

Stratigraphic Distribution and Bibliography
of Fossil Fish, Amphibians, and Reptiles from Virginia

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This report is preliminary and has not been reviewed
for conformity with U.S. Geological Survey editorial
standards and stratigraphic nomenclature

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Introduction

The following stratigraphic compilation and bibliography represent a preliminary attempt to bring together all available literature and identified records of fossil fish, amphibians, and reptiles discovered in the State of Virginia. Most of this list is bibliographic, representing specimens which have been described in the formal literature. However, a few specimens not yet in the literature are also included. Those in possession of the author should, in the course of the next few years, find their way into the literature. Other listed specimens are in the U.S. National Museum collections; they can be found by referring to the listed catalogue numbers.

No attempt was made here to compile detailed references on fossil mammals and birds from Virginia. To date, apparently all mammal and bird remains have come from strata of Miocene to Holocene age. A recent compilation of the Pleistocene bird and mammal record is given in the "Quaternary of Virginia" (Virginia Division of Mineral Resources Publication 75, 1986), and much of the information available on Miocene mammals and birds can be found in "Stratigraphy and paleontology of the outcropping Tertiary beds in the Pamunkey River Region" (Central Virginia Coastal Plain (Guidebook for the 1984 Field Trip of the Atlantic Coastal Plain Geological Association, 1984, edited by L.W. Ward and Kathleen Krafft). These sources should take the interested reader a long way toward finding the available literature on mammals and birds.

Fish remains have not been reported yet from Cambrian, Ordovician, or Silurian strata, and neither fish, amphibian, nor reptile remains have been reported yet from Pennsylvanian, Cretaceous, or Oligocene strata. However, units representing all of these periods exist in Virginia and have potential for yielding fossil vertebrates as attested by the occurrence of fossil fish, reptiles, and amphibians in strata of these ages in nearby states. Similarly, the known fauna from the Devonian,

Mississippian, Triassic, Jurassic, Cretaceous, Paleocene, Eocene, Miocene, Pliocene, Pleistocene, and Holocene surely represent only part of the total fauna present during those ages, for records of nearby states include numerous taxa not yet known from Virginia. Thus, the present list surely represents only a fraction of the total number of fossil fish, amphibians, and reptiles ultimately to be found within the state borders.

Most of the listed taxa are represented by skeletal remains, but some are represented only by footprints. Footprint taxa are denoted by an (*) to set them off from osteological taxa. Formation names are given for the source beds of the described remains except for Quaternary occurrences in the western part of the state. In that region, remains come from fissure deposits for which there is no formal nomenclature.

No attempt has been made to catalogue these occurrences by geographic locality. However, the geographic distribution of geologic strata in Virginia allow for at least some ready localization of fossil remains. Paleozoic vertebrate fossils (Devonian, Mississippian) have been found only west of the Blue Ridge Mountains. Mesozoic vertebrate fossils (Triassic and Jurassic) have been found only in the Piedmont region, which lies between the Blue Ridge and the Fall Line (roughly marked by Interstate 95). Tertiary vertebrate fossils have all come from the Coastal Plain, which lies east of the Fall Line. Pleistocene remains have been found both in the Coastal Plain and in the region west of the Blue Ridge.

PALEOZOIC

Cambrian - Ordovician - Silurian

(Rocks of these ages so far have yielded no fish remains;
Ordovician fish have been reported from Maryland and
Silurian fish have been reported from West Virginia)

Devonian

Pisces

Placodermi

Bothriolepidae

Bothriolepis virginiensis Weems, Beem, and Miller 1981
-- Chemung Formation, Frederick County (Weems and
others, 1981)

Acanthodii

Acanthodian spines? -- Chemung Formation, Frederick
County (Weems and others, 1981)

Mississippian

Cotylosauria

Asperipes aduncus* (Branson 1910) -- Hinton Formation,
Giles County (Branson, 1910; taxonomically updated in
Haubold, 1971) (probably the oldest known reptilian
remains)

Pennsylvanian

(No fossil amphibians or reptiles yet are reported
from Virginia, material known from West Virginia)

Permian

(No known beds of this age are present in Virginia,
material known from West Virginia)

