

# Kentucky Fisheries Bulletin No. 54

Bernard Carter, Director

## CHECKLIST AND DISTRIBUTION OF KENTUCKY AQUATIC GASTROPODS

Department of Fish and Wildlife Resources

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CHECKLIST AND DISTRIBUTION OF  
KENTUCKY AQUATIC GASTROPODS

by

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Excluding several unidentifiable species of Rafinesque (Baker, 1911) and considering the inroads of synonymy, the aquatic gastropod fauna of Kentucky contains 51 specific representatives distributed rather unequally through 21 genera in seven families. Fully one-third of the known fauna is comprised by pleurocerids, but this lopsidedness probably reflects the lack of collecting in many parts of the Commonwealth. Since most investigations of the Kentucky fauna have been conducted by scientists from institutions outside of the state a great deal remains to be known. It is hoped that this checklist will stimulate additional collecting from little-known river basins.

In the checklist which follows, I have included the synonymy for each species, insofar as possible, since much of the older literature utilizes

names no longer applicable for the forms involved. The data upon which this list is based has been gleaned from original field collecting and from the literature. In this regard, I thank Mrs. Horace B. Baker, manager of the Nautilus, for making some difficult-to-obtain literature available.

ANNOTATED LIST

FAMILY PLEUROCERIDAE

Anculosa praerosa (Say), 1824 MAP 1

Melania angulosa Menke, 1828

Melania cruentata Menke, 1828

Melania ovularis Menke, 1828

Melania cincinnatensis Lea, 1838

Melanopsis neritiformis Deshayes

Anculotus angulatus Conrad, 1834

Goniobasis abbreviata Lea

Price (1900) reported this species from Warren County, but this is probably a synonym of Lithasia obovata (see below)

Goniobasis costifera (Haldeman), 1841 MAP 2

Goniobasis curreyana (Lea), 1841 MAP 3

Goniobasis paupercula Lea, 1862

Goniobasis spillmanii Lea, 1862

Goniobasis cruda Lea, 1862

Goniobasis laqueata (Say), 1829 MAP 4

Melania obtusa Lea, 1841

Melania monozonalis Lea, 1841

Melania gracilis Lea, 1841

- Melania blanda Lea, 1841  
Melania nitens Lea, 1841  
Melania plicatula Lea, 1841  
Melania decora Lea, 1841  
Melania terebralis Lea, 1841  
Melania sculptilis Lea, 1841  
Melania nitida Lea, 1841  
Melania nodulosa Lea, 1841  
Melania deshayesiana Lea, 1842  
Melania substricta Haldeman, 1844  
Melania mutata Brot  
Melania athleta Anthony, 1854  
Melania paucicostata Anthony, 1860  
Melania deshayesiana Reeve, 1860  
Goniobasis olivella Lea, 1862  
Goniobasis medicocris Lea, 1862  
Goniobasis duttonii Lea, 1862  
Goniobasis viridicata Lea, 1862  
Goniobasis lindsleyi Lea, 1862  
Goniobasis sparus Lea, 1862  
Goniobasis cerea Lea, 1862  
Goniobasis ornatella Lea, 1862  
Goniobasis costulata Lea, 1841  
Goniobasis goodrichi Hinkley, 1920  
Goniobasis ebenum (Lea), 1841 MAP 5  
Melania dubia Lea, 1841 (in part)  
Melania dubiosa Lea, 1842 (in part)

Trypanostoma lyoni Lea, 1863

Goniobasis emeryensis Lea, 1864

Goniobasis nassula (Conrad), 1834

Reported from Warren County by Price (1900). This is an Alabama species, and Price's specimens were probably G. laqueata (see above).

Goniobasis plicata-striata Wetherby, 1876 MAP 6

Goniobasis semicarinata (Say), 1829 MAP 7

Melania exilis Haldeman, 1841

Melania kirtlandiana Lea, 1841

Melania babylonica Lea, 1841

Melania pulchella Anthony, 1850

Melania succinulata Anthony, 1850

Melania brevispira Anthony, 1850

Melania bicolorata Anthony, 1850

Melania iota Anthony, 1854

Melania angustispira Anthony, 1860

Melania angusta Reeve, 1860

Goniobasis ohioensis Lea, 1862

Goniobasis interlineata Anthony, 1865

Lithasia armigera (Say), 1821 MAP 8

Melania pallidula Anthony, 1854

Melania tuberculata Lea, 1831

Melania spixiana Lea, 1836

Melania nodata Reeve, 1861

Lithasia downiei Lea, 1862

Lithasia stygia Lea, 1829

Angitrema angulata Wetherby, 1876

- Lithasia geniculata Haldeman, 1840 MAP 9  
Melania corneola Anthony, 1860  
Melania vesicula Lea, 1861  
Eurycaelon umbonatum Lea, 1864
- Lithasia obovata (Say), 1829 MAP 10  
Melania depygis Say, 1829  
Melania gibbosa Lea, 1841  
Melania currilabris Anthony, 1854  
Melania coronilla Anthony, 1854  
Melania elegantula Anthony, 1854  
Melania undosa Anthony, 1854  
Melania planaspira Anthony, 1854  
Melania consanguinea Anthony, 1854  
Melania rarinodosa Anthony (Reeve) 1860  
Melania hildrethiana Lea, 1841  
Melania perfusca Lea, 1841  
Melania saffordi Lea, 1852  
Melania nucleola Anthony, 1850  
Melania tabulata Anthony, 1854  
Melania lattitans Anthony, 1854  
Melania chalybea Anthony, 1854  
Melania vicina Anthony, 1854  
Melania rhombica Anthony, 1854  
Melania incurta Anthony, 1854  
Goniobasis microlineata Goodrich  
Anculosa lewissii Lea, 1863  
Trypanostoma tennesseense Lea, 1862

<u>Lithasia plicata</u> Wetherby, 1876	MAP 11
<u>Lithasia salebrosa</u> (Conrad), 1834	MAP 12
<u>Lithasia verrucosa</u> (Rafinesque), 1820	MAP 13
<u>Melania nupera</u> Say, 1829	
<u>Melania aequalis</u> Haldeman, 1841	
<u>Melania holstoniana</u> Lea, 1841	
<u>Melania procissa</u> Anthony, 1854	
<u>Melanopsis semigranulosa</u> , Deshayes, 1840	
<u>Goniobasis auricoma</u> Lea, 1861	
<u>Goniobasis stewardsoniana</u> Lea, 1861	
<u>Nitocris trilineata</u> (Say), 1829	MAP 14
<u>Anculotus costatus</u> Anthony, 1840	
<u>Melania occidentalis</u> Lea, 1841	
<u>Melania viridis</u> Lea, 1841	
<u>Pleurocera acutum</u> Rafinesque, 1831	MAP 15
<u>Pleurocera alveare</u> (Conrad), 1834	MAP 16
<u>Melania pernodosa</u> Lea, 1845	
<u>Melania formosa</u> Conrad, 1834	
<u>Melania producta</u> Lea, 1842	
<u>Melania grossa</u> Anthony, 1860	
<u>Melania abscida</u> Anthony, 1860	
<u>Pleurocera torquatam</u> Lea, 1842	
<u>Pleurocera pumila</u> Lea, 1845	
<u>Pleurocera sycamorense</u> Lea, 1862	
<u>Pleurocera plicatum</u> Tryon, 1863	
<u>Trypansotoma lesleyi</u> Lea, 1864	
<u>Pleurocera canaliculatum</u> (Say), 1821	MAP 17

- Melania filum Lea, 1845  
Melania conica Say, 1821  
Melania exarata Menke, 1830  
Melania ligata Menke, 1830  
Melania auriscalpium Menke, 1830  
Melania substriata Haldeman, 1841  
Melania elevata Say, 1830  
Melania curvatum Lea, 1843  
Melania morata Lea, 1861  
Melania incrassata Anthony, 1854  
Melania altipetum Anthony, 1854  
Melania exima Anthony, 1854  
Melania valida Anthony, 1860  
Strombus sayii Wood, 1828  
Ceriphasia sulcata Swainson  
Pleurocera excuratum (Conrad), 1834  
Io modesta Lea, 1861  
Io spillmanii Lea, 1861  
Trypanostoma troostii Lea, 1862 (in part)  
Trypanostoma virida Lea, 1862  
Trypanostoma ligatum Lea, 1862  
Trypanostoma simplex Lea, 1862  
Trypanostoma pybasii Lea, 1862  
Trypanostoma clarkii Lea, 1862 (in part)  
Trypanostoma moniliferum Lea, 1862  
Trypanostoma florense Lea, 1862  
Trypanostoma alabamense (Lea), 1862

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- Trypanostoma striatum Lea, 1862  
Trypanostoma rostellatum Lea, 1862  
Trypanostoma affine Lea, 1864  
Pleurocera canaliculatum undulatum (Say), 1829  
Melania ponderosum Anthony, 1860  
Io robusta Lea, 1861  
Trypanostoma dux Lea, 1862  
Trypanostoma thorntonii Lea, 1862  
Trypanostoma anthonyi Lea, 1862  
Trypanostoma toumeyi Lea, 1862  
Trypanostoma subrobustum Lea, 1864  
Trypanostoma cinctum Lea, 1864  
Trypanostoma lesleyi Lea, 1864  
Pleurocera curtum (Haldeman), 1841 MAP 18  
Melania turgida Lea, 1841  
Melania picta Lea, 1841  
Melania solida Lea, 1845  
Melania plena Anthony, 1854  
Melania glans Anthony, 1854  
Melania glandulum Anthony, 1860  
Strephobasis spillmanii Lea, 1861  
Strephobasis clarkii Lea, 1861  
Strephobasis picturata Reeve, 1861  
Strephobasis olivaria Lea, 1862  
Strephobasis carinata Lea, 1862  
Strephobasis lyonii Lea, 1864  
Strephobasis hartmanniana Lea, 1871

Pleurocera bicintum Tryon, 1866

Trypanostoma minor Lea, 1862

Trypanostoma pumilum Lea, 1862

Trypanostoma bivittatum Lea, 1862

Trypanostoma trochulus Lea, 1864

Trypanostoma napoideum Lea, 1864

Family Hydrobiidae

Amnicola cincinnatensis (Anthony), 1840 MAP 19

Cincinnatia cincinnatensis (Anthony), 1840

Paludina cincinnatensis Anthony, 1840

Amnicola cincinnatensis Binney, 1865

Amnicola scarboroughi Tryon, 1870

Amnicola emarginata (Küster), 1852

Implied by Baker (1928)

Amnicola integra (Say), 1821 MAP 20

Paludina integra Say, 1821

Paludina cincinnatensis Anthony, 1841

Cincinnatia cincinnatensis Walker, 1902

Amnicola cincinnatensis Haldeman, 1845

Antroselates spiralis Hubricht, 1963 MAP 21

a cave species

Pomatiopsis cincinnatensis (Lea), 1840 MAP 22

Cyclostoma cincinnatensis Lea, 1840

Amnicola sayana (Anthony) Haldeman, 1844

Pomatiopsis lapidaria (Say), 1817 MAP 23

Cyclostoma lapidaria Say, 1817

Paludina lustrica Say, 1821

Somatogyrus integer (Say), 1840

Implied by Baker (1898).

Somatogyrus subglobosus (Say), 1825 MAP 24

Somatogyrus trothis Doherty, 1878

Family Viviparidae

Lioplax sulcosa Menke, 1828 MAP 25

Campeloma crassula Rafinesque MAP 26

Campeloma ponderosa (Say), 1821

Campeloma integrum (Say), 1821 MAP 27

Paludina integra Say, 1821

Campeloma obesum Lewis, 1865 MAP 28

This is probably C. decisum (Say), 1817, and obesum is preoccupied, at any rate.

