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Shippingport, Kentucky, is the type locality for the white-footed mouse, *Peromyscus leucopus* (Rafinesque, 1818) (Mammalia: Rodentia: Cricetidae)

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Abstract.—The white-footed mouse, *Musculus leucopus* Rafinesque, 1818 (= *Peromyscus leucopus*), is a common small mammal that is widespread in the eastern and central United States. Its abundance in many habitats renders it ecologically important, and its status as a reservoir for hantavirus and Lyme disease gives the species medical and economic significance. The recognition of two cytotypes and up to 17 morphological subspecies of *P. leucopus* indicates considerable variation in the species, and to understand this variation, it is important that the nominate subspecies be adequately defined so as to act as a standard for comparison. Relevant to this standard for the white-footed mouse is its type locality, which has generally been accepted to be either the vague "pine barrens of Kentucky" or the mouth of the Ohio River. Newly assembled information regarding the life and travels of Constantine S. Rafinesque, the North American naturalist who described *P. leucopus*, establishes that Rafinesque observed this species in July 1818 while visiting Shippingport, Kentucky, which is now within the city limits of Louisville, Jefferson Co., Kentucky. Shippingport is therefore the actual type locality for this species.

Keywords: Muroidea, Neotominae, systematics, taxonomy

One of the most common small mammals in the eastern United States is the white-footed mouse, *Musculus leucopus* Rafinesque, 1818b (= *Peromyscus leucopus*), which inhabits deciduous woods, forest edges, and shrubby habitats from Nova Scotia and North Carolina in the east to Montana and Arizona in the west, and from southern Canada to the Mexican states of Oaxaca and Yucatán. An abundant species in many of the habitats it occupies, the white-footed mouse is ecologically significant as an insect and seed predator, as well as prey for larger animals (Hall 1981, Lackey et al. 1985, Whitaker & Hamilton 1998). It is also important to human health as a reservoir species for the New York virus, a cause of hantavirus pulmonary syndrome in humans, and for the spirochaete *Borrelia burgdorferi*, which causes Lyme disease (Centers for Disease Control and Prevention 2002, Bunikis & Barbour 2005).

Studies of geographic variation in *Peromyscus leucopus* have led to recognition of 17 subspecies (Osgood 1909, Hall 1981, Lackey et al. 1985), and research on karyotypic, allozymic, and genomic variation has yielded evidence of two cytotypic populations with separate evolutionary histories (Baker et al. 1983, Nelson et al. 1987). This morphological and genetic variation—and the potential for variation in function—make it critical to document

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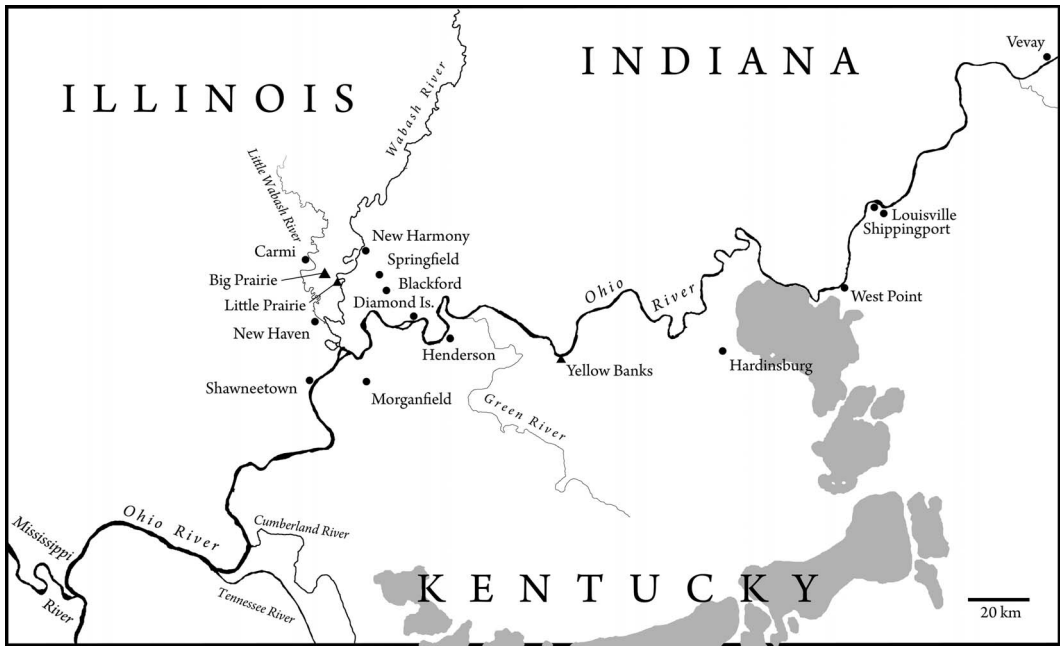