MESOZOIC

Triassic

Pisces

Osteichthyes

Paleoniscidae

Turseodus sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

Redfieldiidae

Dictyopyge macrurus (W.C. Redfield 1841) -- Barren beds, Productive Coal Measures, and Vanita beds, Chesterfield County and Goochland County; Falling Creek Formation, Hanover County; Scotsburg basin, Halifax County (Schaeffer and McDonald, 1978, Olsen and others, 1982)

Cionichthys meekeri (Schaeffer and McDonald 1978) -- Barren beds, Productive Coal Measures, Chesterfield County and Goochland County; Falling Creek Formation, Hanover County (Schaeffer and McDonald, 1978; Olsen and others, 1989, p. 54)

Cionichthys sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

Synorichthys sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

Tanaocrossus sp. -- Vinita beds, Richmond basin, county uncertain (Schaeffer and McDonald, 1978; Olsen and others, 1989, p. 54)

Semionotidae

Semionotus sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

Semionotus sp. -- Balls Bluff Siltstone, Culpeper basin (county unrecorded) (Olsen, 1989)

Coelacanthidae

Osteopleurus newarki (Bryant 1934) --Cow Branch Formation?, Pittsylvania County (Schaeffer and McDonald, 1978)

Osteopleurus sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

cf. Pariostegus sp. -- Cow Branch Formation, Pittsylvania County (Olsen and others, 1989)

Diplurus sp. -- Balls Bluff Siltstone, Loudoun County (Weems and Kimmel, 1993)

Reptilia

Lepidosauria

Sphenodontidae

cf. Diphydontosaurus -- Vinita beds, Chesterfield County (Sues and Olsen, 1990)

Tanystropheidae

Gwyneddosaurus erici Bock 1945 -- Cow Branch Formation, Pittsylvania County (Olsen, 1979) (Tanytrachelos ahynis Olsen 1979 is a junior synonym of this taxon)

Gwyneddichnium sp.* -- Balls Bluff Siltstone, Prince William County (Weems and Kimmel, 1993; illustrated and identified as Rhynchosauroides in Gore, 1990)

Archosauria

Crurotarsi

Doswelliidae

Doswellia kaltenbachii Weems 1980 -- Falling Creek Formation, Hanover County (Weems, 1980a)

Parasuchidae

Rutiodon carolinensis Emmons 1857 -- Falling Creek Formation, Hanover County (Weems, 1980a)

Rutiodon sp. -- Balls Bluff Siltstone, Culpeper County (Weems, 1992); Balls Bluff Siltstone, Loudoun County (Weems, 1979); Cow Branch Formation, Pittsylvania County (Olsen and Baird, 1986)

Parasuchipus harrisi Litwin and Weems 1993 -- Balls Bluff Siltstone, Culpeper County; Cow Branch Formation, Pittsylvania County (Olsen and others, 1989; Litwin and Weems, 199_)

Aetosauridae

aetosaur trackways* (not yet named) -- Balls Bluff Siltstone, Culpeper County (Weems, 1992; Litwin and Weems, 199_)

Rauisuchidae

gen. et sp. indet. (proximal end of humerus and two

vertebrae) -- Falling Creek Formation, Hanover County
(Weems, 1980a)

Chirotherium lulli* Bock 1952 -- Manassas Sandstone,
Fairfax County (Weems and Kimmel, 1993)

Poposauridae?

Brachychirotherium parvum* (C.H. Hitchcock 1889) --
Manassas Sandstone, Fairfax County (Weems and Kimmel,
1993)

Crurotarsi incertae sedis

Euscolosuchus olseni Sues 1992 -- Vinita Beds,
Chesterfield County (Sues, 1992)

Ornithosuchia

Saurischia

"Ceratosauria"

Grallator tuberosus* (E. Hitchcock 1836) -- Cow Branch
Formation, Pittsylvania County (Olsen and Baird, 1986,
Weems, 1992; "Atreipus" is synonymous with Grallator);
Balls Bluff Siltstone, Prince William County
(unpublished, specimen in possession of author)

Grallator cf. G. tuberosus* -- Balls Bluff Siltstone,
Culpeper County (Weems, 1987, 1992)

Grallator sillimani* (E. Hitchcock, 1843) -- Balls Bluff
Siltstone, Culpeper County (Weems, 1987, 1992)

Kayentapus minor* (E. Hitchcock, 1858) -- Balls Bluff
Siltstone, Culpeper County (Weems, 1987, 1992)

Prosauropoda?