Campeloma rufum (Haldeman), 1841 MAP 29

Paludina rufa Haldeman, 1841

Vivipara rufa Tryon, 1870

Viviparus gorgianus Lea, 1834 MAP 30

Viviparus haldemani Shuttleworth

Viviparus contectoides Binney, 1865

Viviparus intertextus (Say), 1829

Inferred by range (Goodrich, 1942).

Family Aculyidae

Ferrissia fragilis (Tryon), 1863 MAP 31

Gundlachia fragilis (Tryon), 1863

Gundlachia meekiana Stimpson, 1863

Gundlachia californica Rowell, 1863

Gundlachia stimpsoniana Smith and Prime, 1870

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- Ancylus fragilis Tryon, 1863
- Ancylus pumilus Sterki, 1902
- Ancylus obliquus Shimeki, 1890
- Ancylus shimekii Pilsbry, 1890
- Ancylus hendersoni Walker, 1908
- Ancylus novangliae Walker, 1908
- Ferrissia hendersoni (Walker), 1908
- Ferrissia novangliae (Walker), 1908
- Ferrissia shimekii (Pilsbry), 1890
- Ferrissia bartschi Walker, 1920
- Ferissia meekiana (Stimpson), 1863
- Ferrissia rivularis (Say), 1817 MAP 32
- Anculus rivularis Say, 1817
- Ancylus tarda Say, 1830
- Ancylus calcarius DeKay, 1843
- Ancylus depressus Haldeman, 1844
- Ancylus depressus Haldeman, 1844
- (non A. depressus DeShayes, 1824; non A. depressus Keferstein, 1834)
- Ancylus haldemani Bourguinat, 1853
- Ancylus ovalis Morse, 1864
- Ancylus borealis Morse, 1864
- Ancylus caurinus Cooper, 1873
- Ancylus oregonensis Clessin- 1882
- Laevapex caurinus (Cooper), 1873
- Ferrissia haldemani (Bourguinat), 1873
- Ferrissia tardus (Say), 1830
- Ferrissia rivularis (Say), 1817

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- Ferrissia ovalis (Morse), 1864
- Ferrissia browni Walker, 1925
- Ferrissia arkansasensis Walker, 1925
- Laevapex fuscus (C.B. Adams), 1841 MAP 33
- Ancylus fuscus Adams, 1841
- Ancylus obscurus Haldeman, 1844
- Ancylus eugraptus Pilsbry, 1896
- Ancylus peninsulae Pilsbry and Johnson, 1896
- Ancylus kirklandi Walker, 1903
- Ferrissia fusca (C.B. Adams), 1841
- Ferrissia fusca eugraptata (Pilsbry), 1896
- Ferrissia kirklandi (Walker), 1903
- Ferrissia obscura (Haldeman), 1844
- Ferrissia peninsulae (Pilsbry and Johnson), 1896
- Ferrissia obscura (Haldeman), 1844
- Ferrissia dalli Walker, 1920
- Rhodacmea elatior (Anthony), 1885 MAP 34
- Ancylus elatior Anthony, 1885
- Rhodacmea cahawbensis Walker, 1917
- Rhodacmea hinkleyi (Walker), 1908
- Ancylus hinkleyi Walker, 1908
- Rhodacmea rhodacmea Walker. 1917
- Rhodacmea gwatiniana Walker, 1917
- Ancylus rhodaceus Walker, 1917 (nomen nudum)
- Implied by range (Walker, 1918; Basch, 1963).

Family Lymnaeidae

- Lymnaea auricularia (Linnaeus), 1758 MAP 35

Lymnaea (Pseudosuccinea) columella Say, 1817 MAP 36

Lymnaea humilis Say, 1817 MAP 37

Lymnaea (Stagnicola) palustris (Müller), 1774

Implied by range (Baker, 1911).

Family Physidae

Physa gyrina Say, 1821 MAP 38

Physa albofilata Ancey, 1891

Physa hildrethiana Lea, 1841

Physa saffordii Lea, 1841

Physa altonensis Lea, 1864

Physa hawni Lea, 1864

Physa cylindrica Newcomb, 1843

Physa distorta Haldeman, 1840

Physa heterostropha (Say), 1817 MAP 39

Limnea heterostropha Say, 1817

Physa fontana Haldeman, 1841

Physa charpentieri Kuster, 1862

Physa lata Tryon, 1842

Physa vinosa Gould, 1847

Physa ancillaria Say, 1825

Physa sayii Tappan, 1838

Physa elliptica Lea, 1864

Physa warreniana Lea, 1864

Physa chetekensis (Baker), 1928

Physa obrussooides (Baker), 1928

Physa fragilis Mighels, 1841

Physa striata Menke, 1830

(non P. striata Lea, 1864)

(non P. striata d'orbigny, 1841)

Physa subarata Menke, 1830

Physa obesa DeKay, 1843

Physa integra Haldeman, 1841 MAP 40

Physa crocata Lea, 1864

Physa pomila Conrad, 1866

Physa microstoma Haldeman, 1853

Physa Virgata Gould, 1855 MAP 41

Physa anatina Lea, 1864

Physa forsheyi Lea, 1864

Physa halei Lea, 1863

Physa tenuissima Lea, 1864

Physa grosvernori Lea, 1864

Physa parva Lea, 1864

Physa smithsoniana Lea, 1864

Physa striata Lea, 1864

Physa dorbigniana Lea, 1866

Physa humerosa Gould 1855

Physa rhomboidea Meek and Hayden, 1856

Physa osculans rhyssa Pilsbry, 1899

Physa rhomboidea Crandell, 1901

Physa marci F.C. Baker, 1924

Physa bottimeri Clench, 1924

Family Planorbidae

Gryaulus parvus (Say), 1817 MAP 42

Planorbis parvus Say, 1817

Planorbis concavus Anthony

Planorbis billingsi Lea, 1864

Helisoma anceps (Menke), 1830 MAP 43

Helisoma antrosa shellensis Baker, 1927

Helisoma antrosa Conrad, 1834

Helix angulata Rachett, 1821

Helisoma antrosa chani Baker, 1927

Helix angulata Rachett, 1821

Planorbis bicarinatus Say, 1817

Planorbis bicarinatus striatus Baker, 1906

Planorbis bicarinatus major Walker, 1893

Planorbis bicarinatus percarinatus Walker, 1909

Planorbis engonatus Conrad, 1865

Helisoma Trivolvis (Say), 1817 MAP 44

Planorbis trivolvis Say, 1817

Bulla fluviatilis Say, 1821

Physa planorbula DeKay, 1865

Planorbis regularis Lea, 1865

Planorbis megastoma DeKay, 1865

Planorbis macrostomus Whiteaves, 1865

Planorbis binneyi Baker, 1909

Planorbis trivolvis pilosbyi Baker, 1926

Planorbis trivolvis winslowi Baker, 1926

Planorbis truncatus Miles, 1861

Helisoma truncata (Miles), 1861

Helisoma pseudotrivolvis (Baker), 1920

Planorbis pseudotrivolvis Baker, 1920

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Planorbis glabratus Baker, 1906

Menetus sampsoni (Ancey), 1885

Planorbis sampsoni Ancey, 1885

Secured by the author from a small pond, Pine Mountain State Park, Bell County, Kentucky.

Promenetus exacuous (Say), 1821

MAP 45

Planorbis exacuous Say, 1821

Planorbis exacutus Haldeman, 1844

Paludina myalina Lea, 1865

REFERENCES

- Anthony, J. G. 1855. Descriptions of new species of *Ancylus* and *Anculosia* from the western states of North America. Ann. Lyc. Nat. Hist. New York 6:158-160.
- Baker, F. C. 1898. Mollusca of the Chicago Area. Bull. Chicago Acad. Sci. 3:131-410.
- Baker, F. C. 1911. The Lymnaeidae of North and Middle America. Chicago Acad. Sci. Special Pub. 3:i-xvi; 1-539.
- Basch, P. F. 1963. A review of the freshwater limpet snails of North America (Mollusca:Pulmonata). Bull. Mus. Comp. Zool. Harvard 129:399-461.
- Bickel, D. 1965. The role of aquatic plants and submerged structures in the ecology of a freshwater pulmonate snail, *Physa integra* Hald. Sterkiana 18:17-20.
- Bickel, D. 1966. *Campeloma crassula* in the reversal of whorls. Nautilus 79:107-108.
- Bickel, D. 1967. Preliminary checklist of Recent and Pleistocene Mollusca of Kentucky. Sterkiana 28:7-20.
- Binney, W. G. 1865. Land and freshwater shells of North America. Part III, Ampullariidae, Valvatidea, Viviparidae, freshwater Rissoidae, Cyclophoridae, Truncatellidae, freshwater Neritidae, Helicinidae. Smith. Misc. Coll. 144: i-viii; 1-120.
- Binney, W. G. 1865, b. Land and freshwater shells of North America. Part II, Pulmonata and Thalassophila. Smith. Misc. Coll. 143:i-x; 1-161.
- Branson, B. A. and D. L. Batch. 1969. Notes on exotic mollusks in Kentucky. Nautilus 82:102-106.
- Browne, R. G. and P. M. Bruder. 1963. Pleistocene Mollusca from the loesses of Kentucky. Sterkiana 11:53-57.

