

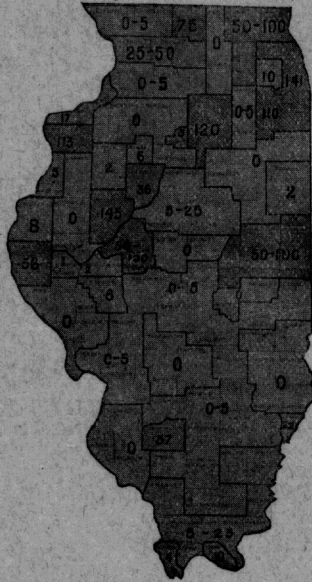
THE MOLLUSCA OF PIATT, CHAMPAIGN, AND  
VERMILION COUNTIES OF ILLINOIS

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This report on the mollusks of these three counties is based upon collections and observations made from the Autumn of 1907 to the Summer of 1911, supplemented by such additional data as given in Baker (1906). The late Mr. Charles A. Hart accompanied me on a great many of these excursions and took a lively interest in the study; to him particularly I wish to show my gratitude.

I am also greatly indebted to the following gentlemen: Dr. Charles C. Adams for valuable suggestions and interest in the survey; to Dr. Frank C. Baker for accurate determinations of my material and checking on my identifications; Dr. Victor Sterki for identifications of the Sphæriidæ and Ppidæ; Dr. Bryant Walker for determination of *Paravitrea significans*; my colleagues, Drs. J. Douglas Hood, Arthur G. Vestal, Robt. D. and Hugh Glasgow, H. E. Ewing and Frank Elmer Wood, for contributions of specimens; Drs. Wm. Healey Dall and Paul Bartsch for their kindness in going over the manuscript and bringing the nomenclature to date; and finally to the pioneer ecologist, Dr. Stephen Alfred Forbes, for the use of his library and for valuable suggestions.

Baker's catalog of the mollusks of Illinois (1906) lists one species from Piatt Co., twenty-three from Champaign Co., and four from Vermilion Co. The present paper lists fifty-two, seventy-eight and sixty-seven species respectively, a total of one hundred and sixteen species. The important fact to note is that the material on which this paper is based was collected at odd times, and nearly always when engaged in entomological work. An exception to this is the Brownfield Woods (also known as the Augerville Woods) near Urbana, where a special study was made of the ecology of forest inhabiting snails for a thesis. It is clear that this paper cannot be considered as even fairly



complete, for if an intensive survey is made, the number of species will probably be over two hundred.

Primarily as a stimulus to others, in the hopes that we may know more of the ecology of our mollusk-fauna, I prepared a map of Illinois on which I summarized our knowledge of this fauna to date. In the preparation of this map I followed the data given by Baker and that in this paper. There are only five counties with more than one hundred species reported from them, and what is most regrettable, there are thirty-two counties of which we have no record at all. Almost one-third

of the entire State, representing some of our richest faunal regions, is still almost unknown so far as mollusks are concerned!

It is to be hoped, however, that none shall stop at mere collecting of specimens, but that notes shall be taken of the ecology of the species found,—that apparent maze of interrelations existing between individuals, species and the complex environment, which, combined, spell life and give to Nature true orientation and significance.

#### THE MOLLUSCA OF THE THREE COUNTIES

The following are the localities visited:

Piatt Co. (1 and 2) White Heath and Monticello; four trips to the Sangamon River and one trip to a small patch of woods near White Heath.

Champaign Co. (3) Urbana; five visits to Mr. C. A. Hart's back yard at 923 W. Green St., where several logs rested undisturbed for years. (4) Mount Hope Cemetery, south of Urbana, one trip. (5) Crystal Lake and cut-offs near Urbana, nine trips. (6) Salt Fork, Urbana, one trip to the historic "bone-yard" branch, three to the main stream, and one to a sewer outlet. (7) Brownfield (Augerville) Woods,  $3\frac{1}{4}$  miles Northeast of Urbana, about sixty trips. (8) the Cottonwood Woods, 4 miles Northeast of Urbana, near the Brownfield Woods, ten trips. (9) St. Joseph, Salt Fork and Spoon Creek, two trips. (10) Homer and Homer Park, one trip.

Vermilion Co. (11) Muncie, five trips to Stony Creek and to the woods bordering it, one trip to the Salt Fork. (12) Hillery, two trips to the Middle Fork and the woods bordering it, one trip to the woods north of Hillery. (13) Danville, one trip to woods northwest of town.