Eubrontes sp.* -- Balls Bluff Siltstone, Culpeper County
(Weems, 1987, 1992)(not certainly Eubrontes, but closer
to that taxon than anything so far described; possibly a
poposaurid print)

Sauropoda

Agrestipus hottoni* Weems 1987 -- Balls Bluff Silstone,
Culpeper County (Weems, 1987, 1992)

Ornithischia

Ornithopoda

Gregaripus bairdi* Weems 1987 -- Balls Bluff Siltstone,
Culpeper County (Weems, 1987, 1992)

Archosauria incertae sedis

Uatchitodon kroehleri Sues 1991 -- Vinita Beds,
Chesterfield County (Sues, 1991)

Plesiornis pilulatus* E. Hitchcock 1858 -- Poolesville
Member, Manassas Sandstone, Fairfax County (Weems and
Kimmel, 1993) (possibly a bird footprint)

Synapsida

Traversodontidae

Boreogomphodon jeffersoni Sues and Olsen 1990 -- Vinita
beds, Chesterfield County (Sues and Olsen, 1990)

Chiniquodontidae

Microconodon tenuirostris Emmons 1856 -- Vinita beds,
Chesterfield County (Sues and Olsen, 1990)

Jurassic

Pisces

Redfieldiidae

Redfieldius gracilis (J.H. Redfield 1837) -- Midland Formation, Fauquier County; Waterfall Formation, Prince William County (Baer and Martin, 1949; Parrott and Dunkle, 1949; Schaeffer and McDonald, 1978; Olsen and others, 1982; "Dictyopyge" listed in Parrott and Dunkle, 1949, was probably a Redfieldius)

Semionotidae

Semionotus spp. -- Midland Formation, Fauquier County; Waterfall Formation, Prince William County (Parrott and Dunkle, 1949; Schaeffer and McDonald, 1978; Olsen and others, 1982)

Ptycholepididae

Ptycholepis marshi Newberry 1878 -- Midland Formation, Fauquier County; Waterfall Formation, Prince William County (Parrott and Dunkle, 1949; Schaeffer and others, 1975; Schaeffer and McDonald, 1978; Olsen and others, 1982)

Coelacanthidae

Diplurus longicaudatus Newberry 1878 -- Midland Formation, Fauquier County; Waterfall Formation, Prince William County (Baer and Martin, 1949; Schaeffer and McDonald, 1978; Olsen and others, 1982)

Reptilia

Archosauria

Crocodylia

Protosuchidae

Batrachopus* sp. -- Turkey Run Formation, Loudoun County
(unpublished, specimen in possession of author and
mentioned in Weems and Kimmel, 1993)

Saurischia

"Ceratosauria"

Grallator tenuis* E. Hitchcock 1858 -- Turkey Run
Formation, Loudoun County (Pannel, 1985; compare to
Weems, 1992 for updated taxonomy)

Prosauropoda

Eubrontes giganteus* (E. Hitchcock 1836) -- Turkey Run
Formation, Loudoun County (Roberts, 1928; Pannel, 1985;
compare to Weems, 1992 for updated taxonomy)

Eubrontes minusculus* (E. Hitchcock 1858) -- Turkey Run
Formation, Loudoun County (Gilmore, 1924; Pannel, 1985;
compare to Weems, 1992 for updated taxonomy)

Cretaceous

(No vertebrate fossils are yet reported from the Potomac Formation in Virginia, vertebrate remains are known from beds of similar age in Maryland)

CENOZOIC

Tertiary

Paleocene

Pisces

Chondrichthyes

Selachii

Lamnidae

Otodus obliquus Agassiz 1843 -- Aquia Formation,
Stafford County, Richmond (Clark, 1895, 1896; Eastman,
1901; Clark and Miller, 1912; Leriche, 1942)