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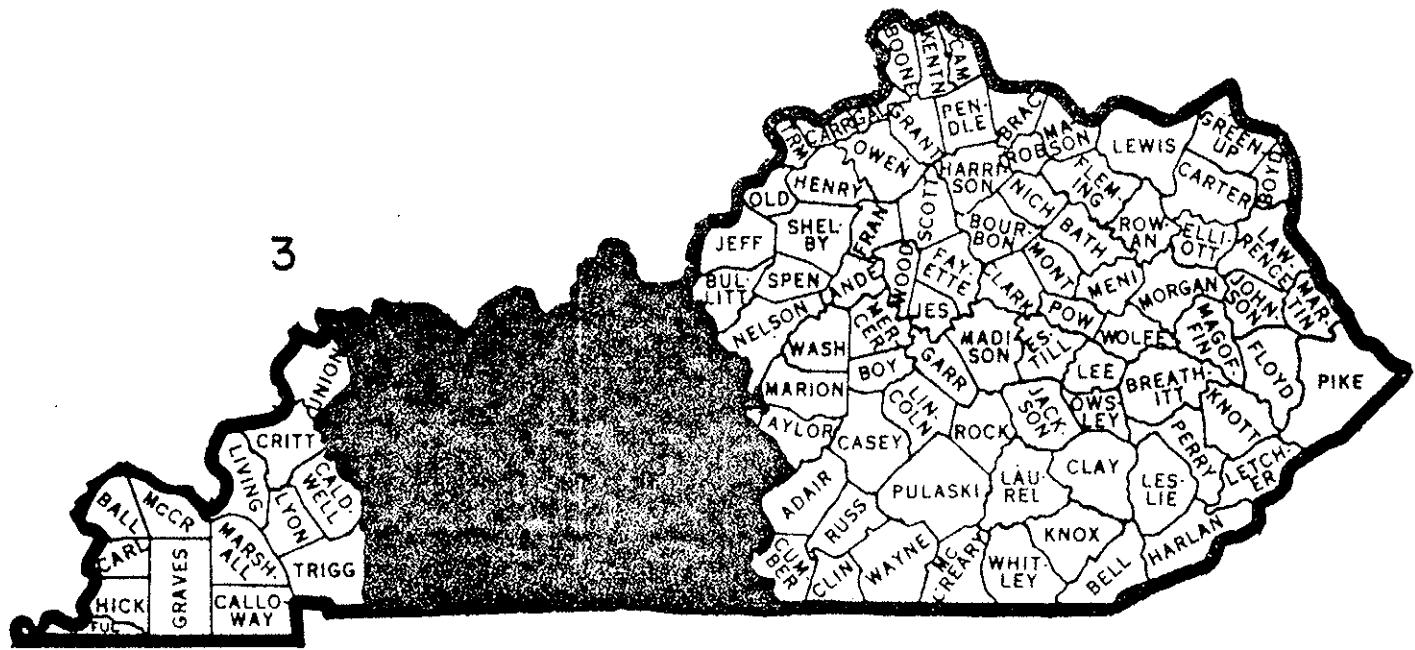
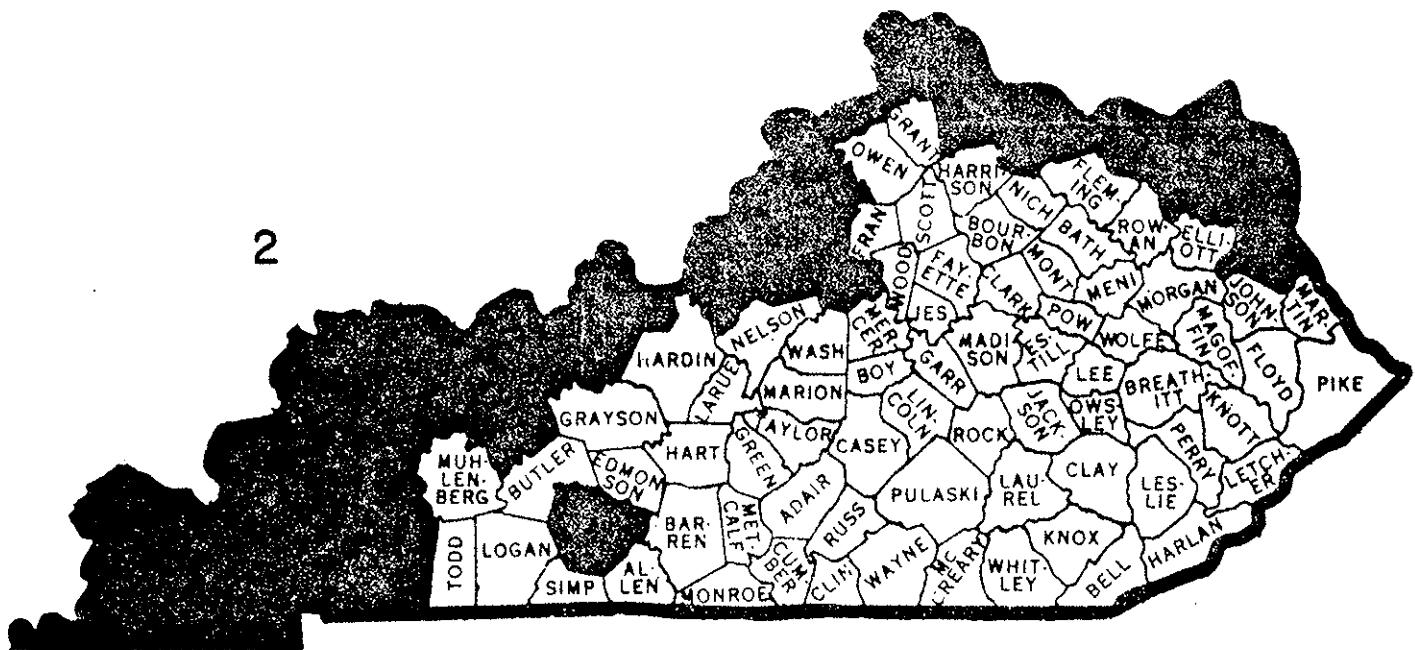
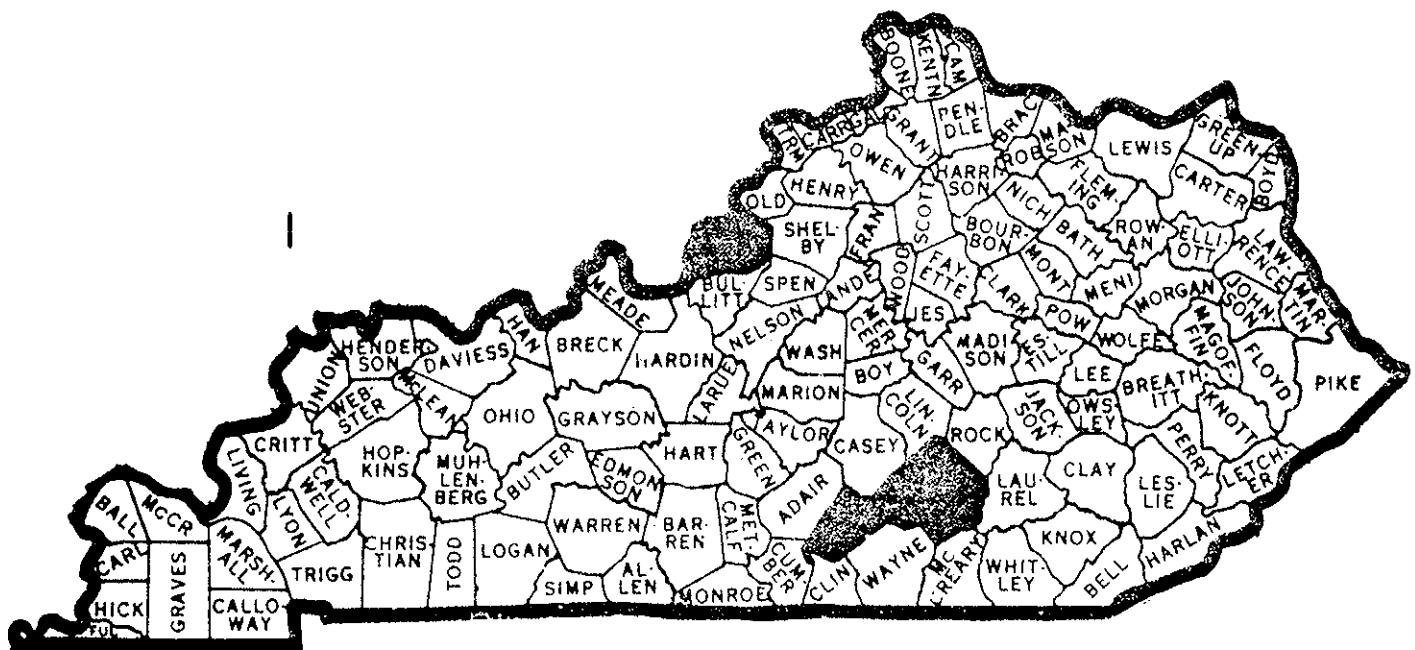
- Call, R. E. 1900. A descriptive catalogue of the Mollusca of Kentucky. Bull. Am. Paleon. 41:165-183.
- Clench, W. J. 1962. New records for the genus Lioplax. Occ. Pap. Mus. Comp. Zool. Harvard 2:288.
- Clench, W. J. 1962, b. A catalogue of the Viviparidae of North America with notes on the distribution of Viviparus georgianus Lea. Occ. Pap. Mus. Comp. Zool. Harvard 2:1-20.
- Clench, W. J. 1969. The Physa striata complex. Nautilus 83:73.
- Crandall, O. A. 1901. The American Physae. Nautilus 15:69-71.
- Dundee, D. S. 1957. Aspects of the biology of Pomatiopsis lapidaria (Say) (Mollusca:Gastropoda:Prosobranchia). Misc. Publ. Mus. Zool. Univ. Mich. 100: 1-3.
- Goodrich, C. 1927. Some misplaced pleurocerids. Nautilus 41:57-62.
- Goodrich, C. 1929. The pleurocerid fauna of the falls of the Ohio. Nautilus 43: 1-17.
- Goodrich, C. 1930. Pleurocera (Strephobasis) curtum (Haldeman). Nautilus 43:161.
- Goodrich, C. 1934, a. Studies of the gastropod family Pleuroceridae, I. Occ. Pap. Mus. Zool. Univ. Mich. 286:1-17.
- Goodrich, C. 1934, b. Studies of the gastropod family Pleuroceridae. II. Occ. Pap. Mus. Zool. Univ. Mich. 295:1-6.
- Goodrich, C. 1934, c. Studies of the gastropod family Pleuroceridae. III. Occ. Pap. Mus. Zool. Univ. Mich. 300:1-11.
- Goodrich, C. 1938. Studies of the gastropod family Pleuroceridae. V. Occ. Pap. Mus. Zool. Univ. Mich. 318:1-12.
- Goodrich, C. 1940. The Pleuroceridae of the Ohio River Drainage System. Occ. Pap. Mus. Zool. Univ. Mich. 417:1-21.