Fig. 1. Map of the lower Ohio River region, illustrating the locations of place names mentioned in the text. The villages of Blackford and Springfield no longer exist. Big Prairie and Little Prairie (solid triangles) were grasslands (Anonymous 1883). Yellow Banks was an 18th century frontier post at the mouth of a small creek (Cramer 1808, 1817). Gray shading indicates the approximate locations of the Kentucky "barrens" (after Baskin et al. 1994).

morphological, genetic, and functional aspects of the nominative subspecies as a comparative benchmark for this and closely related species. To do so requires knowledge of where the nominative subspecies occurs. Unfortunately, Constantine S. Rafinesque (CSR), the North American naturalist who named *Musculus leucopus*, did not provide explicit information regarding when or where he observed this species beyond noting it was one of ten new "wild rats of the western states" that he was describing (Rafinesque 1818b:446). Although he was cognizant of the increased importance that his fellow North American naturalists placed on having an example of a new species (Rafinesque 1818a, Boewe 2011b: Letter 125 CSR to Zaccheus Collins, 12 August 1818), he did not designate a type or preserve any specimens.

The type locality for *Musculus leucopus* has often been interpreted to be the vaguely generalized "pine barrens of Kentucky" (e.g., Rhoads 1903:79, Hall 1981:686), which probably corresponds to the Big Barrens Region of Kentucky and Tennessee (Baskin et al. 1994, 1999). The Big Barrens Region is dominated by extensive deep-soil, anthropogenically-maintained grasslands with stunted trees and shrubs interspersed with timber groves that occur in the Elizabethtown Plain and Pennyroyal Plain subsections of the Highland Rim Section of the Interior Low Plateaus Physiographic Province. The discontinuous, roughly horseshoe-shaped region (Fig. 1), also known as the Kentucky Karst Plain, is underlain by Mississippian-age limestone and is marked in some areas by numerous sinkholes (Baskin et al. 1994, 1999).

The interpretation of the Kentucky barrens as the type locality for *M. leucopus* most likely derived from Rafinesque's (1818b:446) description of the "Big-eye

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Table 1.—Partial itinerary of C. S. Rafinesque's western travels in 1818 as reconstructed from the archival sources footnoted.

Location	Arrival	Visit Duration	Documented Presence	Departure
New York City	n/a	n/a	n/a	end of April[1]
Philadelphia	April 22[2]	15 days[1]	—	May 7[3]
Lancaster, PA	May 7[3]	1 day[3]	—	May 8[3]
Pittsburgh, PA	May 25[3]	12 days[1]	June 1[4]	ca. June 7[2]
Gallipolis, OH	—	2 days[5]	—	—
Vevay, IN	—	2 days[5]	—	—
Louisville & Shippingport, KY	by July 4[3]	2 weeks[5,6] or 20 days[1]	July 4[3], 17[7], 20[7]	ca. July 20–24[2]
Henderson, KY	ca. July 22 – August 4[2]	8 days[1] or 3 weeks[8]	August 12[9]	August 12[3]
Mr. Alvis's [near Henderson]	August 12[3]	3 days[3]	—	August 15[3]
Diamond Island, IN[10]	—	en route	—	—
Blackford, IN[11]	—	en route	—	—
Springfield, IN[12]	—	en route	—	—
New Harmony, IN	August 15[3]	—	—	—
Little Prairie, IL[13]	August 18[3]	—	—	—
Big Prairie, IL[14]	August 20[3]	en route	—	August 20[3]
Carmi, IL	August 20[3]	1 day[3]	—	August 21[3]
Springfield, IN	August 21[3]	en route	—	August 21[3]
Blackford, IN	August 21[3]	en route	—	August 21[3]
Henderson, KY	—	—	—	August 29[3]
Green River, KY	—	en route[3]	—	—
Yellow Banks, KY	—	en route[3]	—	—
Hardinsburg, KY	—	en route[3]	—	—
"barrens"	—	en route[3]	—	—
West Point, KY	—	en route[3]	—	—
Louisville & Shippingport, KY[15]	Sept. 5[3]	15 days[1]	Sept. 12[9]	Sept. 19[3]
Lexington, KY	Sept. 22[3]	21 days[2]	Sept. 27[16]	Oct. 13[3]
Washington, KY	Oct. 15[3]	1 days[2]	—	Oct. 16[3]
Chillicothe, OH	Oct. 20[3]	en route[3]	—	Oct. 20[3]
Pittsburgh	Oct. 31[3]	—	—	—
Philadelphia	ca. Nov. 23[2]	n/a	Nov. 25[3]	n/a

