: UMMZ 188782 (45.0), R. R. Miller and family, C. L. Hubbs, D. R. Tindall, and W. L. Minckley, 6 April 1961. PARATYPES: UMMZ 179834 (11), ASU 969 (8), paratopotypes; ASU 2316 (185), UMMZ 179202 (46), UANL 703 (6), UANL 709 (105), ASU 3728 (68), KU 7404 (72), UMMZ 179860 (53).

REMARKS.—Lytle (1972) reviewed species. Original description date 17 November 1969.

= *Notropis xanthicara* Minckley and Lytle

Ceratichthys zanemus Jordan and Brayton 1878

See pages 21, 92.

Alburnus zonatus Agassiz 1863

Agassiz, in Putnam 1863:9. TYPE LOCALITY: Osage R., presumably in Missouri. LECTOTYPE: UMMZ 174594 (85.0), George Stolley, 1854. Gilbert (1964:129) designated lectotype. LECTOPARATYPES: MCZ 1914 (9), UMMZ 86915 (ex MCZ 1914) (3), USNM 120243 (ex MCZ 1914) (3), paratopotypes.

REMARKS.—Many early literature records of this species actually refer to the closely related *N. pilsbrii*, and Hubbs and Ortenburger (1929b:81-82) considered the latter to be a junior synonym of *N. zonatus*. Hubbs and Moore (1940) later regarded the two as subspecies, and they were so considered until I (Gilbert 1964:129-136) showed them to be specifically distinct. Bailey *et al.* (1970:23) regarded Putnam as the describer of *N. zonatus*, but I credit this to Agassiz for reasons discussed in my 1964 paper. Original description date 1 March 1863.

= *Notropis zonatus* (Agassiz)

Luxilus zonistius Jordan 1880

Jordan 1880b:239-240. TYPE LOCALITY: Suwannee (= Suwanee) Cr. (trib. to Chattahoochee R.), ca 8 mi NW of Lawrenceville, Gwinnett County, Georgia. HOLOTYPE: USNM 23452 (68.5), D. S. Jordan and C. H. Gilbert, summer 1876. PARATYPES: USNM 31110 (1), CAS-SU 1998 (1), MCZ 24395 (1), BMNH 1880.1.21.55 (1), paratopotypes.

REMARKS.—Gilbert (1964:126-129) reviewed species. Jordan (1880b:240) clearly designated a holotype in the original description, despite Böhlke's (1953:33) statement to the contrary. Original description date 3 February 1880.

= *Notropis zonistius* (Jordan)

ACCOUNTS OF SPECIES PRESENTLY REFERRED TO GENUS *Hybopsis*, BUT WHICH MAY
ULTIMATELY BE INCLUDED IN *Notropis*

Rutilus amblops Rafinesque 1820

Rafinesque 1820b:51. TYPE LOCALITY: Falls of the Ohio R., at Louisville, Kentucky. TYPES: None located.

REMARKS.—Jordan (1876a:94) initially regarded this form as of uncertain identity, but he later (1877c:328-329) considered it to be the species with the currently-used vernacular name "bigeye chub." The name *amblops* has been applied to this species ever since, despite the fact that it was said by Rafinesque to have 10 rays (rather than 8) in both the dorsal and anal fins. Clemmer (1970) reviewed species. Original description date (31) May 1820.

= *Hybopsis amblops* (Rafinesque)

Hybopsis gracilis Agassiz 1854

Agassiz 1854:358. TYPE LOCALITY: Huntsville, Alabama. SYNTYPES: None located.

REMARKS.—Jordan (1885b:816) was first to synonymize this form with the species *amblops*, at the same time pointing out that *Hybopsis* was the oldest available generic name for this and related species. Original description date (31 December) 1854.

= *Hybopsis amblops* (Rafinesque)

Ceratichthys hyalinus Cope 1868

Cope, in Günther 1868:179-180. TYPE LOCALITY: tribs. of Holston River, Virginia. SYNTYPES: ANSP 1925-1995 (70, 37.5-65.0), USNM 118112 (formerly ANSP 1996-2000) (5, 44.5-64.0), E. D. Cope, October 1867. Three other specimens listed in original description from BMNH.