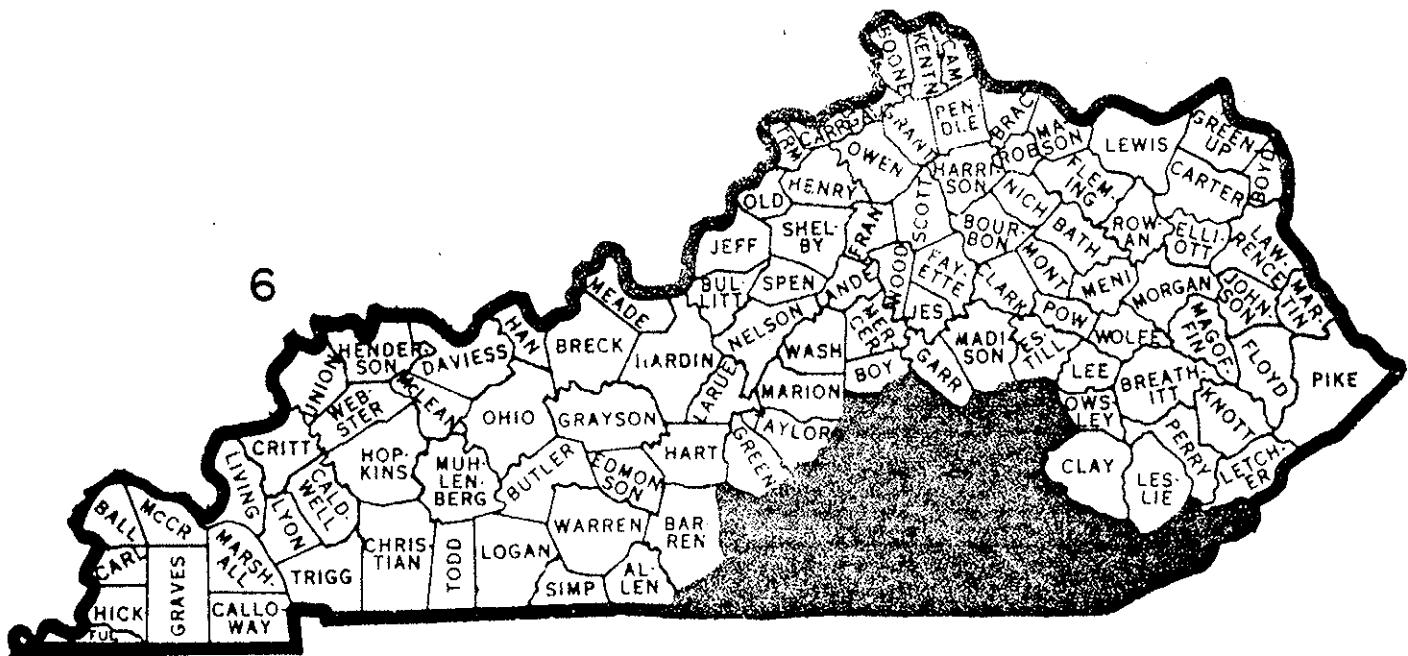
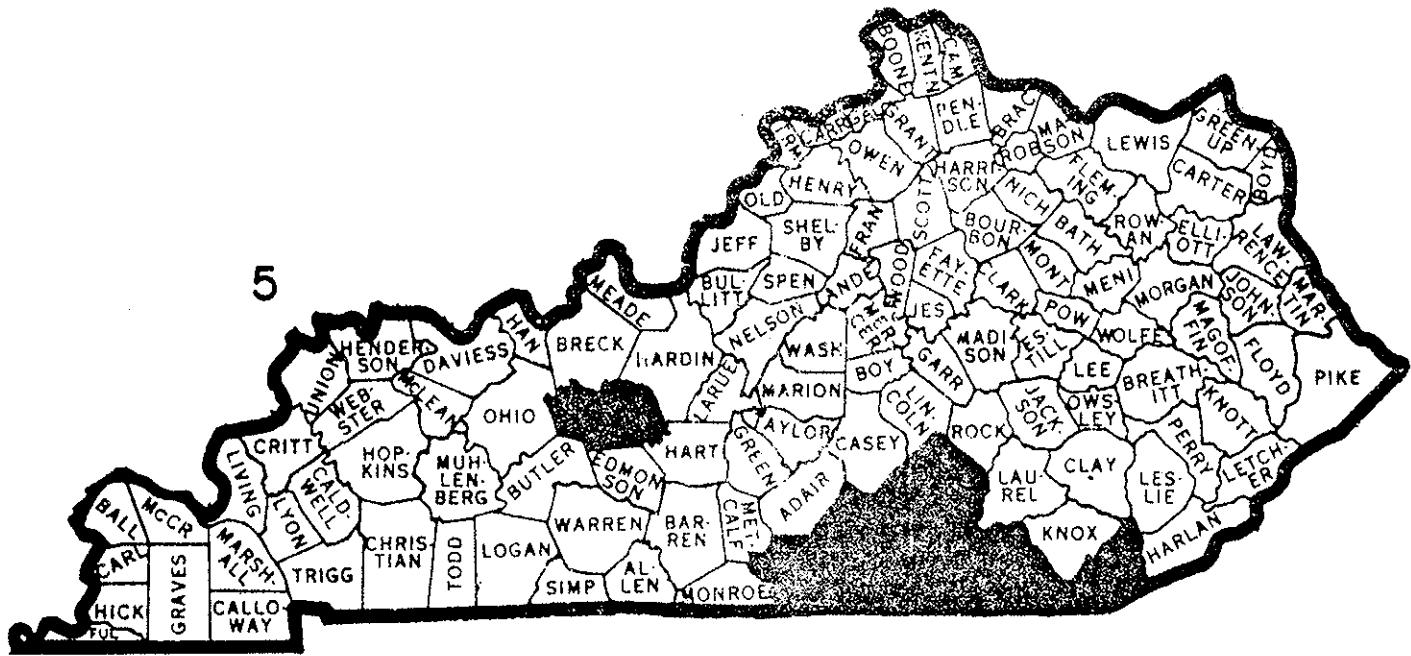
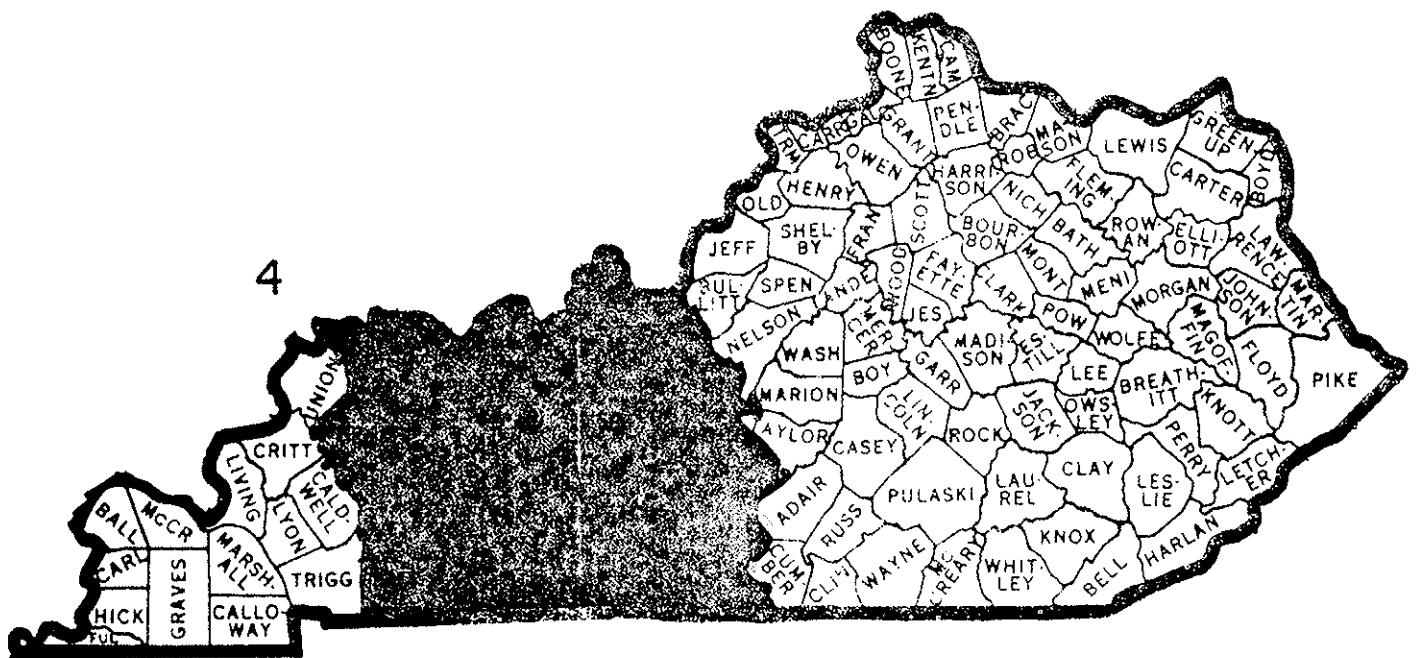
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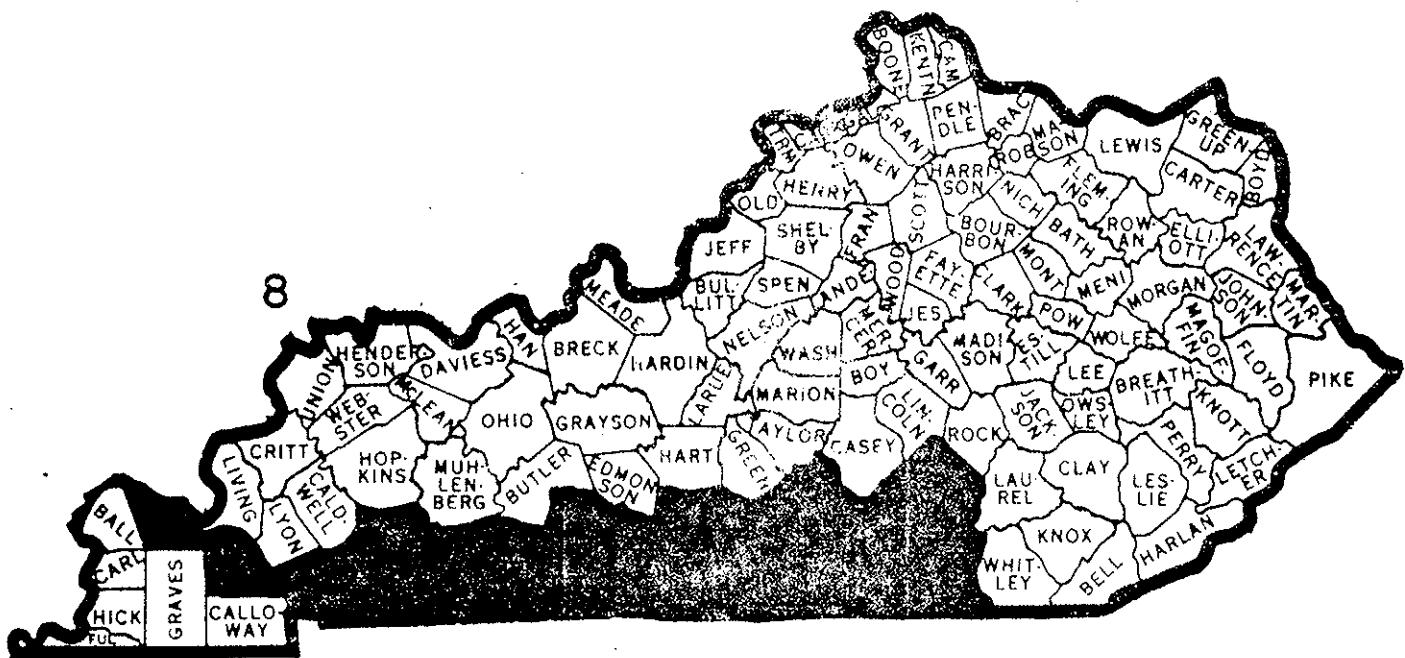
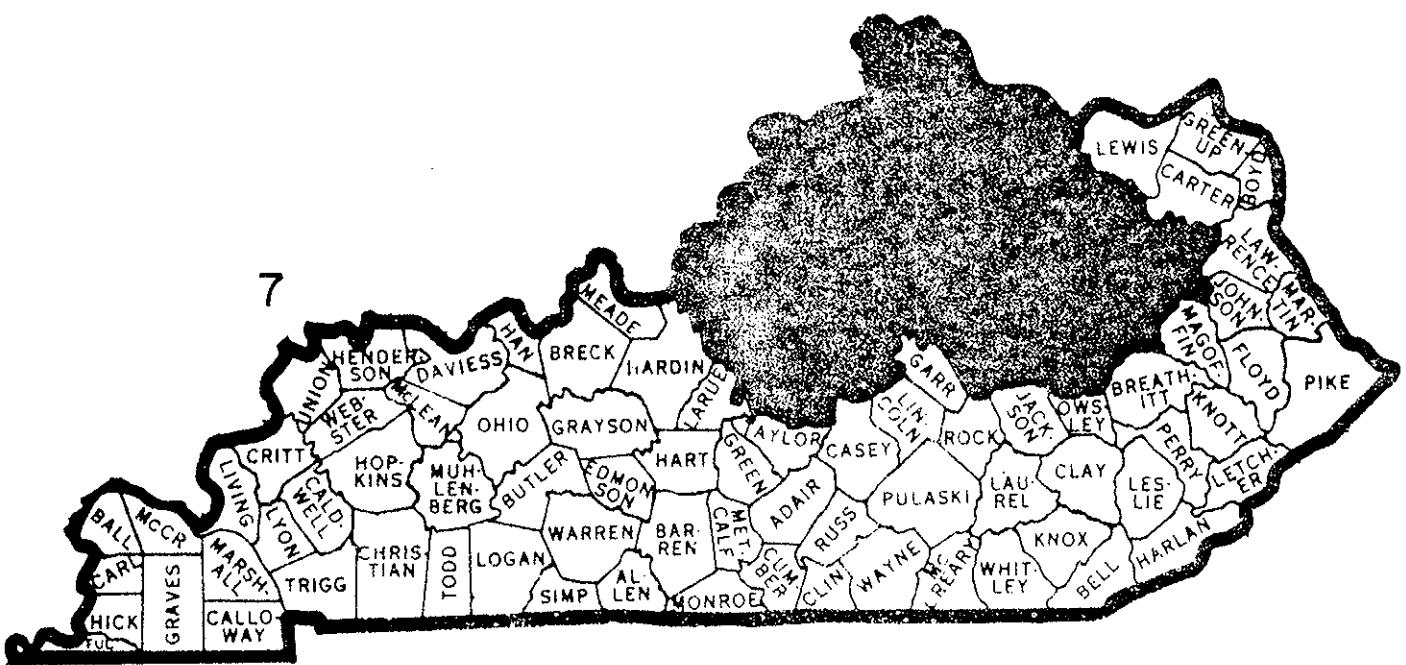
- Goodrich, C. 1941. Studies of the gastropod family Pleuroceridae. VIII. Occ. Pap. Mus. Zool. Univ. Mich. 447:1-13.
- Goodrich, C. 1942. The American species of Viviparus. Nautilus 55:82-92.
- Hubricht, L. 1963. New species of Hydrobiidae. Nautilus 76:138-140.
- Kaplin, M. T. and W. L. Minckley. 1960. Landsnails from the Doe Run Creek Area, Meade County, Kentucky. Nautilus 74:62-65.
- Linicicome, D. R. and A. L. Whitt. 1947. Occurrence of Neoechinorhynchus emydia (Acanthocephala) in snails. Trans. Ky. Acad. Sci. 12:19.
- Magruder, S. R. 1935. The anatomy of the freshwater prosobranchiate gastropod, Pleurocera canaliculatum angulatum (Say). Amer. Midl. Nat. 16:883-912.
- Magruder, S. R. 1934. Notes on the life history of Pleurocera canaliculatum angulatum (Say). Nautilus 48:26-28.
- Mattox, N. T. 1938. Morphology of Campeloma rufum, a parthenogenetic snail. J. Morph. 62:243-261.
- Morrison, J. P. E. 1954. The relationships of Old and New World Melanians. Proc. U. S. Nat. Mus. 103:357-394.
- Price, S. F. 1900. Mollusca of southern Kentucky. Nautilus 14:75-79.
- Rosewater, J. 1959. Mollusks of the Salt River, Kentucky. Nautilus 73:57-62.
- Tryon, G. W. 1864. Catalogue of the species of Physa inhabiting the United States. Amer. J. Conch. 1:165-173.
- Tryon, G. W. 1873. Land and freshwater shells of North America Part IV. Strebomatidae (American Melanians). Smith. Misc. Coll. 253:i-iv;1-436.
- van der Schalie, H. and D. S. Dundee. 1955. The distribution, ecology and life history of Pomatiopsis cincinnatensis (Lea), an amphibious operculate snail. Trans. Amer. Micros. Soc. 74:119-133.