[1] Boewe 2011b: Letter 130
[2] Approximate date calculated from information in the relevant sources
[3] SIA: RU 7250
[4] Boewe 2011b: Letter 121, CSR to Zaccheus Collins, 1 June 1818
[5] Rafinesque (1836)
[6] Boewe et al. 1987
[7] Boewe 2011b: Letters 122, 123, 124
[8] Audubon (1831)
[9] Boewe 2011b: Letter 125
[10] Diamond Island, Indiana, is now the town of West Franklin. Ferry service across the Ohio River was first established in 1807 (Leffel 1913).
[11] Blackford, Indiana, located in section 29 of Marrs Township, was laid out in 1815 as the seat of Posey Co. (Leffel 1913). The town no longer exists.
[12] Springfield, Indiana, located in the southwest corner of section 33, Lynn Township, served as the seat of Posey Co. from 1817 to 1825. The land for the town was donated by George Rapp, leader of the Rappite sect that established New Harmony (Leffel 1913). The town no longer exists.

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Table 1.—Continued.

[13] Little Prairie was a grassland in White County, Illinois, located near the Grand Chain Rapids of the Wabash River (Anonymous 1883). At the time of Rafinesque's visit, Illinois was still a territory. It became the 21st state in December 1818.

[14] Big Prairie was a grassland with scattered homesteads in Hawthorne Township, White County, Illinois (Anonymous 1883).

[15] The return trip by foot from Henderson to Louisville took 8 days according to Rafinesque's field notebook, or 10 days according to Rafinesque (1836).

[16] Boewe 2011b: Letter 126

jumping mouse," *Gerbillus megalops*, the first of the ten "wild rats of the western states" he described and the only one for which he provided anything close to a specific type locality: i.e., "in the barrens of Kentucky" (see also Osgood 1909:115). In the absence of information to the contrary, subsequent systematists reasoned that *M. leucopus* inhabited the same region. Rafinesque's (1818b:446) statement that another of his "wild rats," the "Brindled stamiter," *Cricetus fasciatus*, also "burrows in the barrens," may have reinforced the broader association of all ten species, including *M. leucopus*, with that region.

Because of the tentative nature of the type locality attributed to *M. leucopus*, and more explicitly, "to apply the name *leucopus* to the southern form of the group," Osgood (1909:115), in his comprehensive revision of *Peromyscus*, modified the type locality to "Western Kentucky; assumed to be near the mouth of the Ohio River" (Osgood, 1909:113). Although this change was ignored by some later authors (e.g., Hall & Kelson 1959, Hall 1981), "near mouth of Ohio River" was accepted as the type locality by Musser & Carleton (2005:1070).

Secondary determination of the type locality for *M. leucopus* is dependent on knowing the route and chronology of Rafinesque's 1818 exploration of the Ohio River region, during which he encountered the species. Unfortunately, no single contemporary document provides a complete account of Rafinesque's western travels. His extant publications and field notes, considered together with his recently compiled correspondence, however, make it possible to determine a credible time frame and location for his observation of *M. leucopus*, and thereby accurately fix the original type locality. Herein, I use these sources to argue that Rafinesque visited the "barrens of Kentucky" long after he first observed *M. leucopus*; that he never reached the mouth of the Ohio River; and that Shippingport, a village now within the limits of Louisville, Kentucky, is the correct type locality for *Musculus leucopus* Rafinesque, 1818b.

