

QUATERNARY OCCURRENCE OF THE FISHER, *MARTES PENNANTI*, IN INDIANA

RONALD L. RICHARDS
Indiana State Museum
Department of Natural Resources
202 North Alabama Street
Indianapolis, Indiana 46204

INTRODUCTION

The fisher (*Martes pennanti*) is a relatively solitary carnivore that feeds primarily upon the snowshoe hare, mice, the porcupine, birds, carrion, and occasionally other carnivores and berries (Burt and Grossenheider, 1964; Powell, 1982). It especially prefers conifer forests but also occurs in mixed conifer/hardwood and open hardwood forests that maintain continuous overhead cover (Powell, 1982). The fisher is typically found in dense lowland/wetland forests, where the canopy is high. It avoids nonforested areas (Powell, 1982). The fisher is distributed from northern British Columbia across Canada south of Hudson Bay to southeastern Quebec; it also occurs in the northwestern U.S., the Sierra Nevada and northern Rocky Mountains, the Great Lakes region, and New England (Anderson, 1970; Hall, 1981).

Presently the fisher does not occur in Indiana, but historic records document its presence prior to 1859. Records exist for Posey (1833), Wayne (1820), Hamilton (1859), and Allen (1811) counties (Anonymous, 1906; Mumford, 1969; Plummer, 1844; von Wied, 1841). The fisher was last seen in northern Illinois in the 1850's (Kennicott, 1855).

In more recent years, fisher remains have been recovered from natural and culturally derived bone accumulations. In 1946, a skull fragment with two molars was found "at the site of an old Indian village" in Ohio County, Indiana (Kirkpatrick and Conaway, 1948). A few years later a partial right dentary with a canine tooth was found in a dunes blowout in what is probably Porter County (Rand and Rand, 1951). Accumulating fisher records (Figure 1) were summarized by Hahn (1909), Lyon (1936), and Mumford (1969). Martin (1986) recently identified fisher bones representing a minimum of two individuals (2 R maxillae; 2 L, 1 R dentaries; L c; axis; L innominate) among the faunal remains at Fort Ouiatenon, an eighteenth century trading post in Tippecanoe County. Recovery of additional fisher material has led to the present report.

DESCRIPTIVE PALEOZOOLOGY

Verebrate nomenclature used in this report follows Banks, *et al.* (1987). Abbreviations used are as follows: L, R, left, right; I,C,P,M,i,c,p,m, upper, and lower incisor, canine, premolar, and molar, respectively; and B.P., Before Present (A.D. 1950).

Fisher remains have been identified from three late Pleistocene localities in Harrison, Crawford, and Daviess Counties (Figures 1-3).