#### *Peculiarities of the Fauna*

The Sangamon River. It is a tributary of the Illinois River. During late Summer and Autumn it is very shallow at White Heath and Monticello. Due to the very high rises in Spring, which often overflow the river's flood-plain, great changes occur in the mollusk habitats. In addition to the changes in depth of water and current, the character of the bottom changes in

many places. What was gravel one day, is sand the next, or an ox-bow forms and the channel is changed over night. *Amblema undulata*, *Quadrula pustulosa*, *Fusconaia rubiginosa*, *F. coccinea*, *Tritogonia tuberculata* and *Eurynia fasciata* were the dominant clams. The less common species were: *Lampsilis ventricosa*, *L. anodontoides*, *Strophitus edentulus*, *Anodonta grandis*, *Anodontoides ferussacianus subcylindraceus*, *Lasmigona costata*, *L. complanata*, *Alasmidonta calceola* and *A. marginata*.

With the exception of *Eurynia fasciata*, the dominant clams are summer breeding forms, i. e., the sex products mature from fall to Spring, and the young are discharged during the Summer months. The others are the winter breeding species, the embryos of which mature in Spring and are set free in Autumn and the following Spring. The summer breeders find plenty of water when their young are discharged, also plenty of fish to which these young glochidia may become attached. Conditions appear, therefore, more favorable to the development of this type of clam. On the other hand, the Winter breeders find the river very shallow and with fewer fish when their young are released. This hypothesis seems valid as an explanation of the abundance of certain clams at this particular place.

At Havana, Illinois, the Illinois River is very broad and deep all year round. Fish are always plentiful. Therefore both the Summer and Winter breeders are in abundance. It would appear also that as the Spring rains swell the tributaries of the Illinois River, that fish from it will swim up these tributaries to spawn and bring with them the encysted glochidia, and that these are set free in these tributaries. As the late Summer and Winter conditions of the Sangamon River are not favorable to the development of these tiny clams, only a few survive. Whether or not these explanations are true, remains to be proven by more intensive studies.

Prof. F. E. Wood (1910, p. 558) gives the following count and list of clams that he found at White Heath, all of them in one heap and empty,—the results of a muskrat raid: 41 *Amblema undulata*, 4 *Quadrula pustulosa*, 1 *Fusconaia coccinea*, 7 *Lasmigona* sp., 3 *Tritogonia tuberculata*, 7 *Eurynia fasciata*,

1 *Lampsilis ventricosa*, 3 *Lasmigona complanata* and 1 *Anodonta grandis*. Such heaps were plentiful and show only too well how severe are the inroads made by *Fiber zibethicus* in the clam world, notwithstanding the fact that his chief food is vegetable matter. The muskrat takes the clams during Autumn, Winter and early Spring, when the corn and grain fields offer him no food.

Vermilion County. The Vermilion River, with its North and Middle Forks, rises in Ford and Iroquois Counties and drains into the Wabash River. The Middle Fork at Hillery contains much drifting sand. The depth of water varies in all these branches according to the season. Too few collections were made of the Unionidae to warrant making definite conclusions, however, it is evident that in several respects the fauna of this drainage system is quite different from that of the Sangamon. *Quadrula cylindrica* and *Obovaria circularis* collected here are typical of the Wabash Drainage.

The hillsides at Hillery are very favorable for *helices*; *Polygyra elevata*, *P. albolabris* and *P. thyroides* are the most abundant. Unfortunately man with his fire, destroyed an extensive area of this splendid *Polygyra habitat*; the calcined shells are strewn all over the place. Near the stream the lowland mesophytic plant association merges into a typical hydrophytic type with *Lymnæa humilis modicella*, *Segmentina armigera* and *Carychium exile* as the dominant mollusks.

At Muncie is an excellent sample of dry upland association and near to it, a well-drained mesophytic association; unfortunately, the mollusk fauna was very limited in both species and individuals. This place no longer represents natural and normal habitats, being badly distorted and changed by hogs, cattle, horses and man. The stream at the Big Four R. R. crossing is very rapid, its bed being chiefly rock. On one side are high bluffs; on the other side is a broad, level flood-plain which exhibits several terraces. Numerous cut-offs occur, usually dry in Summer and Autumn. The small fauna of these is chiefly composed of *Lymnæa humilis modicella*, *L. caperata*, *Physa gyrina*, *Aplexa hypnorum*, *Planorbis trivolvis* and *Segmentina armigera*. *Mancassellus macrurus*, *Branchippus* sp.,

Amphipods, Odonata larvæ, and a host of aquatic and semi-aquatic insect larvæ and adults, are in abundance. It is a melting point of terrestrial and aquatic conditions, and the aquatic forms must endure much dessication when the waters dry up in late Summer. Numerous birds come here to find food.