Materials and Methods

Because of the relevance of the timing of Rafinesque's 1818 trip down the Ohio River and to the "western states," I reconstructed his itinerary as closely as possible, focusing upon the date and location of his discovery of *Musculus leucopus* (Table 1). I studied Rafinesque's publications that resulted directly from this expedition (Rafinesque 1818a–d, 1819a–c, 1820); his autobiographies in English (Rafinesque 1836) and French (Boewe et al. 1987); his field notebook for his 1818 journey, preserved in the Smithsonian Institution Archives, Washington, D.C. (SIA: RU 7250: Constantine Samuel Rafinesque papers, 1815–1834 and undated: Box 1: Folder 3, Book 17; hereafter cited as SIA: RU 7250); and his correspondence during and after his western travels, now transcribed, compiled,

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and published on a compact disc (Boewe 2011b) that accompanies Boewe's (2011a) biography of Rafinesque. Transcriptions and translations of his letters are from this last compilation. Aside from their content, the correspondence is valuable because Rafinesque dated his letters and noted where they were written, thus providing a partial record of his movements. Particularly helpful to understanding his western journey are a partial itinerary in his field notebook and a letter from Rafinesque to his sister Georgette Louise Rafinesque Lanthois, who was living in France (Boewe 2011b: Letter 130, CSR to Georgette Rafinesque, 25 November 1818).

To understand transit times by boat from Pittsburgh, Pennsylvania, to Louisville, Kentucky, and from Louisville to Henderson (also called Hendersonville), Kentucky, I relied primarily on Smith & Swick (1997), who reprinted Thomas Rodney's 1803 trip down the Ohio River in a 30-foot bateau, a single-masted, flat-bottomed rowboat commonly used for travel along inland waterways in the early 19th century. I also consulted the sixth and ninth editions of Cramer's (1808, 1817) *The Navigator*, which was the primary guidebook to the Ohio River for western travelers and pioneers. Although river distances from Cramer (1808, 1817) are inaccurate, they may better reflect the early 18th century routes taken along the unchannelized course of the Ohio River. Ultimately, navigating any boat down the Ohio River depended upon numerous factors, among them the size and lading of the boat, travel habits (e.g., whether the boat traveled at night as well as by day) and experience of the crew, river level, wind direction, and other conditions (Cramer 1808, 1817). The 96-mile-long (154 km) leg of Rodney's September 1803 trip from Wheeling, West Virginia, to Louisville, Kentucky, for example, took 25 travel days during a time of low water level (Smith & Swick 1997), whereas, Cramer (1817) claimed that boats could pass the 1132.5 miles (1823 km) from Pittsburgh, Pennsylvania, to the mouth of the Ohio River in 15 days when water level was high, generally in the early spring.

Itinerary of Rafinesque's Western Travels in 1818

Rafinesque began his western journey from New York City at the end of April 1818, departing for Philadelphia, where he remained for 15 days before traveling to Lancaster, Pennsylvania, by coach on May 7 (Table 1). He continued onwards to Pittsburgh by foot the following day, arriving May 25 (Boewe 2011b: Letter 130). During a 12-day respite in Pittsburgh, Rafinesque and some "Frenchmen going to Illinois" together purchased a "flat covered boat" (Rafinesque 1836:54) or bateau (Boewe 2011b: Letter 130) to travel down the Ohio River.

The bateau left Pittsburgh approximately June 7. Regarding this leg of his trip, Rafinesque (1836:54) noted that the boat "floated slowly down the river, stopping every night" at towns and villages along the way (Boewe 2011b: Letter 130). "I was then at leasure [sic] to survey and explore, we had a smaller boat to land where we pleased, botanize and buy provisions. ... and I began to study the fishes which we caught or bought, making drawings, &c." (Rafinesque 1836:54–55). The party stopped for two days each in Gallipolis, Ohio, and in Vevay, Indiana. Rafinesque debarked at Cincinnati, Ohio, and walked overland to visit the botanist and physician Charles Wilkins Short at Northbend, Ohio, where Rafinesque subsequently reboarded the bateau (Rafinesque 1836). Rafinesque's field notebook (SIA: RU 7250) indicates that he was in Shippingport, Kentucky, on July 4, so his boat had traveled the 705 mi (1135 km) to Louisville, Kentucky, in $\leq$26 travel days, which is consistent with travel times recorded by