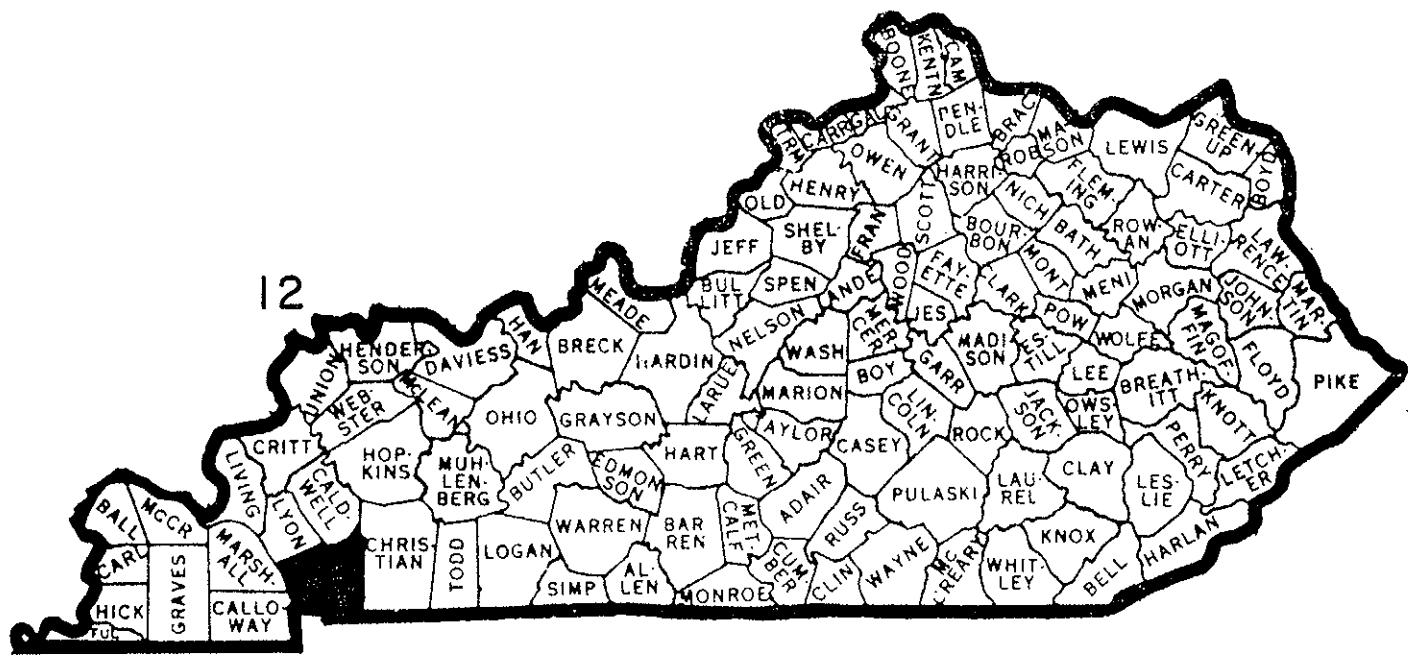
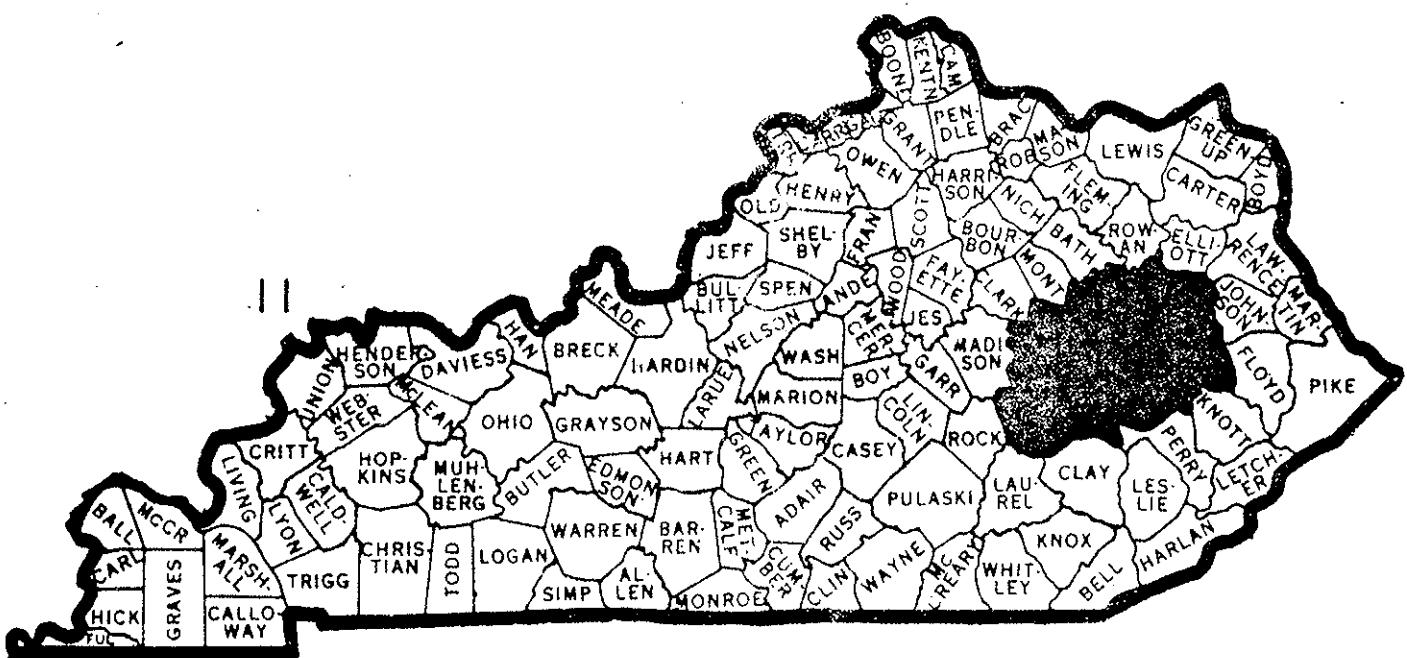
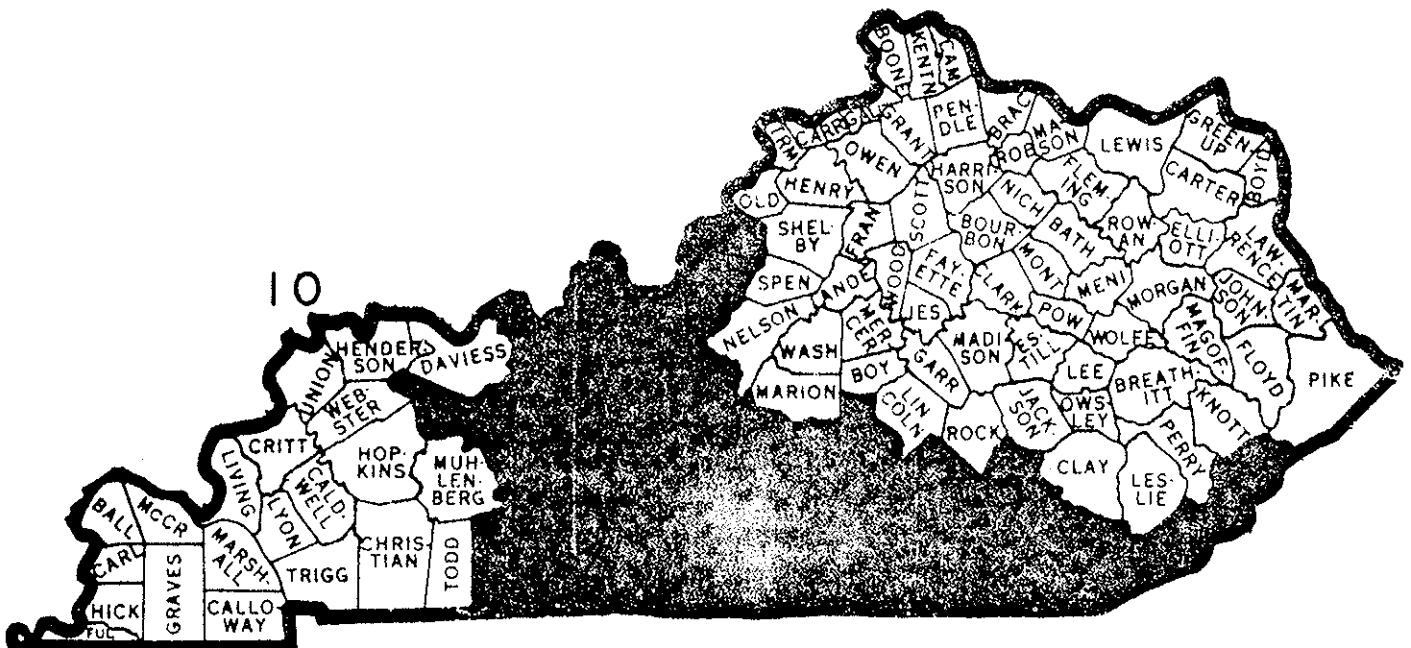
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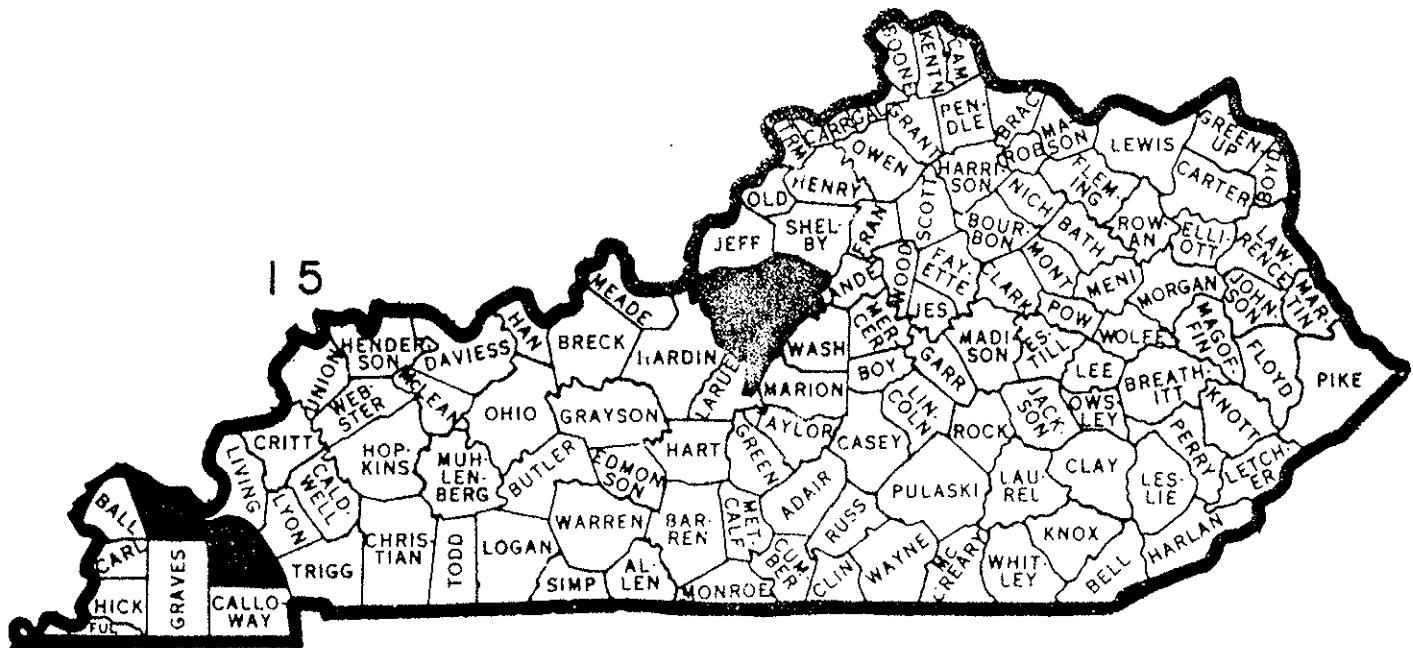
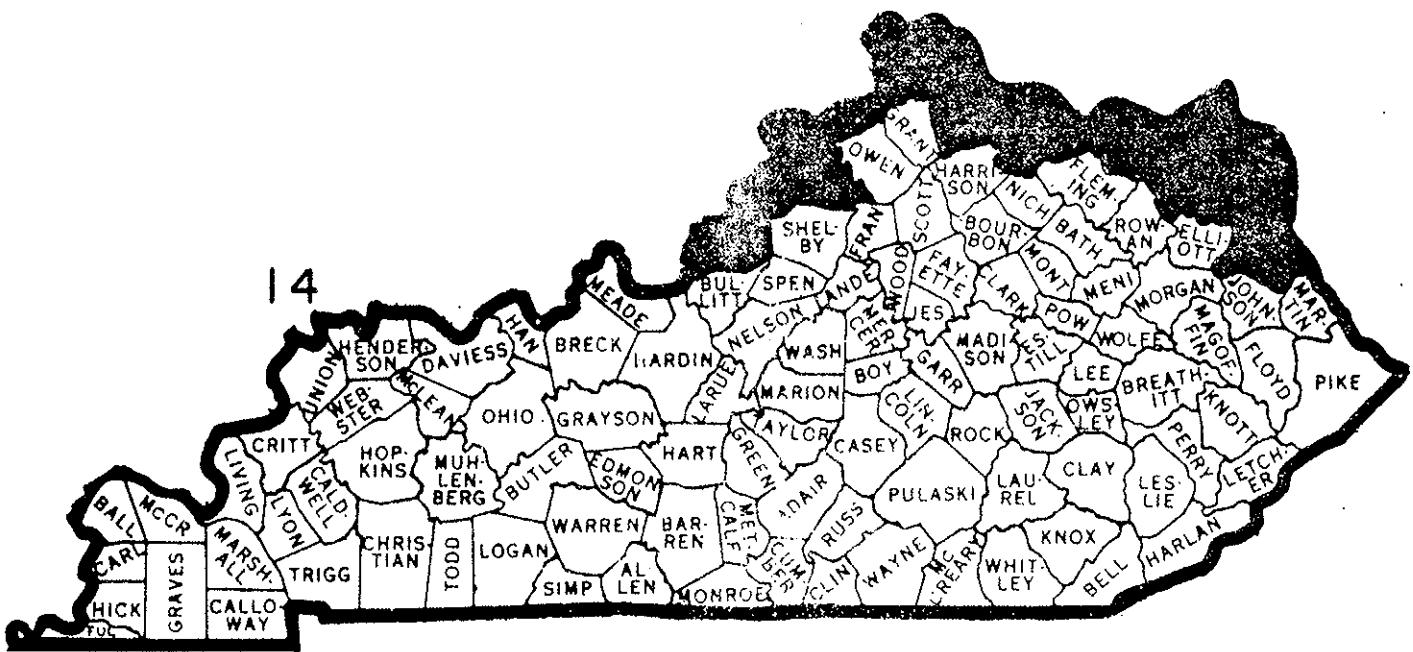
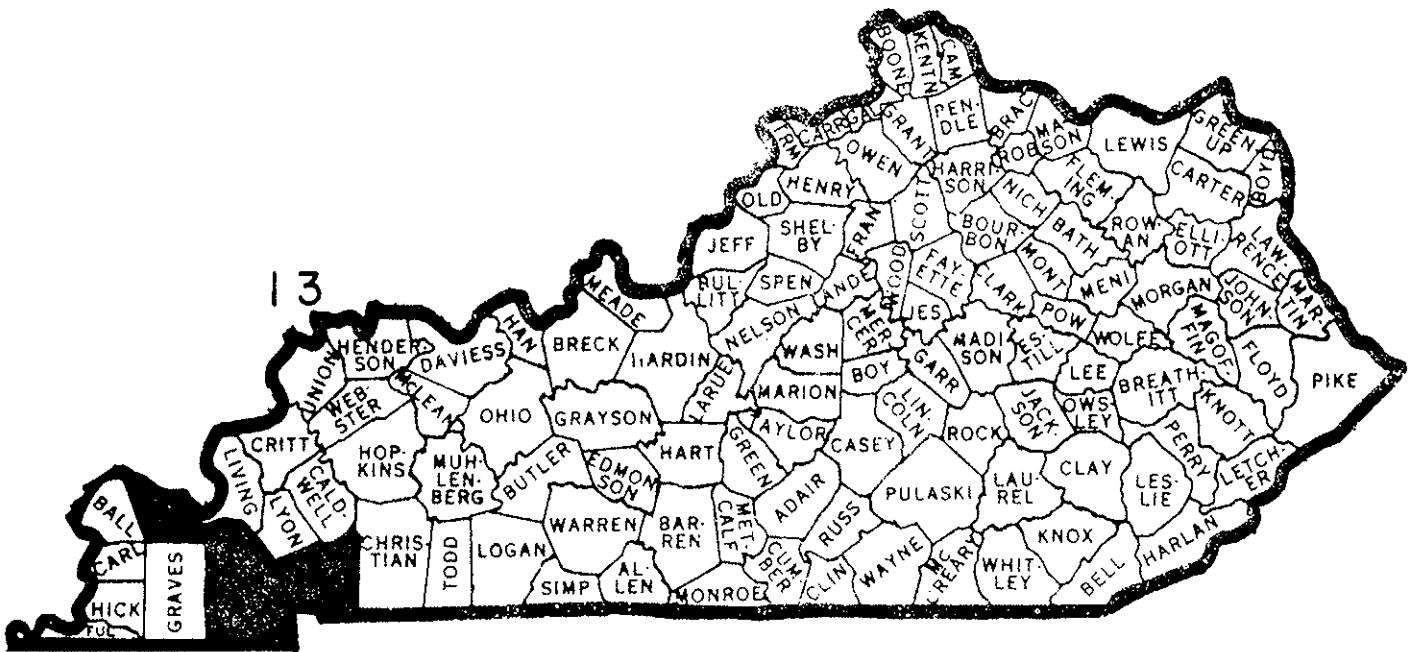
- Walker, B. 1918. A synopsis of the classification of the freshwater Mollusca of North America, north of Mexico, and a catalogue of the more recently described species, with notes. *Misc. Pub. Mus. Zool. Univ. Mich.* 6:1-213.
- Wurtz, C. A. 1949. Physa heterostropha (Say). *Nautilus* 63:20-33.