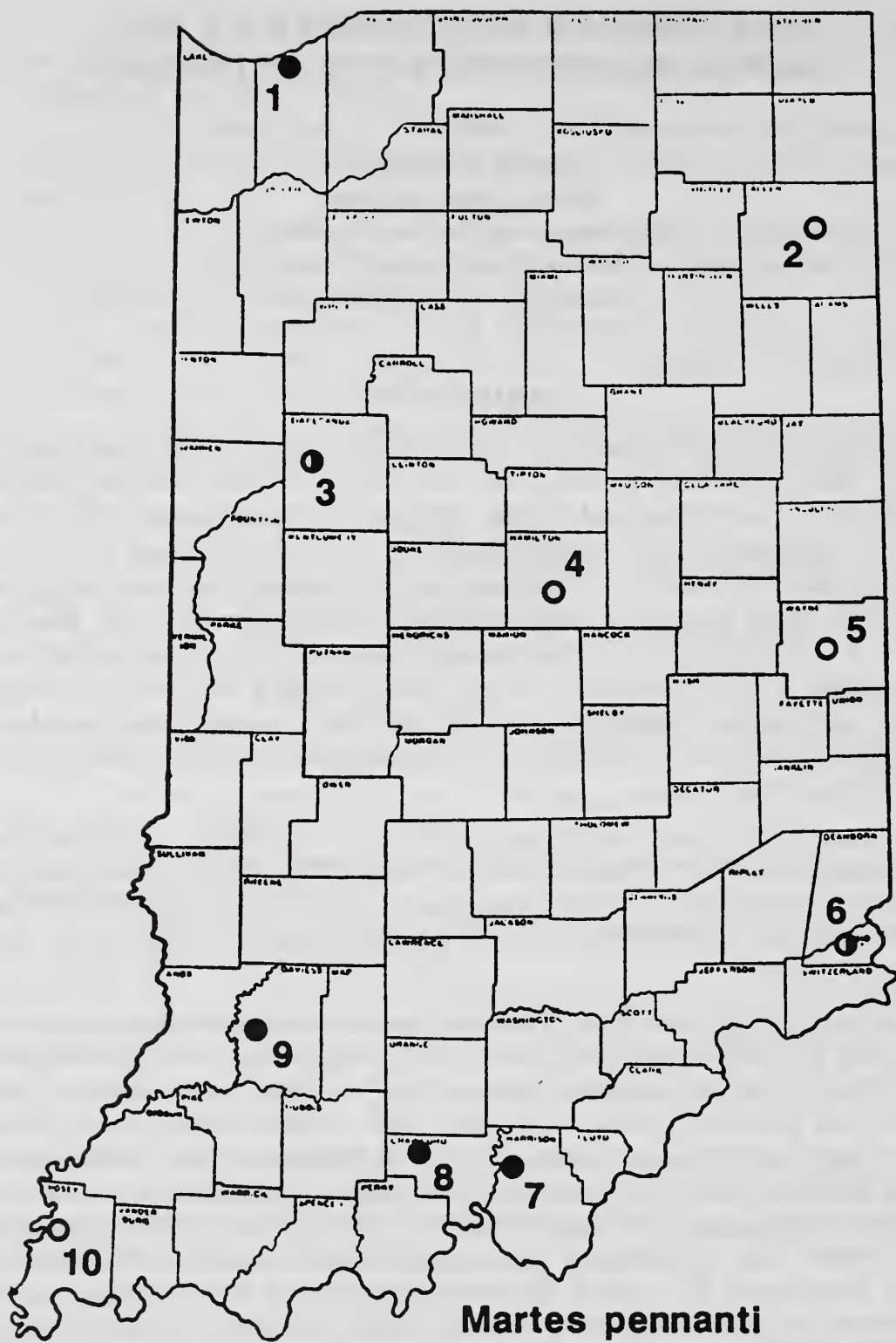


FIGURE 1. Late Pleistocene, Holocene, and historic records of the fisher (*Martes pennanti*) in Indiana. Solid circles represent paleontological localities; eclipsed circles represent archaeological sites, and hollow circles represent historic records. Sites identified include: 1) Dunes, probably Porter Co. (Rand and Rand, 1951); 2) Fort Wayne trading post, Allen County, 1811 (Mumford, 1969); 3) Fort Ouiatenon, Tippecanoe County (Martin, 1986); 4) Fur dealer, Hamilton County, 1859 (Anonymous, 1906); 5) Wayne County, 1820 (Plummer, 1844); 6) Indian village site, Ohio County (Kirkpatrick and Conaway, 1948); 7) King Leo Cave, Harrison County; 8) Megenity Peccary Cave, Crawford County; 9) Prairie Creek Site, Daviess County; 10) New Harmony, Posey County, 1833 (von Wied, 1841).



FIGURE 2. Left male (below) and right female dentaries of the fisher (*Martes pennanti*), Megenity Peccary Cave, Crawford County, Indiana. Scale in millimeters and centimeters.

LOCALITY 1

King Leo Cave (Depauw Quadrangle) Harrison County, Indiana.

Materials. Incomplete skeleton of a large male: partial L dentary with m1 (heel) and m2; L c; partial R dentary with c, pl and p2; R m1; R m2; C root; axis; 2 cervical, 3 thoracic, 1 lumbar, and 5 caudal vertebrae; 11 fragmented ribs; manubrium; 5 sternabrae; L radius; fibula, proximal end; R calcaneum; R astragalus; L, R magna; R scapholunar; cuboid; 13 metapodials; 4 proximal, 5 medial, 14 distal phalanges; patella; 5 sesamoids; miscellaneous fragments (Figure 3B).

Occurrence. Bones occurred within a 10-20 cm thick silt deposit on the bedrock floor of an abandoned stream channel deep within the cave (probable old entrance, now closed, 77m away).