Striatolamia macrota (Agassiz 1843) -- Aquia Formation,
Stafford County, King George County (Clark, 1895, 1896;
Eastman, 1901; Clark and Miller, 1912; Leriche, 1942)

Batoidea

Myliobatidae

Myliobatis dixonii Agassiz 1843 -- Aquia Formation, King
George County, Stafford County (Clark, 1895, 1896;
Eastman, 1901; Clark and Miller, 1912; Leriche, 1942)

Aetobatis irregularis Agassiz 1843 -- Aquia Formation,
Stafford County (Eastman, 1901; Leriche, 1942)

Osteichthyes

Phyllodontidae

Phyllodus toliapicus Agassiz 1839 -- Aquia Formation,

Richmond, King George County (Wyman, 1850; Gildersleeve, 1933; Leriche, 1942)

Albulidae

Paralbula oweni (Owen 1845) -- Aquia Formation, Stafford County (Weems, 1984, 1991)

Ostraciidae

Ostracion meretrix Daimeries 1891 -- Aquia Formation, Stafford County (Leriche, 1942)

Reptilia

Chelonia

Trionychidae

Aspiderites virginianus (Clark 1895) -- Aquia Formation, Stafford County (Clark, 1895, 1896; Case, 1901; Clark and Miller, 1912; Lynn, 1929; Weems, 1988) (R.E. Weems has found fragments of this taxon in Hanover County which represent an unpublished occurrence)

Cheloniidae

Osteopygis roundsi Weems 1988 -- Aquia Formation, Caroline County (Weems, 1988)

Dermochelyidae

Allopleuron insularis (Cope 1872) -- Aquia Formation, Stafford County (Weems, 1988)

family incertae sedis

Planetochelys savoiei Weems 1988 -- Aquia Formation,
Stafford County (Weems, 1988; Hutchison and Weems, 1991;
this is functionally a "box" turtle of uncertain
familial designation, not a sinemydid as originally
thought by Weems, 1988)

Lepidosauria

Paleophidae

Paleophis virginianus Lynn 1934 -- Aquia Formation, King
George County (Lynn, 1934; Weems and Horman, 1983;
Weems, 1984)

Archosauria

Crocodylidae

Thecachampsia contusor Cope 1867 -- Aquia Formation,
Stafford County (Case, 1901; Clark and Miller, 1912; now
USNM 009365)

Thoracosaurus neocesariensis (DeKay 1842) -- Aquia
Formation, Stafford County (unpublished, USNM 000003,
USNM 000072)

Eocene

Pisces

Selachii

Abdounia beaugei (Arambourg 1935) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Abdounia lapierrei Cappetta & Nolf 1981 -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Abdounia recticonia (Winkler 1873) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Carcharhinus gibbesi (Woodward 1889) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Carcharias acutissima (Agassiz, 1844) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Carcharias hopei (Agassiz 1843) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Carcharocles auriculatus (Blainville, 1818) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Galeocerdo latidens (Agassiz 1843) -- Nanjemoy Formation, King George County (Eastman, 1901; Clark and Miller, 1912); Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Galeorhinus ypresiensis Casier 1946 -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

?Hemipristis sp. -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Isurus praecursor -- Piney Point Formation, Hanover County (Weems, 1984; Ward and Wiest, 1990)

Jaekelotodus trigonalis (Jaekel, 1895) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Nebrius thielensis (Winkler 1873) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Otodus obliquus Agassiz 1843 -- Nanjemoy Formation, Caroline County, Prince George County (Clark, 1895, 1896; reference in Clark, 1896 to "Front Royal" should be to Port Royal as indicated on p. 45)

Physogaleus secundus (Winkler 1874) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Scyliorhinus gilberti Casier 1946 -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Sphyrna sp. -- Nanjemoy Formation, King George County (Eastman, 1901; Leriche, 1942)

Striatolamia macrota (Agassiz 1843) -- Nanjemoy Formation, Caroline County, King George County, Prince George County (Clark, 1895, 1896; Eastman, 1901; Clark and Miller, 1912; Leriche, 1942; reference in Clark, 1896, to "Front Royal" should be to Port Royal as indicated on p. 45); Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Batoidea

