

## Catalogue of American Amphibians and Reptiles.

Walley, H.D. 1998. *Eumeces anthracinus*.

***Eumeces anthracinus* (Baird)**  
Coal Skink

*Plestiodon anthracinus* Baird 1850:294. Type locality, "North Mountain, near Carlisle, [Cumberland Co.,] Pennsylvania" (see Remarks). Syntypes, National Museum of Natural History (USNM) 3138 (5 specimens), collected by S.F. Baird, date of collection unknown (cataloged 21 July 1858)(not examined by author).

*Eumeces anthracinus*: Cope 1875:45. First use of combination.

• **Content.** Two subspecies, *anthracinus* and *pluvialis*, are recognized.

• **Definition.** This species is a medium-sized skink (maximum SVL 65 mm), with smooth and overlapping scales. The legs are small but well developed, and overlap when adpressed in most specimens except gravid females. A single postmental is present, supralabials usually number 7 (5–8), infralabials usually 6 (5–7). Postnasals are absent. Four supraoculars are usually present, 3 in contact with the frontal scales. Superciliary scales usually number 8 (7–9) (Taylor 1935). Other meristic counts are as follows: ventral scales (counted along a midventral line between the postmental scale and the anterior edge of the vent) 44–69 (mean  $51.8 \pm 2.6$  SD,  $N = 302$ ); ventral scales between limbs 22–47 (mean  $32.7 \pm 2.5$ ,  $N = 308$ ); 4th toe lamellae 10–18 (mean  $13.2 \pm 1.4$ ,  $N = 310$ ); scale rows around midbody 22–30 (mean  $27.2 \pm 1.4$ ,  $N = 316$ ). Hatchlings are 21–24 mm SVL (mean  $22.8 \pm 1.0$  mm,  $N = 19$ ).

This is a shiny olive-gray to brown skink dorsally with a broad dark brown or black lateral stripe. 2–3 scales wide, on each side. This is bordered above by a thin white or greenish white line which originates above or at the posterior corner of the eye, and extends posteriorly through the ear along the length of the body onto the base of the tail. Below the lateral brown stripe is a narrow white line extending from the ear to the groin, bordered by a narrow dark area which fades into the gray or bluish-gray ventral coloration. Occasionally a faint middorsal stripe is present on the neck, rarely extending the length of the body, and never involving the head scales. Irregular light marks may be present on the sides of the head, the most prominent of which are reddish spots on the last 2 supralabials (Smith 1946a). Juveniles may be marked like the adults, or may be uniformly black with reddish spots on the head. Individuals from southern and western populations (*pluvialis*) have a bright blue tail.

• **Descriptions.** Descriptions more extensive than the original are by Cope (1898 [1900]), Smith and Smith (1952), and Taylor (1935). Other descriptions are in Barbour (1971), Collins (1993), Conant (1958, 1975), Conant and Collins (1991), Cooper (1986), Dundee and Rossman (1989), Green and Pauley (1987), Harding (1997), Martof et al. (1980), Mitchell (1994), Mount (1975), Sievert and Sievert (1993), Smith (1946a, 1950, 1956), and Surface (1908).

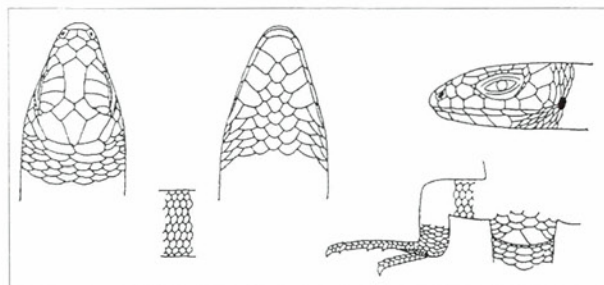
• **Illustrations.** Cope (1898 [1900]) and Smith and Smith (1952) provided line drawings of the head, neck, and pelvic area of both subspecies, and Taylor (1935) provided lateral and dorsal views of the head of the nominotypical form. Behler and King (1979), Cooper (1986), Green and Pauley (1987), Martof et al. (1980), Shaffer (1991), and Sievert and Sievert (1993) provided color photographs of *E. a. anthracinus*, and Ashton and Ashton (1985), Barbour (1971), Collins (1993), Garrett and Barker (1987), Green and Pauley (1987), Johnson (1987), and Sievert and Sievert (1993) provided color photographs of *E. a. pluvialis*. Other color illustrations appeared in Conant (1958), Conant and Collins (1991), Dundee and Rossman (1989), Harding (1997), and Palmer and Braswell (1995). A color photograph of a juvenile *E. a. anthracinus* appeared in Shaffer (1991), whereas Means