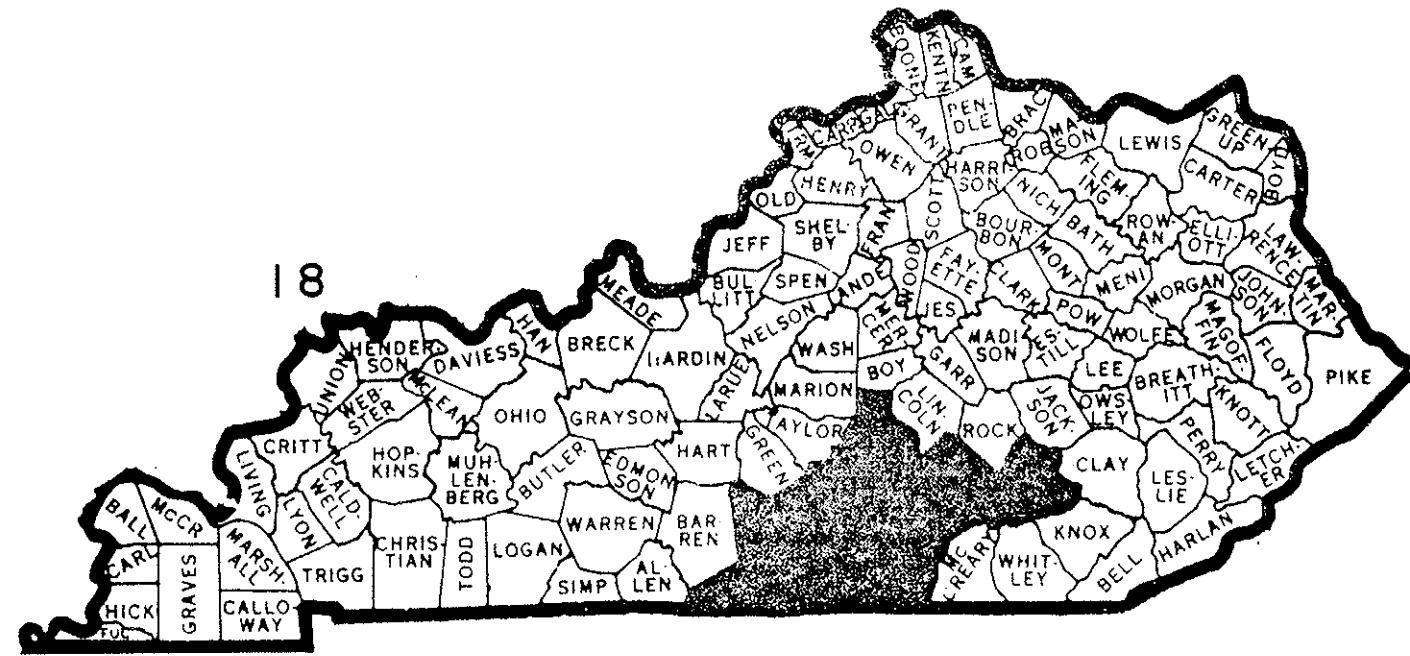
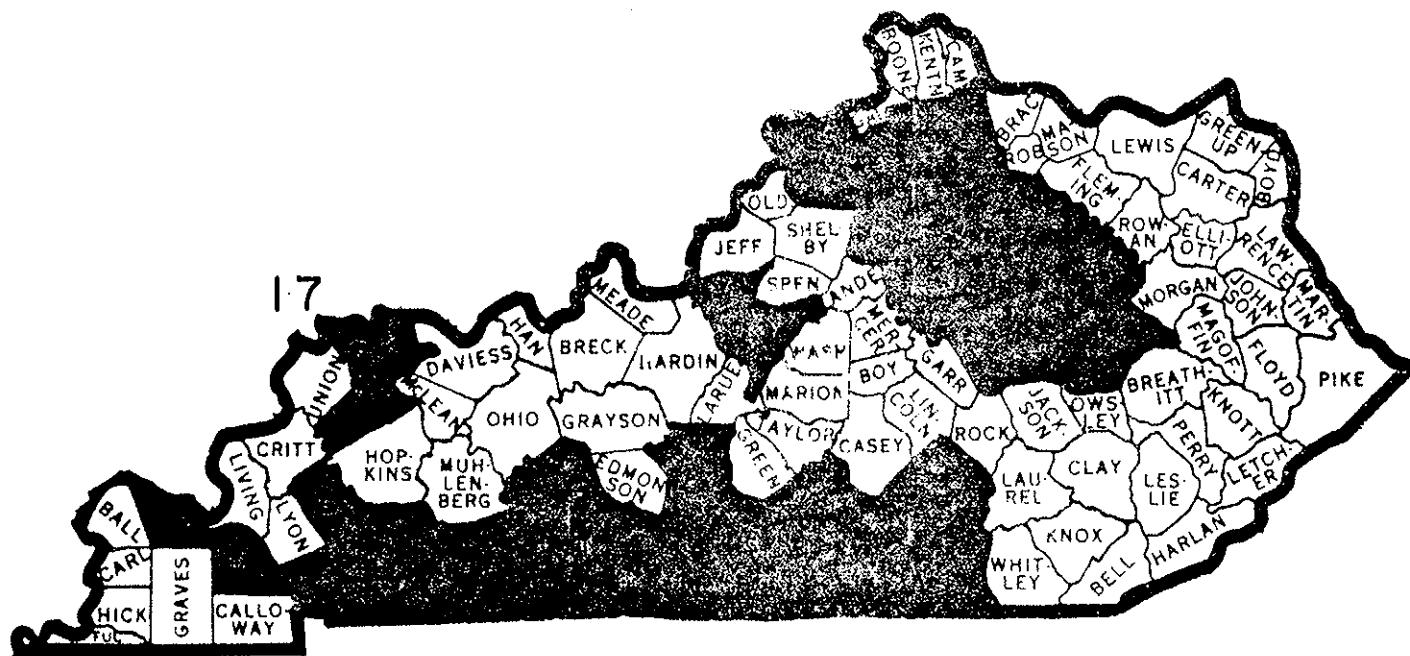
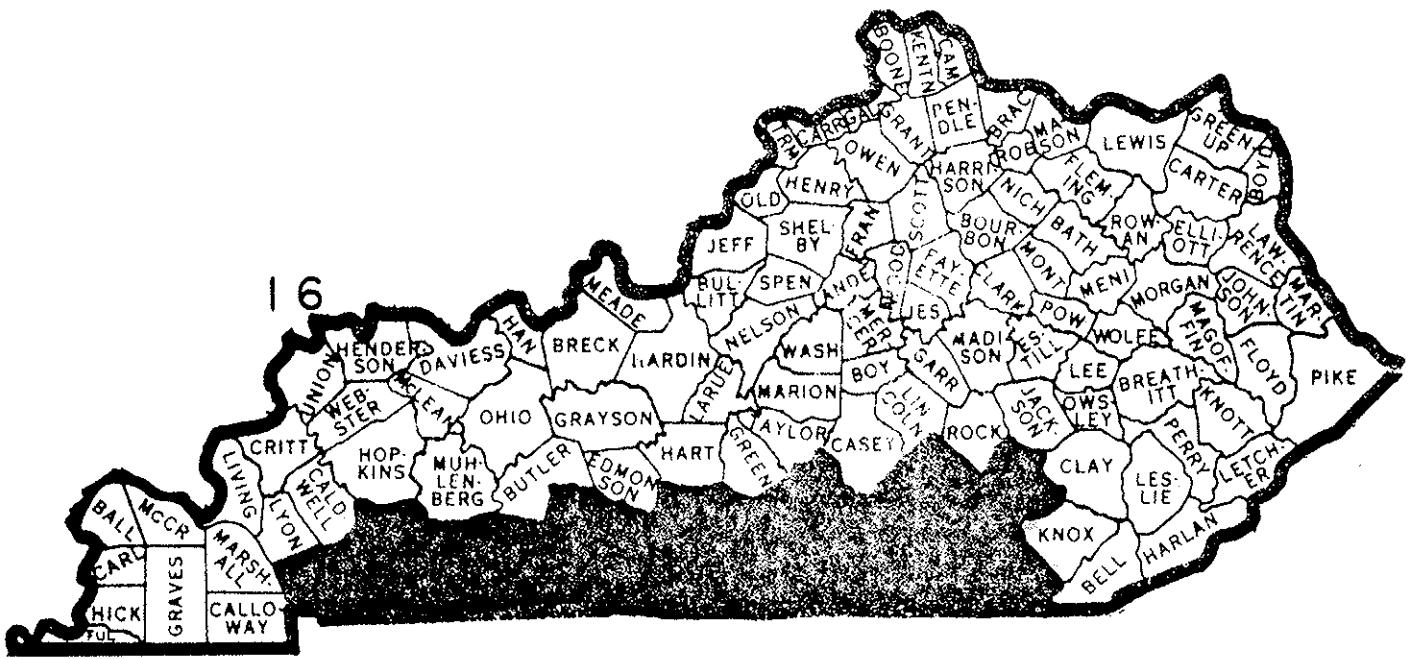