Aetobatis irregularis (Agassiz 1843) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Coupatezia woutersi (Winkler 1874) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Myliobatis dixonii Agassiz 1843 -- Nanjemoy Formation, King George County (Eastman, 1901; Clark and Miller, 1912; Leriche, 1942); Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Pristis brachyodon Cope 1869 -- Nanjemoy Formation, Petersburg (Cope 1869b; Leriche, 1942)

Pristis lathamii Galeotti 1837) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Rhinobatos bruxelliensis (Jaekel 1894) -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Rhynchobatus vincenti Jaekel 1894 -- Piney Point Formation, Hanover County (Ward and Wiest, 1990)

Osteichthyes

Xiphiidae

Cylindracanthus rectus (Agassiz 1844) -- Nanjemoy Formation, Petersburg (Leriche, 1942)

Oligocene

(no fish, amphibians or reptiles presently described
from Virginia, nearest material known from South
Carolina)

Miocene

Pisces

Selachii

Notidanidae

Notorynchus primigenius (Agassiz 1843) -- Choptank Formation, Richmond (Leriche, 1942)

Lamnidae

Isurus hastalis (Agassiz 1843) -- Calvert Formation, Stafford County (Clark, 1895, 1896; specimen was assigned by Clark to the "Eocene", but this taxon is not elsewhere known from the Paleocene/Eocene Pamunkey Group and is typical of the Miocene so it is here considered to have come from the Calvert which is the only fossiliferous Miocene unit known from that area); Choptank Formation, Westmoreland County (Leriche, 1942); Eastover Formation, Prince George County (Clark, 1895, 1896; specimen was assigned by Clark to the Eocene, but this taxon is not known elsewhere from the Paleocene/Eocene Pamunkey Group and is typical of the Miocene so it is here considered to have come from the Eastover Formation which occurs above the Eocene in this area according to Ward and Blackwelder, 1980)

Isurus retroflexa (Agassiz 1843) -- Choptank Formation, Westmoreland County (Leriche, 1942)

Alopias grandis (Leriche 1942) -- Calvert Formation, Westmoreland County (Leriche, 1942)

Procarcharodon angustidens (Agassiz 1843) -- Calvert Formation, King George County (Weems, 1984)

Procarcharodon megalodon -- Calvert Formation, Westmoreland County (R.E. Weems collection, unpublished record); Eastover Formation, Westmoreland County (Weems, 1984) and King William County (R.E. Weems collection, unpublished record); Calvert Formation, King George County (Clark, 1895, 1896, called this "Carcharodon polygyrus" and considered it to be Eocene in age, but Clark and Miller, 1912, noted Miocene (Calvert) along the Potomac Creek bluff (p. 95) and this taxon is almost certainly Procarcharodon megalodon, so it is here considered to be a Calvert occurrence); Eastover Formation, Prince George County (Clark 1895, 1896, called this occurrence "Carcharodon polygyrus" and considered it to be Eocene in age, but Ward and Blackwelder, 1980, noted Miocene (Eastover) above the Nanjemoy at this locality and this taxon is almost certainly Procarcharodon megalodon, so it is here considered to be an Eastover occurrence)

Procarcharodon sp. -- Calvert Formation, King William County (Kimmel and Purdy, 1984; published as Carcharodon)

Carcharhinidae

Prionodon egertoni (Agassiz 1844) -- Calvert Formation, Westmoreland County; Choptank Formation, Westmoreland County, Richmond (Leriche, 1942)

Galeocerdo aduncus Agassiz 1843 -- Calvert Formation, Stafford County (Clark, 1895, 1896; specimen was assigned by Clark to the "Eocene", but this taxon is not elsewhere known from the Paleocene/Eocene Pamunkey Group and is typical of the Miocene so it is here considered to have come from the Calvert which is the only

fossiliferous Miocene unit known from that area);
Choptank Formation, Westmoreland County (Leriche, 1942);
Eastover Formation, Prince George County (Clark, 1895,
1896; specimen was assigned by Clark to the Eocene, but
this taxon is not known elsewhere from the
Paleocene/Eocene Pamunkey Group and is typical of the
Miocene so it is here considered to have come from the
Eastover Formation which occurs above the Eocene in this
area according to Ward and Blackwelder, 1980)