REMARKS.—Jordan (1876a:31-32) tentatively synonymized this form with *Nocomis* (= *Hybopsis*) *amblops*, and he later (1877c:328-329) positively synonymized it with the same species. Original description date 2 December 1868.

= *Hybopsis amblops* (Rafinesque)

Ceratichthys hypsinotus Cope 1870

Cope 1870:458-459. TYPE LOCALITY: Trib. to Yadkin R., Roane (= Rowan) County, North Carolina. Type locality herein restricted by Jenkins and Lachner's designation of lectotype. Other syntypes are from tributaries of Catawba River, McDowell County, North Carolina. LECTOTYPE: ANSP 2005 (55.1), E. D. Cope, Autumn 1869. Lectotype herein designated by R. E. Jenkins and E. A. Lachner. LECTOPARATYPES: ANSP 2006-2021 (16), USNM 118113 (formerly ANSP 2024-2025) (2), paratopotypes; ANSP 2033-2035 (4 probably).

REMARKS.—One specimen each of *Nocomis leptcephalus* and *Moxostoma papillosum* removed from ANSP syntypic series (originally encompassing nos. 2005-2026). One specimen of *Nocomis leptcephalus* removed from USNM 118113. ANSP 2033-2035 includes one whole specimen, two heads without bodies, and three bodies without heads. Jenkins and Lachner (unpub. ms.) are reviewing species. Original description date 21 November 1870.

= *Hybopsis hypsinotus* (Cope)

Ceratichthys labrosus Cope 1870

Cope 1870:458. TYPE LOCALITY: Upper waters of Catawba R. (Santee R. system), McDowell and Burke counties, North Carolina. LECTOTYPE: ANSP 2045 (46.0), E. D. Cope, Autumn 1869. Lectotype herein designated by R. E. Jenkins and E. A. Lachner. LECTOPARATYPE: ANSP 2046 (1), paratopotype. Remainder of original syntypic series (ANSP 2047-2054), comprising eight specimens, has been reidentified by Jenkins and Lachner as *Hybopsis zanema* (R. E. Jenkins in litt.). A series of four specimens (ANSP 2041-2044) probably are original syntypes, but inasmuch as this cannot be positively established, they are not so regarded. Of these, three (nos. 2041-2043) are the species *labrosa*, as here defined, and the fourth (no. 2044) has been identified as *H. zanema*.

REMARKS.—As indicated above, the syntypic series comprises two valid species. These species, which are very similar in appearance, occur sympatrically over much of their respective ranges, and have long been collectively called *H. labrosa*. One of these (the more lightly colored of the two forms) was subsequently described (Jordan and Brayton 1878:24-25) as *Ceratichthys zanemus*, which in turn has usually been regarded since as a junior synonym of *H. labrosa*. Cope's description of *C. labrosus* could apply to either form. In the interest of nomenclatural conservation, Jenkins and Lachner will call the light form *H. zanema* and the dark form *H. labrosa*.

H. labrosa and *H. zanema* are most closely related to species of the subgenus *Cyprinella* (genus *Notropis*), from which they differ in the presence of a barbel at each corner of the mouth. Counts for lectotype: lateral-line scales 36; total vertebrae 38. Original description date 21 November 1870.

= *Hybopsis labrosa* (Cope)

Hybopsis lineapunctata Clemmer and Suttkus 1971

Clemmer and Suttkus 1971:21-30, figs. 1-3. TYPE LOCALITY: Enitachope Cr., trib. to Hilla-