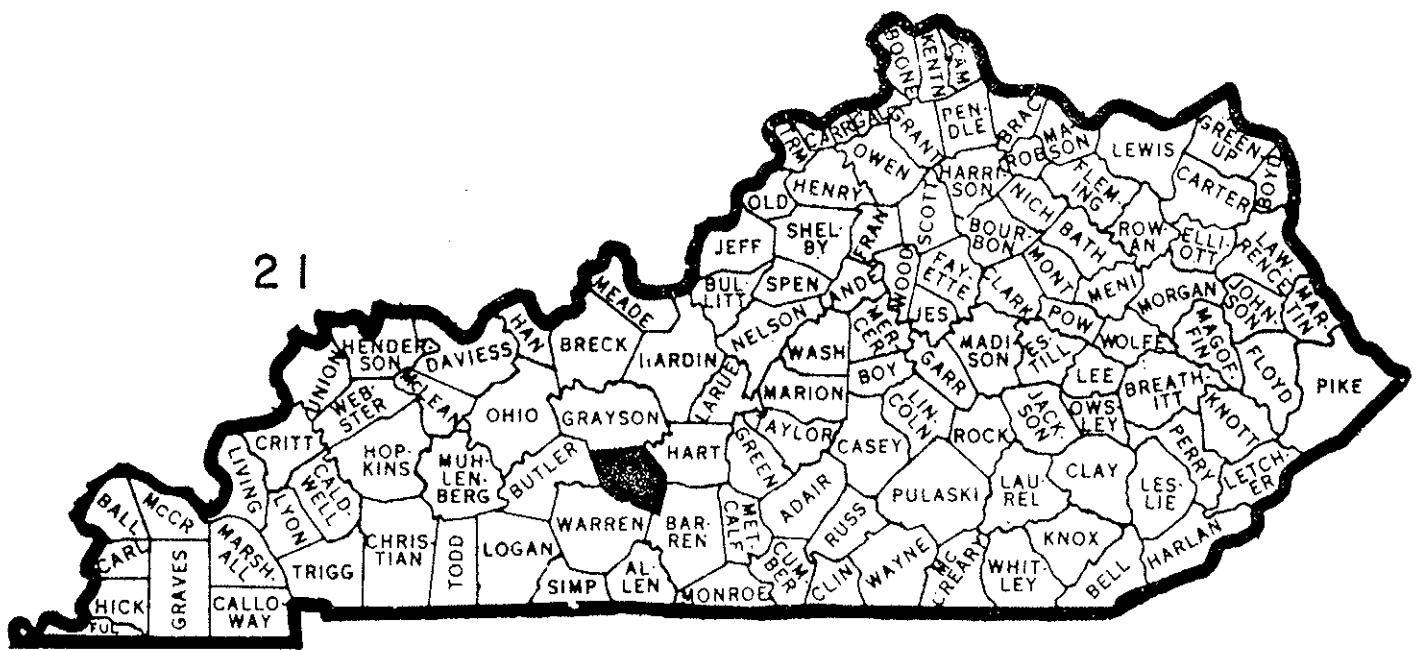
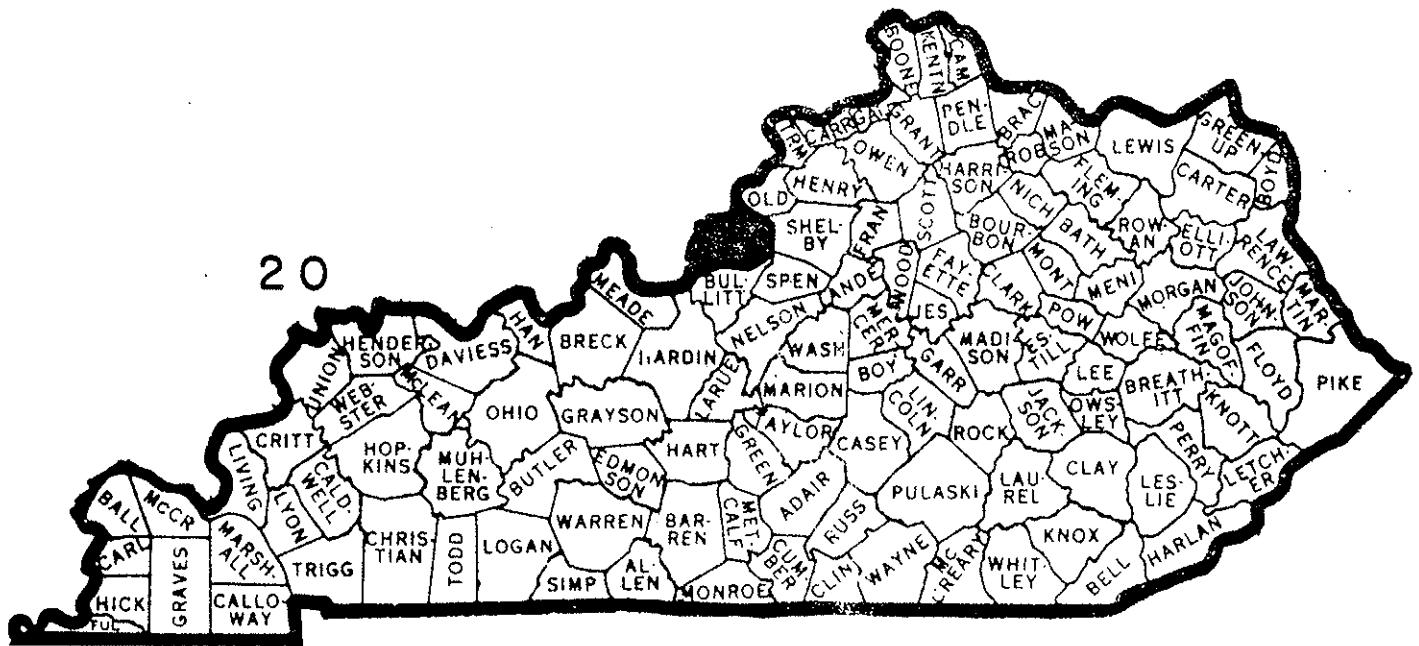
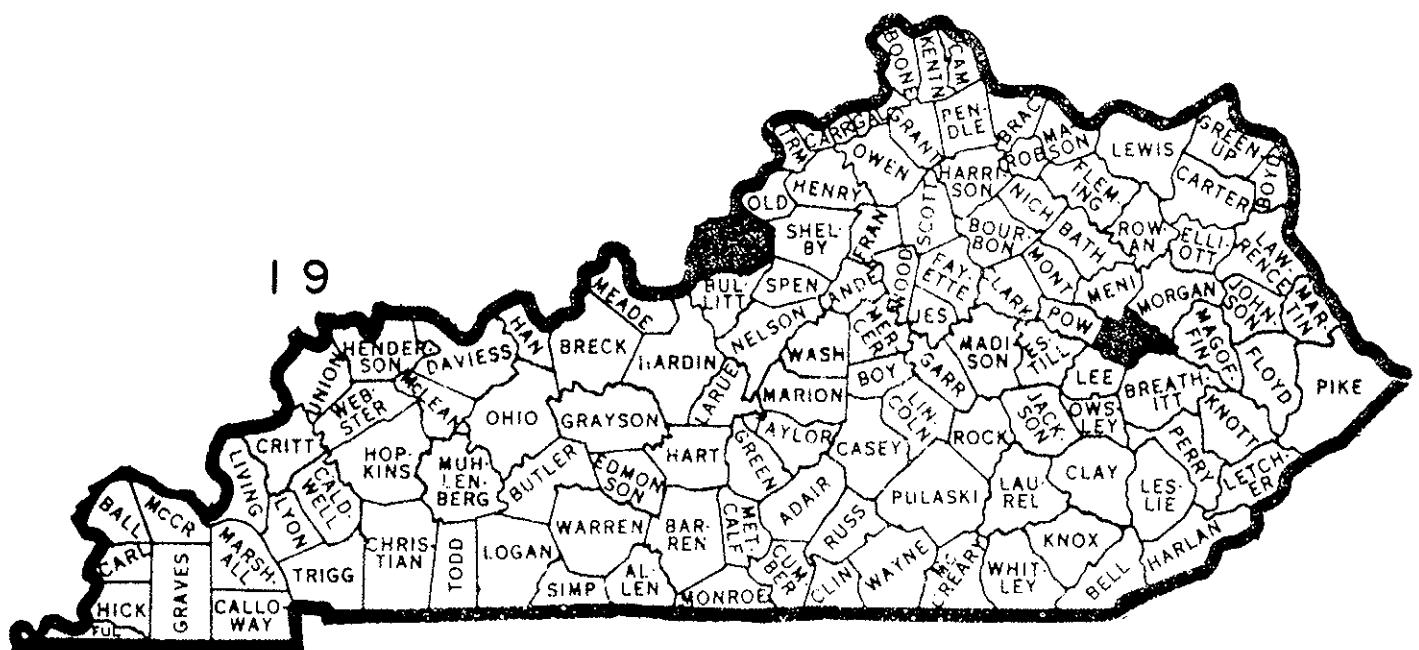