Champaign Co. This county is at the divide between the Sangamon, Vermilion and Embarass Rivers. Champaign and Urbana are almost the highest portions of the county. The woods are nearly all cleared and pastured, and the few that remain, even if undisturbed by axe or stock, are more or less abnormal due to the inroads of great numbers of field mice and shrews during Winter when the adjoining corn fields no longer suit them. This destruction of our forests, and as a consequence the development of corn and grain fields, means the destruction of our larger land snail habitats, and it is only a question of brief time, if not actually now, when these large *Polygyras* will no longer be collected by the hundreds. This fact should inspire students to survey those counties of Illinois from which we have few or no records, counties which are so situated that they are still rich in natural abodes, undisturbed by man.

The Brownfield and Cottonwood Woods are located  $3\frac{1}{4}$  and, 4 miles respectively, to the Northeast of Urbana. Their area is about eighty acres each. Until 1910 the only intruders in the Brownfield Woods (also called Augerville Woods), were rabbit hunters, botanists and entomologists. Since then, church picnics were held there, and more or less of a habit, fires were built and the burning embers not always extinguished, hogs and chickens entered, and trees were cut down by the neighbors. The Brownfield Woods is in the main part well drained, is composed chiefly of a mesophytic plant association, with a small sample of wet lowland type near the intermittant creek which flows thru the woods. The fauna of this creek is very poorly developed.

The mollusca of these woods are quite well developed; the following species have been collected: *Polygyra elevata*, *P. zaleta*, *P. pennsylvanica*, *P. thyroides*, *P. hirsuta*, *Circinaria concava*, *Zonitoides arboreus*, *Z. mimusculus*, *Z. nitudus*,

*Vitrea indentata*, *V. hammonis*, *Paravitrea significans*, *Euconulus chersinus*, *Agriolimax campestris*, *Philomycus carolinensis*, *Pyramidula alternata*, *P. solitaria*, *P. perspectiva*, *Helicodiscus parallelus*, *Sphyradium edentulum*, *Succinea avara*, *Strobilops labyrinthica*, *Gastrocopta contracta*, *G. tappaniana*, *G. holzineri*, *Vertigo tridentata* and *Carychium exile*, a total of twenty-seven species.

The Salt Fork drainage feeds into the Vermilion. The "Boneyard" branch is its source. A few intermittent feeders are found as far north as Rantoul, near the Mackinaw region where also the Sangamon has its source. The first Unios to be found are *Carunculina parva* and *Anodontoides ferussacianus subcylindraceus*, and wherever ox-bows are formed, *Anodonta grandis* is almost certain to be found. But few Sphæriidæ were found, no doubt more exist if only a more careful search is made for them. In the ecologically annotated list of species data is given covering the habitats of the Ancyliidæ, etc., found here. At Crystal Lake the littoral fauna is well developed,—mostly insect and snail, of the latter *Lymnæa humilis modicella*, *L. parva*, *Pomatiopsis lapidaria* and *Physa gyrina* being the dominant forms.

In 1910 the Salt Fork was dredged and as a result many faunal changes occurred. Numerous ox-bows were formed and at times these were literally alive with *Carunculina parva*, *Musculium transversum* and several species of *Sphærium*, and of course, large numbers of dragon fly larvae and nymphs. On one occasion a nymph of *Gomphus* sp. was collected with one of its legs caught between the valves of *Sphærium striatinum*. The dredged area is practically devoid of mollusks, though in time these will invade it. During the Winter, *Physa gyrina* and *Planorbis trivolvis* were frequently found crawling on the underside of ice.

At St. Joseph, prior to dredging, the stream was rather wide and had very muddy banks. *Amblema undulata* and *Carunculina glans* were the most numerous clams. The latter was only found here and particularly near the outlet of a slaughter house. *C. parva* was not found at this particular place, though elsewhere it was common. Many of the "Quadrulas" were found with their shells deformed by the hoofs of cattle.