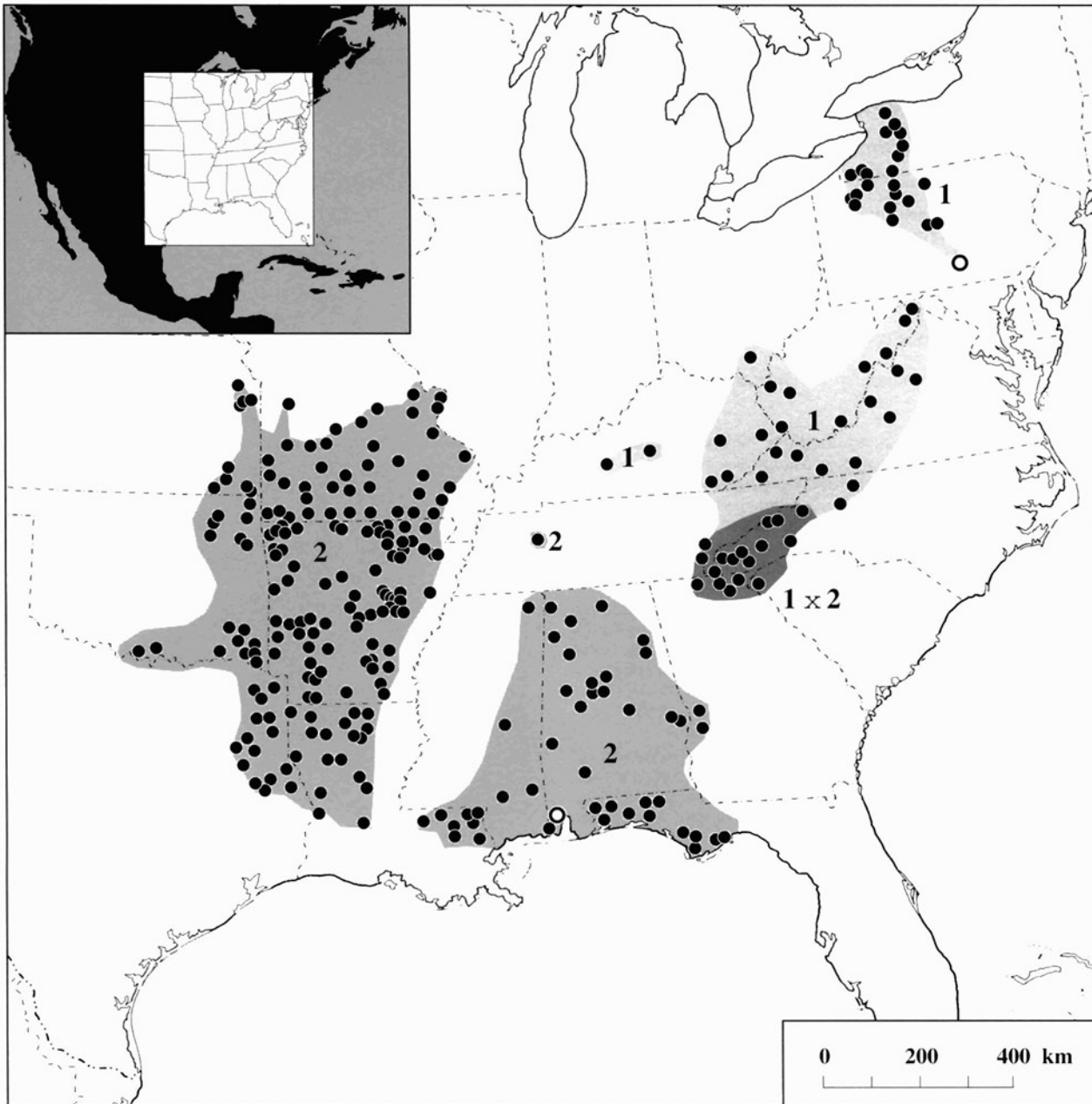
**Figure 1.** *Eumeces anthracinus* from Woods, Madison County, Kentucky (top) and from Jackson County, North Carolina. Photographs by Lynnette Sievert and Jack Dermid.