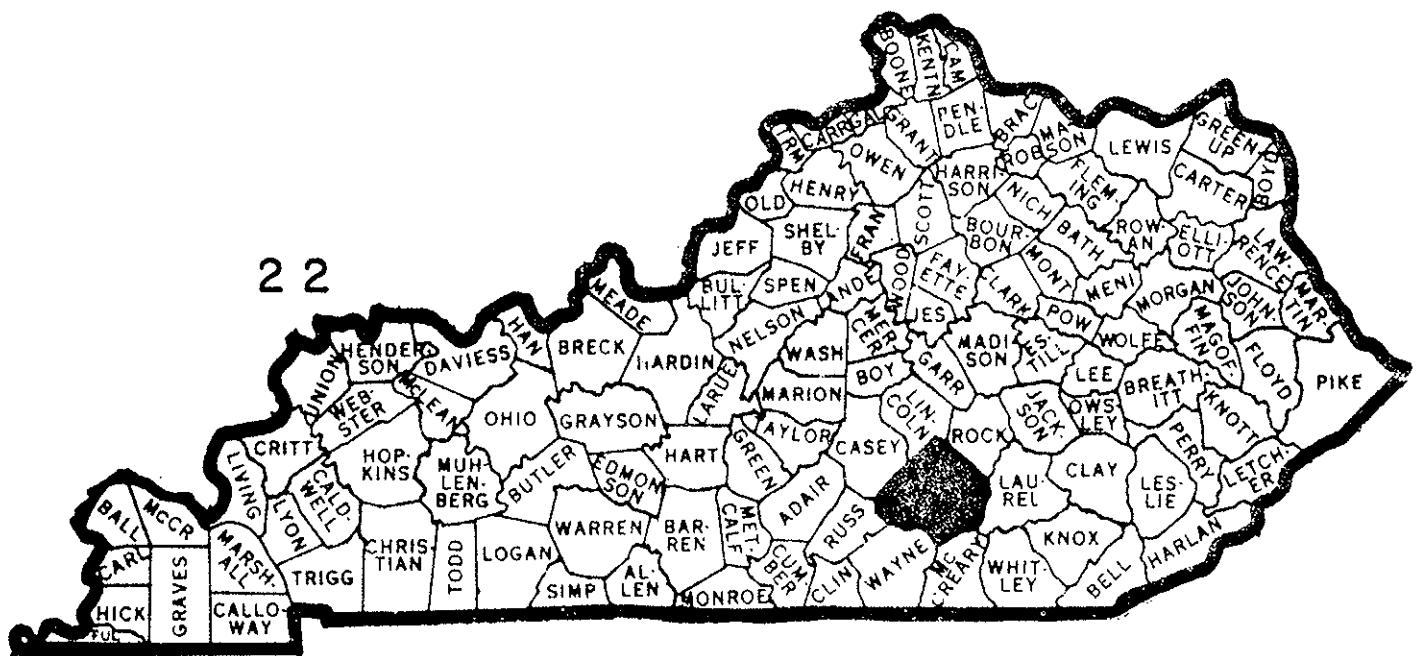




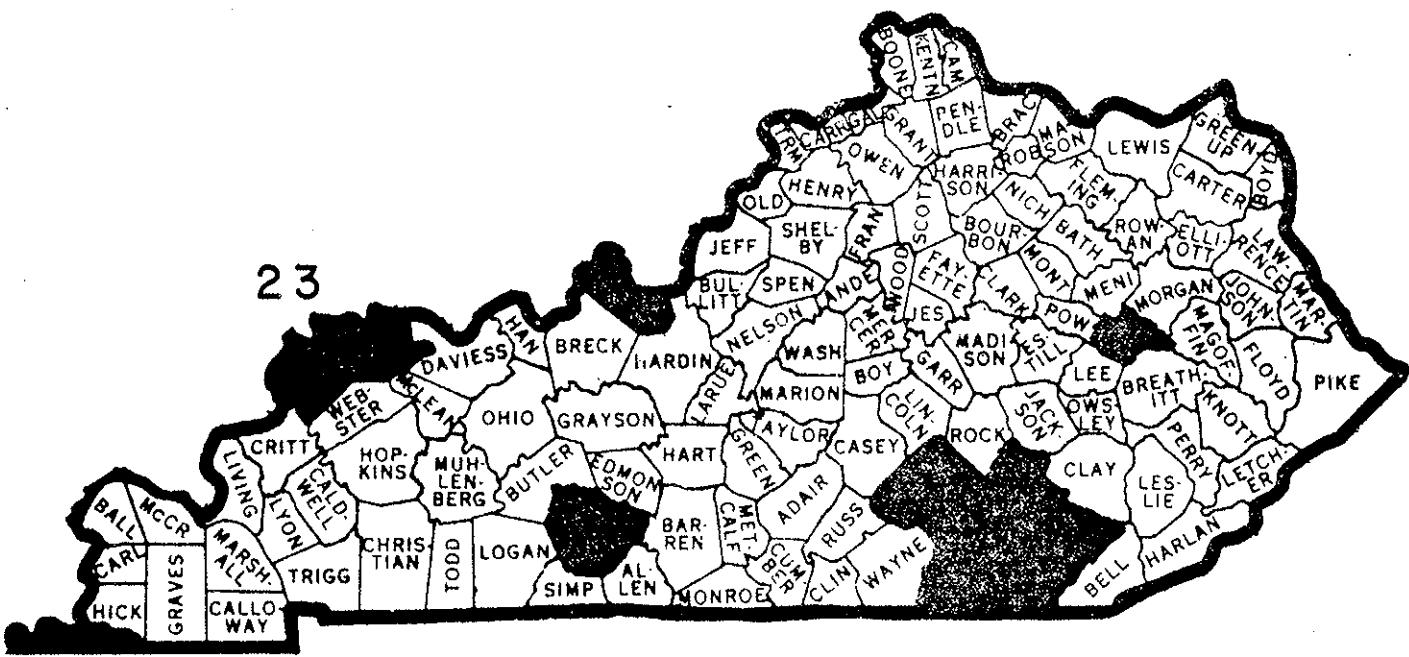




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