Hemipristis serra Agassiz 1843 -- Calvert Formation,
Richmond; Choptank Formation, Westmoreland County
(Wyman, 1850; Leriche, 1942)

Sphyrnidae

Sphyrna sp. -- Calvert Formation, King William County

Rhincodonidae

Rhincodon sp. -- Calvert Formation, King William County
(Kimmel and Purdy, 1984)

Batoidea

Myliobatidae

Aetobatis arcuatus Agassiz 1843 -- Choptank Formation,
Westmoreland County (Leriche, 1942)

Dasyatidae

Dasyatis sp. -- Calvert Formation, King William County
(Kimmel and Purdy, 1984)

Osteichthyes

Acipenseridae

Acipenser ornatus Leidy 1873 -- Calvert Formation,
Westmoreland County (Weems, 1974b)

Acipenser sp. -- Calvert Formation, King William County
(Kimmel and Purdy, 1984; R.P. Purdy, written
communication, 1993)

Sphyraenidae

Sphyraena speciosa Leidy 1856 -- Calvert Formation,
Westmoreland County (Leriche, 1942; Weems, 1974b)

Ariidae

Arius sp. -- Calvert Formation, King William County
(Kimmel and Purdy, 1984; R.P. Purdy, written
communication, 1993)

Sciaenidae

Pogonias multidentatus Cope 1869 -- Eastover Formation,
Westmoreland County, Richmond (Wyman, 1850; Cope, 1869b;
Weems, 1974b)

Labridae

Protautoga conidens Leidy 1873 -- Calvert Formation,
Westmoreland County; Choptank Formation, Richmond
(Leidy, 1873a, 1873b; Leriche, 1942; Weems, 1974b)

Clupeidae

cf. Alosa sp. -- Eastover Formation, King William County
(Kimmel and Purdy, 1984)

Scombridae

cf. Katsumonius pelamis -- Calvert Formation, King
William County (Kimmel and Purdy, 1984)

Istiophoridae

Istiophorus calvertensis Berry 1917 -- Eastover
Formation, Prince George County (Berry, 1917; Kimmel and
Purdy, 1984)

Branchiostegidae

Lophalotilus sp. -- Calvert Formation, Westmoreland
County (Kimmel and Purdy, 1984; R.P. Purdy, written
communication, 1993)

Diodontidae

Chilomycterus sp. -- Calvert Formation, Westmoreland
County (Kimmel and Purdy, 1984; R.P. Purdy, written
communication, 1993)

Molidae

Ranzania grahami Weems 1985 -- Calvert Formation,
Westmoreland County (Berry, 1941; Weems, 1985)

Ranzania tenneyorum Weems 1985 -- Calvert Formation,
King William County (Weems, 1985)

Reptilia

Chelonia

Cheloniidae

Syllomus aegyptiacus (Lydekker 1889) -- Calvert Formation, Hanover County, Westmoreland County (Cope, 1896; Berry and Lynn, 1936; Berry, 1937; Weems, 1974a; Weems, 1980b)

Procolpochelys grandaeva Leidy 1851 -- Calvert Formation, Westmoreland County, "near Pamunkey River" (Weems, 1974a)

Dermochelyidae

Psephophorus calvertensis Palmer 1908 -- Calvert Formation, Choptank Formation, Westmoreland County (unpublished occurrences, USNM 357848, USNM 357173-357202, USNM 357751-357762, USNM 357783, USNM 357785-357798, USNM 357800, USNM 357876-357877, USNM 357879-357881, USNM 358871)

Archosauria

Crocodylidae

Gavialosuchus antiquus (Leidy, 1852) -- Choptank Formation, Westmoreland County (Leidy, 1852) (also USNM 024877, USNM 024890, USNM 025243)

Thecachampsa contusor Cope 1867 -- Calvert Formation, Westmoreland County (unpublished, USNM 355964)