(1992) provided a black and white photograph of a juvenile *E. a. pluvialis*. McCoy (1985) and Green and Pauley (1987) provided black and white photographs of *E. a. anthracinus*. Black and white photographs of *E. a. pluvialis* appear in Anderson (1965), Collins (1993), Haltom (1931), Means (1978), Mount (1975), and Smith (1950, 1956). A line drawing of an intergrade appeared in Palmer and Braswell (1995). Clausen (1938) and Smith (1946a, 1950, 1956) provided black and white photographs of an adult female with eggs and hatchlings. Walley (1997) included a black and white photograph of an individual with a bifurcated tail. Conant and Collins (1991) and Johnson (1987) provided line drawings illustrating the postmental scale. Stokely (1950) provided a drawing of a wrist skeletal element.

• **Distribution.** The range of *Eumeces anthracinus* is disjunct. The species occurs from the Lake Ontario region of northwest-



**Figure 2.** *Eumeces anthracinus* from Pennsylvania (USNM 3138) (from Cope 1898 [1900]).



**Map.** Distribution of *Eumeces anthracinus*. Circles indicate type localities, dots mark other records.

ern New York southward through westcentral Pennsylvania, western Maryland, West Virginia, extreme southcentral Ohio, eastern Kentucky, western Virginia, northwestern North Carolina, eastern Tennessee, northern Georgia, Alabama, and the Florida panhandle westward through eastern Mississippi, Louisiana, and eastern Texas, and then northward through Arkansas and eastern Oklahoma to eastern Kansas and the southern two-thirds of Missouri. Isolated populations occur in central Kentucky and northwestern Tennessee.

This species usually inhabits mesic environments. It is commonly associated with damp wooded hillsides having an abundance of leaf litter and other cover objects such as logs and rocks. In the Florida panhandle the Coal Skink occurs near swamps or in bogs (Cooper 1986). In Pennsylvania these lizards can be found on open, rocky hillsides, clearcuts, and highway rights-of-way (A.C. Hulse, pers. comm.).

• **Fossil Record.** Peterson (1926) cited specimens from the Pleistocene of Frankstown Cave, Blair County, Pennsylvania; how-

ever, Hoffstetter (1944) and Estes (1983) reidentified this material as fossil anurans.

• **Pertinent Literature.** Comprehensive reviews of this species are included in Taylor (1935), Smith (1946a,b), and Smith and Smith (1952). Extensive bibliographies can be found in Carpenter and Krupa (1989), Dixon (1987), Enge and Dodd (1992), Redmond et al. (1990), and Vance (1985).

Remarks on ecological species associations are in Brooks (1965), Burt (1935), Fitch (1955), Jacob and Sanders (1980), and Lemay and Marsiglia (1952). Arboreal habits were noted by Dundee and Rossman (1989) and Walker (1963). Biogeographical studies are in Blair (1958), Blaney (1971), and Johnson (1958). Food habits were reported by Anderson (1965), Collins (1993), Dundee and Rossman (1989), Garrett and Barker (1987), Gloyd (1928), Hoffman (1944), Hurter (1911), Johnson (1987), Mitchell (1994), Palmer and Braswell (1995), and Smith (1950, 1956). Hamilton (1958) provided data on tecnophagy. Escape behavior was described by Mitchell (1994) and Palmer and

Braswell (1995). Reported predators include small mammals, snakes, and larger lizards (Collins 1974), whereas eggs have been destroyed by ants (Minton and Minton 1948).