bee Cr., 2.9 mi SW of Ashland, on St. Rt. 9, Clay County, Alabama. HOLOTYPE: TU 53405 (61.0), R. D. Suttkus and G. H. Clemmer, 13 April 1966 (field no. RDS 3877). PARATYPES: TU 40643 (46), paratopotypes; TU 12085 (8), TU 15281 (156), TU 29884 (1), TU 32729 (8), TU 40668 (12), TU 41118 (28), TU 41132 (1), CU 51708 (6), UMMZ 168870 (3), UMMZ 168762 (5), UMMZ 168767 (1), UMMZ 175795 (2), UMMZ 177751 (19), UAIC 1036 (10), UAIC 1039 (15), UAIC 1064 (1), UAIC 1066 (26), UAIC 1067 (2), UAIC 1068 (41), UAIC 1069 (2), UAIC 1098 (13), UAIC 1247 (3), UAIC 1248 (4), UAIC 1249 (2), UAIC 1250 (?), UAIC 1251 (2), UAIC 1282 (20), UAIC 1284 (5), UAIC 1308 (1), UAIC 1309 (1), UAIC 1310 (2), UAIC 1316 (3), UAIC 1317 (6), UAIC 1318 (6), UAIC 1319 (3), UAIC 1320 (3), UAIC 1362 (4), UAIC 1375 (?), UAIC 1376 (?), UAIC 1377 (6), UAIC 1378 (25), UAIC 1379 (3), UAIC 1380 (1), UAIC 1381 (5), UAIC 1382 (7), UAIC 1383 (2), UAIC 1487 (2), UAIC 1497 (17), UAIC 1504 (3), UAIC 1505 (2), UAIC 1509 (2), UAIC 1517 (9), UAIC 1519 (14), UAIC 1522 (92), UAIC 1523 (1), UAIC 1529 (5), UAIC 1911 (2).

REMARKS.—Species closely related to *H. amblops*. Original description date 30 September 1971.

= *Hybopsis lineapunctata* Clemmer and Suttkus 1971

Nocomis rubrifrons Jordan 1877

Jordan 1877c:330. TYPE LOCALITY: South Fork of Ocmulgee R., at Flat Rock, DeKalb County, Georgia. SYNTYPES: USNM 17863 (7, 45.3-55.4), USNM 20146 (1, 59.3), MCZ 24381 (1, 57.0), D. S. Jordan and C. H. Gilbert, summer 1876.

REMARKS.—Species closely related to *H. amblops*. Inasmuch as the name *rubrifrons* is preoccupied in *Notropis* by *Alburnus rubrifrons* Cope 1865, a new name will be required for this species if and when it is eventually transferred to *Notropis*. Clemmer (1970) reviewed species. Original description date (30) June 1877.

= *Hybopsis rubrifrons* (Jordan)

Hybopsis winchelli Girard 1857

Girard 1857:211. TYPE LOCALITY: Black Warrior R., at Selma, Alabama. SYNTYPE: USNM 2 (one pair of pharyngeal teeth in osteological collection), Prof. A. Winchell.

REMARKS.—Jordan (1885a:127) regarded this species as a synonym of *H. amblops*. It has either been so considered since (Jordan and Evermann 1896:321; Bailey, Winn and Smith 1954:124) or treated as a subspecies of *H. amblops* (Hubbs 1951a:5). Recent studies by Clemmer (1970) indicate full species status. Counts: pharyngeal teeth 1,4-4,1. Original description date 25 April 1857.

= *Hybopsis winchelli* Girard

Ceratichthys zanemus Jordan and Brayton 1878

Jordan and Brayton 1878:24-25. TYPE LOCALITY: Saluda R., at Farr's Mills, W of Greenville, Greenville County, South Carolina. LECTOTYPE: USNM 31126 (34.0), D. S. Jordan, A. W. Brayton, C. H. Gilbert *et al.*, summer 1877. Lectotype herein designated by R. E. Jenkins and E. A. Lachner.

REMARKS.—Type in very poor condition, with fins mostly broken, body almost completely descaled, and head almost separated from body. Counts: pharyngeal teeth -4,1, with major teeth well hooked; total vertebrae 39. Although only one type apparently exists, it is not regarded as the holotype because Jordan and Brayton, in the original description, mentioned having collected a number of specimens. For further remarks, see account of *Ceratichthys labrosus*. Original description date (31 December) 1878.

= *Hybopsis zanema* (Jordan and Brayton)

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