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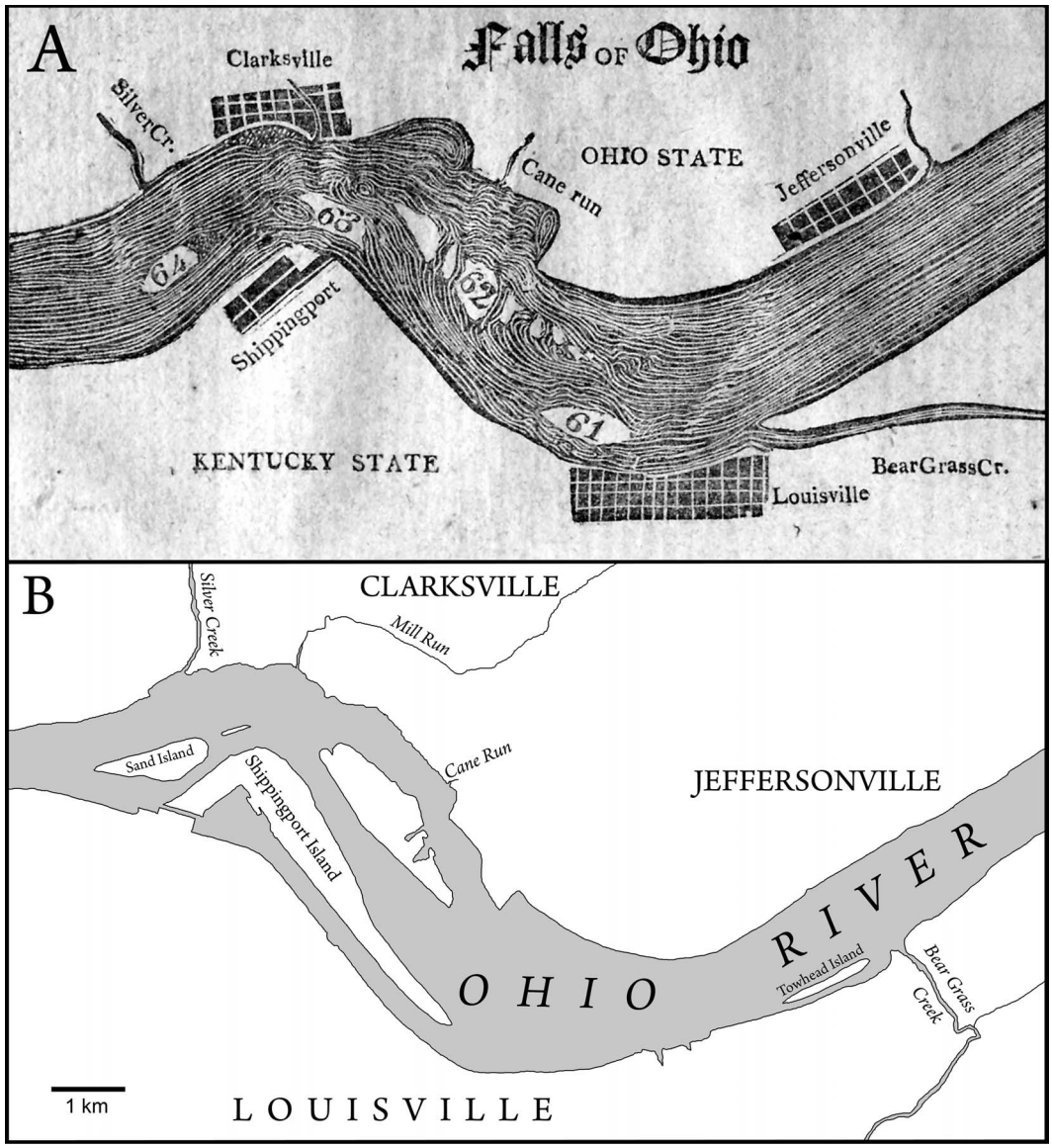


Fig. 2. Maps of the Falls of the Ohio River between Indiana and Kentucky: A, map from Cramer (1808:72) illustrating locations of Shippingport and Louisville at the time of Rafinesque's visit (Reproduced with permission of the Dibner Library of the History of Science and Technology, Smithsonian Institution Libraries, Washington, D.C.); B, map illustrating the modern layout of the region. Construction of the Louisville and Portland Canal in 1826–1830, which permitted shipping to bypass the falls, left Shippingport as an island. The course of Bear Grass Creek also was altered during the 19th century (Anonymous 1882). North is at the top of both images.

other early 19th-century Ohio River travelers (Smith & Swick 1997).