Trauth (1994) conducted a histological study of the male reproductive cycle of *Eumeces anthracinus* and compared the cycle of both sexes with those of *E. fasciatus*. General accounts of reproduction have included Clausen (1938), Irwin (1982), Mitchell (1994), Mount (1975), Cooper (1986), and Palmer and Braswell (1995). Aspects of female reproduction have been described by Blackburn (1993), Collins (1974, 1993), and Dowling (1950). Anderson (1965), Cooper (1986), Dundee and Rossman (1989), Garrett and Barker (1987), Green and Pauley (1987), Gloyd (1928), Means (1992), Minton and Minton (1948), and Sexton (1984) have described eggs and clutch sizes, and Gloyd (1928) described hatchlings. Embryonic metabolism was studied by Thompson and Stewart (1997). Parental care has been noted by Collins (1974, 1993), Dowling (1950), Garrett and Barker (1987), Gloyd (1928), Minton and Minton (1948), and Shaffer (1991). Hillis (1975) reported hybridization with *Eumeces fasciatus*. Intergradation between subspecies has been reported by Blackburn (1993), Brown (1992), Jacob and Sanders (1980), Martof (1956), Mount (1975), Palmer and Braswell (1995), and Sanders and Jacob (1980).

Brattstrom (1965) reported preferred body temperature. Hunsaker and Johnson (1959) included this species in a study of ultraviolet light transmission through the body wall. Lynn and Zmich (1967) studied thyroid morphology, Stokely (1947) the pelvic girdle, and Griffith (1990) presented data on presacral vertebrae number.

Distributional and ecological notes are provided for the following states: Alabama (Burt 1937; Cooper 1986; Dowling 1950; Haltom 1931; Loding 1922; Mount 1975, 1986; Mount and Folkerts 1968); Arkansas (Burt 1935; Dellinger and Black 1938; Dowling 1956, 1957; Hurter and Strecker 1909; Strecker 1924); Florida (Ashton and Ashton 1985; Means 1978, 1992; Seibert 1964; Stevenson 1968 [1969]); Georgia (Ash 1945; Martof 1955, 1956; McCauley 1940; Meham 1960; Williamson and Moulis 1994); Kansas (Burrage 1962; Burt 1928, 1933; Clarke 1965; Collins 1974, 1993; Fleharty and Ittner 1967; Fleharty and Johnson 1974 [1975]; Gloyd 1928; Smith 1950, 1956); Kentucky (Barbour 1956, 1971; Barbour and Ernst 1971; Branson et al. 1981; Bush 1959; Funkhouser 1925; Hibbard 1936; Stephens and Sievert 1982); Louisiana (Dundee and Rossman 1989, Fouquette and Delahoussaye 1966, Strecker and Frierson 1926, Walker 1963); Maryland (Harris 1975, Lemay and Marsiglia 1952, Miller 1984); Mississippi (Boyd and Vickers 1963, Burt 1937, Cliburn 1959, Cook 1943, Smith and List 1955); Missouri (Anderson 1965; Dowling 1956; Essner et al. 1995; Greene and Wakeman 1962; Hurter 1911; Johnson 1987; Johnson and Powell 1988; Minton and Minton 1948; Powell 1994; Powell et al. 1993, 1994, 1995, 1996; Sexton 1984); New York (Bishop 1918; Brimley 1926; Clausen 1938, 1943; Stewart 1961; Wright 1919); North Carolina (Braswell 1977, Brown 1992, Burt 1937, Martof et al. 1980, Palmer and Braswell 1995); Ohio (Parker 1972); Oklahoma (Black et al. 1979; Carpenter 1955, 1957; Force 1930; Lardie 1982, 1985; McCoy 1960; Trowbridge 1937; Webb 1970); Pennsylvania (Hulse and Hulse 1992; McCoy 1982, 1985; Netting 1930; Roddy 1928; Shaffer 1991; Surface 1908; Swanson 1952); Tennessee (Ash 1945, Johnson 1958, Sanders and Jacob 1980, Sinclair 1965); Texas (Brown 1951; Burkett 1964; Dixon 1987; Rakowitz et al. 1983; Smith and Buechner 1947; Tinkle and Curtis 1951; Webb and Packard 1961); Virginia (Hoffman 1944, 1945, 1986; Martof et al. 1980; Mitchell 1994; Russ 1973; Telford 1955; Tobey 1985); West Virginia (Green and Pauley 1987). Smith (1961) listed *Eumeces anthracinus* as probably occurring in Illinois.