Important associations. Extinct: *Bootherium bombifrons*, Harlan's muskox. Extralimital: *Clethrionomys gapperi*, southern red-backed vole; *Phenacomys* cf. *P. intermedius*, heather vole.

Comments. Deposit is undated, but presence of extinct and extralimital boreal taxa indicate Late Pleistocene age. Many of the small mammal bones in the deposit are splintered and crusted with a white, chalky mass, probably representing the scat of a carnivore, possibly fisher. The cave fauna is repositied at the Indiana State Museum.

Published records. Richards, 1984, 1986, 1991.

LOCALITY 2

Megenity Peccary Cave (Taswell Quadrangle) Crawford County, Indiana.



FIGURE 3. Selected Late Pleistocene and Holocene remains of the fisher (*Martes pennanti*). Scale in millimeters and centimeters. **A.** Prairie Creek Site, Daviess County, Indiana (from left to right): L femur, L maxilla (top), L maxilla + premaxilla; L humerus, proximal end; R humerus. Left humerus is of Holocene age. R humerus is female; all other elements are male, Late Pleistocene age. **B.** King Leo Cave, Harrison County, Indiana; all from one Late Pleistocene male; top row (left to right): L radius, 3 metapodials, axis, R calcaneum, R astragalus; bottom row: partial R dentary, partial L dentary.

Materials. Unit 18B: L dentary with c-m1 (male), lacking posterior portion of ramus. Test trench: R dentary with c-m1 (female), lacking posterior and inferior portions of ramus (Figure 2).

Occurrence. Both elements recovered from floor sediments in the "Peccary Room" below a 4.6 m drop, 42.7 m from the present entrance. Male jaw occurred in sediments of Unit 18B (10-20 cm below surface), in association with two skeletons of an extinct peccary. Female jaw from the test trench also was probably associated with peccary.

Important associations. Extinct: *Platygonus compressus*, flat-headed peccary. Extralimital: Unit 18B and B-level strata of adjacent units: *Geomys bur-sarius* (Plains pocket gopher); *Phenacomys* cf. *P. intermedius* (heather vole).

Comments. Radiocarbon dating of peccary bone collagen (Units 17B, 18B, 19B) indicated an age of $30,880 \pm 500$ B.P. (Beta-24801). Extralimital species suggest a mixture of boreal forest and open grassland during deposition of those units. Megentry Peccary Cave is currently under excavation and all materials are reposited at the Indiana State Museum.

Published records. Richards, 1987, 1988.

LOCALITY 3

Prairie Creek Site (Washington Quadrangle) Daviess County, Indiana.

Materials. Zone D, Late Pleistocene: L maxilla with P2-P4 (male, 794/1); L maxilla + premaxilla with I3, P2 and P4 (male, 513/1); R C (male, 513/4); R humerus (female, 1497/1); L femur (male, 513/2). Zone C, Late Pleistocene/Holocene mixture: L M1 (218/1); L c (male, 237/1). Zone B, Holocene: L dentary, condyle area (male, 214/2); L humerus, proximal end (male, 211/3); R calcaneum (male, 229/1; Figure 3A). Additional material is questionably referred to fisher.

Occurrence. Zone D represents alluvial redeposition of bones and sediments flushed from a Late Pleistocene lake bed that had accumulated 14,000-15,000 years before present, with an available radiocarbon date of $14,010 \pm 140$ B.P. (P.J. Munson, pers. comm). Zone B represents Holocene accumulation (approximately 4,140-2,880 B.P.) in the bed of Prairie Creek. Zone C is a mixture of Zones D and B.

Important associations. An extensive fauna that includes many extinct and extralimital taxa is under study by Munson, Parmalee, Holman, Richards, and others.

Comments. Tomak (1975) identified *Martes* remains from the original Prairie Creek faunal sample but did not refer them to species. The fisher materials discussed above, and most of the fauna, are maintained at the Glen A. Black Laboratory of Archaeology, Bloomington, Indiana.

Published records. Richards, 1984, 1986, 1993; Tomak, 1975, 1982.