Thecachampsa sp. -- Eastover Formation, Westmoreland County (unpublished, USNM 336174)

Pliocene

Pisces

Selachii

Carcharhinidae

Prionodon egertoni (Agassiz 1844) -- Yorktown Formation,
Chesapeake or Suffolk County (Leriche, 1942)

Quaternary

Pleistocene

Pisces

Selachii

Carchariidae

Carcharias sp. -- Kempsville Formation, Princess Anne
County (Ray and others, 1968)

Carcharhinidae

Carcharhinus sp. -- Kempsville Formation, Princess Anne
County (Ray and others, 1968)

Batoidea

Rajidae

Raja sp. -- Kempsville Formation, Princess Anne County
(Ray and others, 1968)

Dasyatidae

Dasyatis sp. -- Kempsville Formation, Princess Anne
County (Ray and others, 1968)

Myliobatidae

Myliobatis sp. -- Kempsville Formation, Princess Anne
County (Ray and others, 1968)

Osteichthyes

Clupeidae

Brevoortia sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Batrachoididae

Opsanus sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Lophiidae

Lophius sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Gadidae

Gadus sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Triglidae

Prionotus sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Lutianidae

Lutianus sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Sciaenidae

Sciaenops sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Sphyraenidae

Sphyraena sp. -- Kempsville Formation, Princess Anne

County (Ray and others, 1968)

Uranoscopidae

Astroscopus sp. -- Kempsville Formation, Princess Anne County (Ray and others, 1968)

Anguillidae

Anguilla cf. A. bostoniensis -- Bath County (Guilday and others, 1977)

Esocidae

Esox cf. E. americanus or E. niger -- Bath County (Guilday and others, 1977)

Cyprinidae

Semotilus cf. S. corporalis (Mitchill) -- Bath County (Guilday and others, 1977)

Nocomis cf. N. raneyi -- Bath County (Guilday and others, 1977)

gen. et sp. indet. -- Augusta County (Guilday, 1962b)

Catostomidae

Catostomus sp. -- Bath County (Guilday and others, 1977)

Moxostoma sp. -- Bath County (Guilday and others, 1977)

gen. et sp. indet. -- Augusta County (Guilday, 1962b);
Smyth County (McDonald and Bartlett, 1982)

Ictaluridae

Noturus sp. -- Bath County (Guilday and others, 1977)

Amphibia

Urodela

Cryptobranchidae

Cryptobranchus alleganiensis (Daudin 1803) -- Smyth County (Holman and McDonald, 1986; Holman, 1986)

Cryptobranchus sp. -- Wythe County (Guilday, 1962a; Cope, 1869a)

Salamandridae

Notophthalmus viridescens Rafinesque 1820 -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986), Smyth County (Holman and McDonald, 1986; Holman, 1986)

Ambystomidae

Ambystoma (maculatum group) -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Ambystoma (maculatum group, A. jeffersonianum or A. maculatum) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986)

Ambystoma opacum (Gravenhorst 1807) -- Bath County (Holman, 1986)

Ambystoma tigrinum (Green 1825) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986)

Plethodontidae

Desmognathus sp. -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Gyrinophilus porphyriticus (Green 1827) -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Plethodontini sp. -- Augusta County (Holman, 1986), Bath County (Holman, 1986)

Pseudotriton sp. -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Anura

Pelobatidae

Scaphiopus holbrooki (Harlan 1835) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Bufonidae

Bufo americanus Holbrook 1836 -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Bufo woodhousei fowleri Hinckley 1882 -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986), Smyth County (Holman and McDonald, 1986; Holman, 1986)

Hylidae

Hyla chrysoscelis or H. versicolor -- Augusta County
(Fay, 1984; Guilday, 1962b; Holman, 1986)

Pseudacris crucifer (Neuwied 1838) -- Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Ranidae

Rana catesbeiana Shaw 1802 -- Augusta County (Fay, 1984;
Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984;
Guilday and others, 1977; Holman, 1986)