At Louisville, located at the head of the Falls of the Ohio (Fig. 2A), boats going downstream typically unloaded passengers and cargo and picked up a river pilot. The pilot was then responsible for guiding the unladen boat the 2 miles (3 km) through the falls to Shippingport, where the boats were reladen (Cramer 1808, 1817). The

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town of Louisville and the village of Shippingport are now within the incorporated limits of the present City of Louisville, Kentucky (Fig. 2B).

French-born brothers Louis Anastase Tarascon and John [Jean Antoine] Tarascon founded Shippingport on land they had purchased in 1803. There they controlled the docks where boats loaded and reloaded, and they operated a six-story, water-powered flour mill (Cramer 1817, Anonymous 1882, Kleber 2001). These "old friends" invited the French-speaking Rafinesque to stay in their home, and he remained there for two weeks (Rafinesque 1836:55, Boewe et al. 1987:60) or 20 days (Boewe 2011b: Letter 130). His presence in the area is documented by a letter written from Louisville on July 17 (Boewe 2011b: Letter 122, CSR to C. W. Short) and by two others from the Falls of the Ohio on July 20 (Boewe 2011b: Letter 123, CSR to Z. Collins; Letter 124, CSR to Samuel L. Mitchill), the latter of which was later published in *American Monthly Magazine and Critical Review* (Rafinesque 1818a). "After having explored the neighborhood of Louisville," Rafinesque (1836:55) left Shippingport, taking passage downriver in a commercial keelboat to Henderson, Kentucky (Fig. 1). Rafinesque's departure date from Shippingport is not recorded. Because letters to his colleagues generally summarized his most recent findings, he likely wrote them on or near the last day of his residence at a particular place. Hence, Rafinesque may have departed Shippingport as early as July 20, the date of his two letters from the Falls of the Ohio. The 243-mile (391 km) trip from Shippingport to Henderson took Rodney nine days (Smith & Swick 1997), but it may have taken Rafinesque longer, because the crew of the keelboat was engaged in trading at settlements along the way, and he later deemed it "too slow" (Rafinesque 1836:56, Boewe et al. 1987). Based on documentary evidence (Boewe 2011b: Letter 130; SIA: RU 7250), Rafinesque might have arrived in Henderson between July 22 and August 4, but taking into consideration the potential travel time, it was more likely between July 29 and August 4.

On arrival in Henderson, Rafinesque met the artist and natural historian John James Audubon (another native French-speaker), and he was invited to stay in Audubon's home. Rafinesque remained there for eight days (Boewe 2011b: Letter 130) or three weeks (Audubon 1836). This visit served as the inspiration for Audubon's popular (and probably embellished) tale, "The Eccentric Naturalist" (Audubon 1831). The first half of a letter to Z. Collins, summarizing Rafinesque's discoveries in Henderson, was written there on August 12 (Boewe 2011b: Letter 125).

Rafinesque departed Audubon's house on August 12 and went to Mr. Alvis' home on the outskirts of Henderson. After being delayed there by rain for two days (SIA: RU 7250), he borrowed a horse (Rafinesque 1836) on August 15 and rode to the Ohio River, crossing by ferry to the settlement of Diamond Island [now West Franklin; Leffel 1913], Indiana. He then rode via Blackford and Springfield, Indiana, arriving in the Rappite town of New Harmony [also Harmonie], Indiana, along the Wabash River (SIA: RU 7250). Here, (Rafinesque 1836:56) took time to "herborize in the meadows" with "Dr. Miller" [probably the botanist and physician Johann Christoph Müller, New Harmony's schoolmaster, musical director, and printer; Weer, 1954:261, Wilson 1964:113]. On August 18, Rafinesque crossed the Wabash River and traveled to Little Prairie in White County, Illinois, and on August 20, he passed through Big Prairie on his way to Carmi, Illinois, along the Little Wabash River. This town marks the approximate western extent of his Ohio River trip as documented by the itinerary in Rafinesque's field notebook. The following day, August 21, Rafinesque began his "return" (SIA: RU 7250), retracing his horse's steps via Springfield and Blackford, at which

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point he reached the bottom of a page in his notebook, and there is a gap of eight days in the itinerary. The continuation of the itinerary at the top of the next page is dated August 29, when he left Henderson for Louisville (SIA: RU 7250).