DISCUSSION

The fisher is now known to have inhabited Indiana during Late Pleistocene, mid to late Holocene, and historic times. Fisher bones have accumulated both in naturally formed as well as in culturally generated deposits. Moreover, its remains have been associated with those of now extinct mammals and with bones of such

boreal forest species as *Phenacomys intermedius* (heather vole) and *Clethrionomys gapperi* (southern red-backed vole), which have not inhabited Indiana for thousands of years (Richards, 1986) as well as with remains of *Geomys bursarius* (Plains pocket gopher), which today inhabits relatively treeless areas (Mumford, 1969). Many Late Pleistocene faunas are composed of species that do not occur together today and that appear to be ecologically incompatible (Graham and Mead, 1987). The fisher appears more-often-than-not to have been a part of Indiana's fauna during the environmental change of Late Pleistocene and Holocene times, though it was scarcely noted in historic times. This is also the scenario in other States south of the fisher's present range. Fossils have been recovered from at least one Middle and ten Late Pleistocene localities in seven other states (Anderson, 1970): Arkansas: Conard Fissure, Newton County (Middle Pleistocene age; Brown, 1908); Peccary Cave, Newton County (*fide*; Kurten and Anderson, 1980); Georgia: Ladds Quarry, Bartow County (Ray, 1967); Missouri: Bat Cave, Pulaski County (Hawksley, *et al.*, 1973); Brynjulfson Cave I, Boone County (Parmalee and Oesch, 1972); Ohio: Carter, Darke County (Kurten and Anderson, 1980); Pennsylvania: New Paris No. 4, Bedford County (Guilday, *et al.*, 1964); Tennessee: Baker Bluff Cave, Sullivan County (Guilday, *et al.*, 1978); Robinson Cave, Overton County (Guilday, *et al.*, 1969); Virginia: Natural Chimneys, Augusta County (Guilday, 1962); Straight Canyon Fissure, Franklin County (Anderson, 1970, 1984).

The fisher has been recovered from at least 41 Holocene sites (primarily archaeological) in 14 other states: Alabama: Laws (Barkalow, 1961); Georgia: Etowah (Parmalee, 1960); Illinois (Purdue and Styles, 1986): Cahokia (Parmalee, 1958), Crawford Farm (Parmalee, 1960a, 1964), Laurens (Martin, 1984), Pabst (Lewis, 1979), Zimmerman (Rogers, 1975), and name unavailable, Cass County (Parmalee, 1960a); Iowa: Rock Run (Semken, 1983); Kentucky: Indian Knoll (Cleland, 1966; Webb, 1946); Michigan: Schuitz (Cleland, 1966); Minnesota: Bryan (Lunkens, 1963); Missouri: Arnold Research Cave (Parmalee, 1971), and Graham Cave (Parmalee, 1971); New York: Kipp Island (Cleland, 1966), Nahorl, Sylvan Lake (Anderson, 1970) and Wilson Sand Hill (Cleland, 1966); Ohio: Anderson, Baum, Cramer Village, Feurt, and Madisonville (Cleland, 1966); Pennsylvania: Eschelman (Cleland, 1966) and Meadowcroft (Guilday and Parmalee, 1982); Tennessee: Greenland, Watauga Cave (Anderson, 1970), and Westmoreland-Barber (Parmalee and Guilday, 1966); West Virginia: Buffalo (Anderson, 1970), Globe Hill (Guilday, 1956) and Johnston (Cleland, 1966); Wisconsin: Atztalan (Parmalee, 1960b), Bell (Parmalee, 1963), Bornick (Gibbon, 1971), Durst Rockshelter (Parmalee, 1960c), and Raddatz Rockshelter (Parmalee, 1959). Anderson (1970) lists several sites, though not by name.

In the eastern United States, the southern range of the fisher has retracted northward from Late Pleistocene glacial maxima through Late Holocene times to the historic period, after which it suffered a dramatic range reduction. Hall (1981) presents the historic (often 19th century) and Semken (1983) the present (for the eastern United States) distribution of the fisher.