Rana clamitans Latreille 1801 -- Augusta County (Fay,
1984; Guilday, 1962b; Holman, 1986), Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Rana palustris Le Conte 1825 -- Augusta County (Fay,
1984; Guilday, 1962b; Holman, 1986); Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Rana cf. Rana pipiens -- Augusta County (Fay, 1984;
Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984;
Guilday and others, 1977; Holman, 1986), Smyth County
(Holman and McDonald, 1986; Holman, 1986)

Rana sylvatica Le Conte 1825 -- Augusta County (Fay,
1984; Guilday, 1962b; Holman, 1986), Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Reptilia

Chelonia

Chelydridae

Chelydra serpentina (Linnaeus 1758) -- Augusta County
(Fay, 1984; Guilday, 1962b; Holman, 1986), Smyth County
(Holman and McDonald, 1986; Holman, 1986)

Emydidae

Graptemys geographica (LeSueur 1817) -- Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Terrapene carolina (Linnaeus 1758) -- Augusta County
(Fay, 1984; Guilday, 1962b; Holman, 1986)

Terrapene sp. -- Wythe County (Guilday, 1962a; Cope,
1869a)

Chrysemys picta (Schneider 1783) -- Smyth County (Holman
and McDonald, 1986; Holman, 1986)

Trionychidae

Trionyx sp. -- Wythe County (Guilday, 1962a; Cope,
1869a)

Lacertilia

Iguanidae

Sceloporus undulatus (Latreille 1801) -- Augusta County
(Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Scincidae

Eumeces ?laticeps -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Scincella lateralis (Say 1823) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986)

Serpentes

Colubridae

Nerodia erythrogaster (Forster 1771) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986)

Nerodia sipedon (Linnaeus 1758) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986), Smyth County (Holman and McDonald, 1986; Holman, 1986)

?Regina septemvittata (Say 1825) -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Storeria dekayi (Holbrook 1839) -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Storeria occipitomaculata (Storer 1839) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Thanmophis sauritus (Linnaeus 1766) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Thanmophis sirtalis (Linnaeus 1758) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County

(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Virginia valeriae (Baird and Girard 1853) -- Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Virginia sp. -- Augusta County (Fay, 1984; Guilday,
1962b; not reaffirmed in Holman, 1986)

Carphophis amoenus (Say 1825) -- Augusta County (Fay,
1984; Guilday, 1962b; Holman, 1986), Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Diadophis punctatus (Linnaeus 1766) -- Augusta County
(Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Heterodon platyrhinos Latreille 1801 -- Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

?Tantilla coronata Baird & Girard 1853 -- Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Coluber or Masticophis sp. -- Augusta County (Fay, 1984;
Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984;
Guilday and others, 1977; Holman, 1986)

Opheodrys aestivus (Linnaeus 1766) -- Bath County (Fay,
1984; Guilday and others, 1977; Holman, 1986)

Opheodrys vernalis (Harlan 1827) -- Augusta County (Fay,
1984; Guilday, 1962b; not reaffirmed in Holman, 1986),
Bath County (Fay, 1984; Guilday and others, 1977;
Holman, 1986)

Cemophora coccinea (Blumenbach 1788) -- Bath County
(Fay, 1984; Guilday and others, 1977; Holman, 1986)

Elaphe guttata (Linnaeus 1766) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Elaphe obsoleta (Say 1823) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986), Smyth County (Holman and McDonald, 1986; Holman, 1986)

Lampropeltis getula Linnaeus 1766 -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Lampropeltis calligaster (Harlan 1827) -- Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Lampropeltis triangulum (Lacepede 1788) -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Crotalidae

Crotalus horridus Linnaeus 1758 -- Augusta County (Fay, 1984; Guilday, 1962b; Holman, 1986), Bath County (Fay, 1984; Guilday and others, 1977; Holman, 1986)

Holocene

Amphibia

Urodela

Cryptobranchidae

Cryptobranchus alleganiensis (Daudin 1803), -- Giles
County (Weems and Higgins, 1977)

Anura

Bufonidae

Bufo woodhousii fowleri -- Giles County (Weems and
Higgins, 1977)

Reptilia

Serpentes

Colubridae

isolated vertebrae -- Giles County (Weems and Higgins,
1977)

Crotalidae

Crotalus horridus Linnaeus 1758 -- Giles County (Weems
and Higgins, 1977)

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