Rafinesque had time during the eight-day gap in his itinerary to travel west to the junction of the Ohio and Mississippi rivers (Fig. 1). On a separate page of the field notebook, there is a notation that suggests he considered traveling to Shawneetown, Illinois [also Shawanee Town], by way of New Haven, Illinois, and then on to Morganfield, Kentucky. Shawneetown would have been an obvious stopover on a trip to the mouth of the Ohio River, particularly considering the few settlements in between. To reach Shawneetown from Carmi, it would have been advantageous for Rafinesque to travel directly south (Fig. 1). When he left Carmi, however, his dated itinerary clearly indicates that he traveled east to Springfield and Blackford. Although it remains possible that Rafinesque subsequently turned southwest to Shawneetown, this would involve an unnecessarily longer, more circuitous route. He also would have had to travel much more rapidly than he had during his previous seven days. While a journey via Shawneetown to Morganfield or even to the mouth of the Ohio River was possible, there is no other indication in his field notebook that he traveled to any of those places—no itinerary and, uncharacteristically, no descriptions of any animals, plants, or mushrooms (aside from those attributable to other sources) from what would have been new regions of the country for him (SIA: RU 7250). Moreover, on the same page that he mentions Shawneetown, Rafinesque made notes regarding a trip north to Gibson County, Indiana, and a trip east to Cypressdale [also Cypress] in Vanderburgh County, Indiana, and returning to Henderson by way of the Ohio River ferry at the mouth of the Green River (SIA: RU 7250). There is no indication anywhere that he made either of those journeys.

In his autobiographies, written many years after his western excursion, Rafinesque (1836:56, see also Boewe et al. 1987:60) summarized the later stages of his trip through Indiana and Illinois, stating, "Crossing the Wabash, I entered Illinois and went to Shawneetown [now Old Shawneetown, Illinois] on the Ohio; whence I made a rapid excursion to the mouth of the Ohio, returning to Henderson by Morgantown [Morganfield]." When Rafinesque wrote to his sister from Philadelphia in November 1818 (Boewe 2011b: Letter 130), he made no mention of reaching the mouth of the Ohio: "de là je fis une excursion dans l'Etat des Illinois, et je revins à Hendersonville par Carmi et Shawneetown" ("from there [Harmony] I made a trip to the State of Illinois, and I returned to Hendersonville by Carmi and Shawneetown"). Even earlier, in a letter to Collins from the Falls of the Ohio on September 12, Rafinesque wrote: "I have visited the Wabash and Green river[s], the Prairies of Indiana and Illinois, the barrens of Kentucky, but want of time and the bad roads have prevented me from reaching the Mississip[p]i and Missouri [rivers]" (Boewe 2011b: Letter 125). In other words, he explicitly told his colleague that he had not reached the mouth of the Ohio River.

Whether he returned by way of Shawneetown and Morganfield, by way of Cypressdale, or by way of Diamond Island, Rafinesque was back in Henderson by August 29. "Having found the horse too fatiguing" (Rafinesque 1836:56), he presumably returned his borrowed mount and began a 10-day walk via Hardinsburg, Kentucky, to Louisville, where he arrived on September 5 (Rafinesque 1836, Boewe 2011b: Letter 130; SIA: RU 7250). It was during his hike between Hardinsburg and Louisville that he twice passed through portions of the barrens (Fig. 1; SIA: RU 7250; Boewe 2011b: Letter 130). After resting for 15 days at the Tarascon's home

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in Shippingport, Rafinesque traveled on foot and by carriage to Lexington, Kentucky. He subsequently took a wagon to Washington, Kentucky, then walked to Pittsburgh. By late November, Rafinesque had returned to Philadelphia (Rafinesque 1836, Boewe 2011b: Letter 130).

Rafinesque's perception of the success of his western adventure was summarized in a letter to C. W. Short on September 25 (Boewe 2011b: Letter126; for a more formal summary, see Rafinesque 1818d):

> The results of my labours during this Journey are the discovery of ab[ou]t. 25 New species of Bats, Rats & other Quadruped[s,] abt. 20 N Sp. of Birds, abt. 15 N Sp. of Snakes, Turtles, Lizards and other Reptiles, 64 N. Sp. of fishes of the Ohio! more than 80 N. Sp. of Shells, bivalve & univalve, fluviatile & terrestrial, besides some new Worm[s] and many fossils. And in Botany I have collected more than 600 sp. of Plants of which one tenth part at least are new.