Studies of Late Pleistocene and Holocene vertebrate faunas suggest that each species responds to climatic change according to its own "individualistic" physiological tolerances and ability to interface with varying suites of food, arrays of predators, types of habitat, and other taxa competing for a similar niche (Graham, 1984; King and Graham, 1981). During environmental change, animal ranges

will adjust as individual units, rather than as totally shifting communities. The fisher has undergone a general northward restriction of its southern range, since the cool, wet climates of the Late Pleistocene glacial episodes. Perhaps in marginal habitat, the "individualistic" tolerances of the fisher were flexible enough for the maintenance of populations south of its historic distribution up to Late Holocene times, where the animal was occasionally taken by Native Americans. The fisher is not abundant in its current range (Powell, 1982) and during the historic period, already sparse populations were apparently reduced to critically low numbers of individuals. The pressure of the fur and logging industries during the late nineteenth and early twentieth century extirpated many populations in the United States and eastern Canada. Since then, there has been some recovery to former densities (deVos, 1964; Powell, 1982). The fisher was eliminated from Indiana's historic fauna by hunting, trapping, and reducing the habitat for what appears to have been an already critically low number of individuals at the tail end of a long-term, climatically-controlled restriction of its southern range.

ACKNOWLEDGMENTS

I thank William R. Adams, Indiana University Ethnozoology Laboratory, Bloomington, for the loan of comparative material of *Martes pennanti*. Patrick J. Munson arranged for loan of the Prairie Creek materials from the Glenn A. Black Laboratory of Archaeology, Bloomington. Field recovery of the King Leo Cave materials was aided by Gordon Lindamood, D. Bert Haddix, John Linn, Richard Cornell, Howard Ely, Ted Sparks, and Dave Rieger. Indiana State Museum staff and volunteers participated in fieldwork at the Megenity Peccary Cave, and the materials recovered were donated to the Museum by owners Victor and Douglas Megenity. Dave Rieger produced Figures 1-3. Bill N. McKnight, Indiana State Museum, pre-edited, and Carol Graham typed the manuscript.

LITERATURE CITED

- Anderson, E. 1970. Quaternary evolution of the genus *Martes* (Carnivora, Mustelidae). *Acta. Zool. Fennica* 130: 1-132.
- . 1984. Review of the small carnivores of North America during the last 3.5 million years. In: H.H. Genoways and M.R. Dawson (Eds), *Contributions in Quaternary Vertebrate Paleontology: A Volume in Memorial to John E. Guilday*, pp. 257-266, Carnegie Mus. Natur. Hist. Spec. Pub. 8, 538 pp.
- Anonymous. 1906. Wild animals of Indiana. *Indiana Mag. Hist.* 2: 13-16.
- Banks, R.C., R.W. McDiarmid, and A.L. Gardner. 1987. Checklist of vertebrates of the United States, the U.S. Territories, and Canada. U.S. Dep. Inter. Fish Wildl. Serv. Res. Pub. 166, 79 pp.
- Barkalow, F.S. 1961. The porcupine and fisher in Alabama archaeological sites. *J. Mammal.* 42(4): 544-545.
- Brown, B. 1908. The Conard Fissure, a Pleistocene bone deposit in northern Arkansas: With description of two new genera and twenty new species of mammals. *Mem. Amer. Mus. Natur. Hist.* 9(4): 157-208.
- Burt, W.H. and R.P. Grossenheider. 1964. A field guide to the mammals. Houghton Mifflin Co., Boston, 284 pp.
- Cleland, C.E. 1966. The prehistoric animal ecology and ethnozoology of the Upper Great Lakes Region. *Univ. Michigan Mus. Anthropol. Anthropol. Pap.* 29, 294 pp.