• **Remarks.** McCoy (1982) was unable to locate the type locality reported by Baird (1850). He suggested that South Mountain, which is near Carlisle and a favorite collecting locality of Baird's, was more likely to be the actual type locality.

• **Etymology.** The name *anthracinus* is derived from the Greek word *anthraco*, meaning "coal," and the Latin suffix *-inus*, meaning "pertaining to," in reference to the presence "on each side a

broad stripe of anthracite black" in the type specimens (Baird 1850). The name *pluvialis* (Latin) means "rain-bringing" or "belonging to the rain;" Cope's (1880) intended meaning is obscure.

### 1. *Eumeces anthracinus anthracinus* (Baird) Northern Coal Skink

*Plestiodon anthracinus* Baird 1850:294. See species synonymy. *Eumeces a[nthracinus]. anthracinus*: Smith 1946b:87. First use of trinomial (see Remarks).

• **Definition.** Scale rows at midbody number 23–28 (mean 25.2  $\pm$  1.3, N = 59); scales from postmental to vent 48–57 (mean 51.1  $\pm$  2.2, N = 60); scales between limb insertions 28–39 (mean 33.3  $\pm$  2.4, N = 64). Supralabials number 6–7. The dorsal color pattern consists of a broad, conspicuous dark lateral band on each side of body, bordered by a light stripe both above and below, the lower extending anteriorly through the ear to the loreal scale. Occasionally a middorsal light stripe is present; if so, it is usually less conspicuous than the dorsolateral stripes. Occasional melanistic specimens are known. The juvenile color pattern is similar to that of adults.

• **Remarks.** Taylor (1935) explicitly treated *Eumeces anthracinus* (Baird) and *Eumeces pluvialis* Cope as conspecific, but did not employ a formal trinomial for either form.

### 2. *Eumeces anthracinus pluvialis* Cope Southern Coal Skink

*Eumeces anthracinus* var.: Cope 1877 [1878]:64.  
*Eumeces pluvialis* Cope 1880:19. Type locality, "near Mobile, [Mobile Co.,] Alabama." Neotype, National Museum of Natural History (USNM) 75291, collected by H.P. Loding, date of collection unknown (cataloged 5 July 1928)(not examined by author). See Remarks.

*Plestiodon pluvialis*: Stejneger and Barbour 1917:71.  
*Eumeces anthracinus pluvialis*: Smith 1946b:87. First use of trinomial.

• **Definition.** Scale rows at midbody number 24–30 (mean 27.6  $\pm$  0.9, N = 253); scales from postmental to vent 44–64 (mean 51.9  $\pm$  2.5, N = 242); scales between limb insertions 28–47 (mean 32.8  $\pm$  2.3, N = 242). Supralabials usually number 7, occasionally 6, and have light centers which contrast with the dark pigmented sutures between them, producing a spotted appearance. A continuous dorsolateral light stripe extends posteriorly on each side from the posterior supralabials. The dorsum frequently has dark stripes or rows of spots between the dorsolateral light stripes. Juveniles are dark, without evidence of light markings, and have a blue tail. Newly hatched individuals have light infralabial, rostral, mental, and postmental scales in sharp contrast to the dark body color.

• **Remarks.** Taylor (1935) designated USNM 75291 (then the only known extant topotype) as neotype, an action with which Cochran (1961) and Smith and Smith (1952) agreed.

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