Based on Ord's (1815) list of described North American vertebrates, Rafinesque's estimates of the numbers of his new species would potentially have increased known species of reptiles and nonmarine mammals in North America north of Mexico by 25%.

The Type Locality of *Musculus leucopus*

At the time Rafinesque described the ten new "wild rats of the western states," he also described nine bats, five snakes, and three genera and six species of fishes (Rafinesque 1818b). He provided a general geographical context for these species in his preface, stating, "I have visited since [July] the lower parts of the Ohio [River], the Wabash [River], Green River, Barrens, Prairies, and the states of Indiana, Illinois, &c." (Rafinesque 1818b:445), indicating that none of the species was observed during the early portion of his trip overland through Pennsylvania or along the upper part of the Ohio River.

The description of *Musculus leucopus* is the seventh of ten new "wild rats," a list of descriptions otherwise dominated by species considered by later mammalogists to be "imaginary" (Baird 1857:459) or "absolutely 'impossible'" (Osgood 1909:116). Rafinesque learned about most of these species during his visit with Audubon in Henderson (Rafinesque 1832). Audubon infamously described and sketched at least eleven species of invented fishes to Rafinesque as a prank (Jordan 1877a,b, Markle 1997). The credulous Rafinesque subsequently published them as real species (Rafinesque 1818b, 1819c, 1820). This context for the description of *M. leucopus* initially suggests that Rafinesque also first learned of the white-footed mouse when he was in Henderson and that it, too, could be an invention. Among the other nine species of "wild rats," however, eight were described in French in Rafinesque's field notebook (SIA: RU 7250), and seven of the descriptions are accompanied there by sketches that were probably based on descriptions and/or drawings by Audubon (Rafinesque 1832:61). *Musculus leucopus* is the only species not recorded anywhere in Rafinesque's field notebook, suggesting a different source for this species. Clearly aware of the "impossible" mammals described alongside *M. leucopus*, Osgood (1909:116), in his role as first revisor, nonetheless accepted the taxon as the oldest available name: "The applicability of Rafinesque's [1818b] description, however, is scarcely to be doubted."

In fact, Rafinesque had already observed *M. leucopus* prior to his August visit with Audubon. On July 20, he wrote a letter from "Louisville, Falls of the Ohio" to the president of the Lyceum of Natural History of New York (Boewe 2011b: Letter 124) that was subsequently published. While the primary function of this account was to describe a number of new genera and species of fishes, molluscs, and plants, Rafinesque (1818a:354) noted that he had also "discovered and described 3 new species [of Quadrupeds]: 1. *Musculus leucopus*; 2. *Gerbillus sylvaticus*; and, 3.

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Noctilio mystax, Raf." These three mammals were, in fact, not yet described in print (at least temporarily rendering the names *nomina nuda*), but this notice establishes that Rafinesque was already aware of their existence by July 20, when he was still in Shippingport. This correspondence transpired before he visited Henderson, before his overland trip to Indiana and Illinois, and before he traveled through the Big Barrens Region of Kentucky (Table 1).

Osgood's (1909) proposal that the type locality be considered the mouth of the Ohio River is not supported by documentary evidence. Rafinesque had already discovered *M. leucopus* prior to his visit to Illinois, and, moreover, as his contemporaneous correspondence attests, it is probable that he never made it as far west as the mouth of the Ohio River.

The timing of Rafinesque's initial report of the discovery of *M. leucopus* most certainly indicates that he observed this species between July 1 and July 20 in Shippingport, Kentucky, and I, therefore, restrict the type locality to Kentucky, Jefferson County, Shippingport [ca. 38°17′N, 85°47′W], which is now part of the City of Louisville. One might further speculate that the Tarascons' large flour mills with their stores of grains and processed flour in a what had only recently been the western frontier would be an appropriate place to find an omnivorous and granivorous mouse that commonly invades human habitations. Originally located on the southern bank of the Ohio River, Shippingport was transformed into an island by the construction of the Louisville and Portland Canal in 1826–1830, which permitted boats to bypass the falls (Anonymous 1882; see Fig. 2).

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