- deVos, A. 1964. Range changes of mammals in the Great Lakes region. *Amer. Midl. Natur.* 71(1): 210-231.
- Gibbon, G. 1971. The Bornick site: A Grand River phase Oneota site in Marquette County. *Wisconsin Archaeol.* 52: 85-137.
- Graham, R.W. 1984. Paleoenvironmental implications of the Quaternary distribution of the eastern chipmunk (*Tamias striatus*) in central Texas. *Quat. Res.* 21: 111-114.
- _____ and J.I. Mead. 1987. Environmental fluctuations and evolution of mammalian faunas during the last deglaciation in North America. In: W.F. Ruddiman and H.E. Wright, Jr. (Eds.), *North America and Adjacent Oceans During the Last Deglaciation*, pp. 371-402, Geol. Soc. Amer., Geol. N. Amer. K-3.
- Guilday, J.E. 1956. Archaeological evidence of the fisher in West Virginia. *J. Mammal.* 37: 287.
- _____. 1962. The Pleistocene local fauna of the Natural Chimneys, Augusta County, Virginia. *Ann. Carnegie Mus.* 36: 87-122.
- _____, H.W. Hamilton, E. Anderson, and P.W. Parmalee. 1978. The Baker Bluff Cave deposit, Tennessee, and the Late Pleistocene faunal gradient. *Bull. Carnegie Mus. Natur. Hist.* 11, 67 pp.
- _____, _____, and A.D. McCrady. 1969. The Pleistocene vertebrate fauna of Robinson Cave, Overton County, Tennessee. *Palaeovertebrata* 2: 25-75.
- _____, P.S. Martin, and A.D. McCrady. 1964. New Paris No. 4: A Pleistocene cave deposit in Bedford County, Pennsylvania. *Bull. Nat. Speleol. Soc.* 26(4): 121-194.
- _____ and P.W. Parmalee. 1982. Vertebrate faunal remains from Meadowcroft Rockshelter, Washington County, Pennsylvania; Summary and interpretation. In: R.C. Carlisle and J.M. Adovasio (Eds.), *Meadowcroft: Collected Papers on the Archaeology of Meadowcroft Rockshelter and the Cross Creek Drainage*, Soc. Amer. Archaeol., Minneapolis.
- Hahn, W.L. 1909. The mammals of Indiana. 33rd Ann. Rep. Indiana Dep. Geol. Natur. Res., pp. 417-654, 659-663.
- Hall, E.R. 1981. The mammals of North America, 2nd ed. John Wiley and Sons, New York, 1181 pp.
- Hawksley, O., J.F. Reynolds, and R.L. Foley. 1973. Pleistocene vertebrate fauna of Bat Cave, Pulaski County, Missouri. *Bull. Nat. Speleol. Soc.* 35(3): 61-87.
- Kennicott, R. 1855. Catalogue of animals observed in Cook County, Illinois. *Trans. Illinois State Agr. Soc.* 1: 57-580.
- King, F.B. and R.W. Graham. 1981. Effects of ecological and paleoecological patterns on subsistence and paleoenvironmental reconstructions. *Amer. Antiq.* 46(1): 128-142.
- Kirkpatrick, C.M. and C.H. Conaway. 1948. Some notes on Indiana mammals. *Amer. Midl. Natur.* 39(1): 128-136.
- Kurten, B. and E. Anderson. 1980. Pleistocene mammals of North America. Columbia Univ. Press, New York, 442 pp.
- Lewis, R.B. 1979. Hunter-gatherer foraging: Some theoretical explorations and archaeological tests. Ph.D. Dissertation, Univ. Illinois, Urbana 255 pp.
- Lunkens, P.W. 1963. Some ethnozoological implications of mammalian faunas from Minnesota archaeological sites. Ph.D. Dissertation, Univ. Minnesota, Minneapolis.

- Lyon, M.W., Jr. 1936. Mammals of Indiana. *Amer. Midl. Natur.* 17 (1): 1-384.
- Martin, T.J. 1984. Animal remains from Fort de Chartes I, Randolph County, Illinois: 1983 excavations, Appendix. In: E.B. Jelks and C.J. Ekberg (Eds.), *Archaeological Explorations at the Laurens Site (11-R125)*, Randolph County, Illinois, pp. 1-34, Rep. Illinois Dep. Conserv., Springfield, 83 pp.
- _____. 1986. A faunal analysis of Fort Ouiatenon, an eighteenth century trading post in the Wabash Valley of Indiana. Ph.D. Dissertation, Michigan State Univ., East Lansing, 520 pp.
- Mumford, R.E. 1969. Distribution of the mammals of Indiana. *Indiana Acad. Sci. Monogr.* 1, 114 pp.
- Parmalee, P.W. 1958. Evidence of the fisher in central Illinois. *J. Mammal.* 39(1): 153.
- _____. 1959. Animal remains from the Raddatz Rockshelter, SK 5, Wisconsin. *Wisconsin Archaeol.* 40: 83-90.
- _____. 1960. A prehistoric record of the fisher in Georgia. *J. Mammal.* 41(3): 409-410.
- _____. 1960a. Additional fisher records from Illinois. *Trans. Illinois Acad. Sci.* 53: 48-49.
- _____. 1960b. Animal remains from the Aztlalan site, Jefferson County, Wisconsin. *Wisconsin Archaeol.* 41: 1-10.
- _____. 1960c. Animal remains from the Durst Rock Shelter, Sauk County, Wisconsin. *Wisconsin Archaeol.* 41: 11-17.
- _____. 1963. Vertebrate remains from the Bell site, Winnebago County, Wisconsin. *Wisconsin Archaeol.* 44: 58-69.
- _____. 1964. Vertebrate remains from an historic archaeological site in Rock Island County, Illinois. *Trans. Illinois Acad. Sci.* 57: 167-174.
- _____. 1971. Fisher and porcupine remains from cave deposits in Missouri. *Trans. Illinois Acad. Sci.* 64: 225-229.
- _____ and J.E. Guilday. 1966. A recent record of porcupine from Tennessee. *J. Tennessee Acad. Sci.* 41(3): 81-82.
- _____ and R.D. Oesch. 1972. Pleistocene and Recent faunas from the Brynjulfson Caves, Missouri. *Illinois State Mus. Rep. Invest.* 25., 52 pp.
- Plummer, J.T. 1844. Scraps in natural history (quadrupeds). *Amer. J. Sci. Arts* 46: 236-249.
- Powell, R.A. 1982. The fisher: Life history, ecology and behavior. Univ. Minnesota Press, Minneapolis.
- Purdue, J.R. and B.W. Styles. 1986. Dynamics of mammalian distribution in the Holocene of Illinois. *Illinois State Mus. Rep. Invest.* 41, 63 pp.
- Rand, A.L. and A.S. Rand. 1951. Mammal bones from dunes south of Lake Michigan. *Amer. Midl. Natur.* 46(3): 649-659.
- Ray, C.E. 1967. Pleistocene mammals from Ladds, Bartow County, Georgia. *Bull. Georgia Acad. Sci.* 25(3): 120-150.
- Richards, R.L. 1984. The Pleistocene vertebrate collection of the Indiana State Museum with a list of the extinct and extralocal Pleistocene vertebrates of Indiana. *Proc. Indiana Acad. Sci.* 93: 483-504.
- _____. 1986. Late Pleistocene remains of boreal voles (genera *Phenacomys* and *Clethrionomys*) from southern Indiana caves. *Proc. Indiana Acad. Sci.* 95: 537-546.
- _____. 1987. The Quaternary distribution of the eastern woodrat, *Neotoma floridana*, in Indiana. *Proc. Indiana Acad. Sci.* 96: 513-521.

- _____. 1988. Cave graves. *Outdoor Indiana* 53(7): 4-7.
- _____. 1991. New records of Harlan's muskox (*Bootherium bombifrons*) and associated fauna from the Late Pleistocene of Indiana. *Proc. Indiana Acad. Sci.* 99: 211-228.
- _____. 1993. Small mammals of the Prairie Creek Site, Daviess County, Indiana. *Proc. Indiana Acad. Sci.* 101: 245-278.
- Rogers, K. 1975. Faunal remains from the Zimmerman site, Appendix I. In: M. Brown, *The Zimmerman Site: Further Excavations At The Grand Village of Kaskaskia*, Illinois State Mus. Rep. Invest. 32.
- Semken, H.A., Jr. 1983. Holocene mammalian biogeography and climatic change in the eastern and central United States. In: H.E. Wright, Jr. (Ed.), *Late-Quaternary Environments of the United States, Volume 2—The Holocene*, pp. 182-207, Univ. Minnesota Press, Minneapolis, 277 pp.
- Tomak, C.H. 1975. Prairie Creek: A stratified site in southwestern Indiana. *Proc. Indiana Acad. Sci.* 84: 65-68.
- _____. 1982. *Dasypus bellus* and other extinct mammals from the Prairie Creek site. *J. Mammal.* 6(1): 158-160.
- Webb, W.S. 1946. Indian Knoll Site 2, Ohio County, Kentucky. *Univ. Kentucky Rep. Anthropol. Archaeol.* 4(3): 115-365.
- von Wied, M. 1841. Reise in das innere Nord-Amerika in den jahren 1832 bis 1834. Vol. 1 and 2. J. Hoelscher, Coblenz.