

**Transactions of the Kansas Academy of Science**  
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Presentation Awards - 143<sup>rd</sup> Annual Meeting of the Kansas Academy of Science- Baker University

First Annual Photo Contest - 143<sup>rd</sup> Annual Meeting of the Kansas Academy of Science

Abstracts of the 143<sup>rd</sup> Annual Meeting of the Kansas Academy of Science.

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## **A ‘woollgari-zone mosasaur’ (Squamata; Mosasauridae) from the Carlile Shale (Lower Middle Turonian) of central Kansas and the stratigraphic overlap of early mosasaurs and pliosaurid plesiosaurs**

**Bruce A. Schumacher**

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A new specimen of rüsselosaurine mosasaur (FHSM VP-17564) from the middle Fairport Chalk Member (*Collignonicerias woollgari* zone, early Middle Turonian), Carlile Shale of central Kansas is among the earliest records of a derived mosasaur known from the North American Western Interior Seaway. Unequivocally the oldest recorded occurrence of a rüsselosaurine mosasaur from Kansas, and one of only four Kansas occurrences consisting of more than a single element, the specimen includes seven successive proximal caudal vertebrae bearing articulating hemal facets. No demonstrable characters ally the specimen to a more refined taxonomic subgroup, although the relative dimensions of the vertebral centra are significantly longer than equivalent caudal series in *Platecarpus* and *Tylosaurus*. This suggests that the tails of early rüsselosaurines were composed of a lesser number of longer caudal vertebrae than their successors, with less hydrodynamic adaptation from the terrestrial condition. Size of the vertebrae in relation to *Platecarpus* and *Tylosaurus* indicates a relatively large animal roughly 3.2 m in total body length, although this may be an over-estimate given the difference in vertebral dimensions as compared to more derived rüsselosaurines of the Niobrara Formation. The middle of the Fairport Chalk interval continues to produce a large number of vertebrate specimens despite the rarity of exposures. A pliosaurid plesiosaur skull (FHSM VP-321) is known from similar geographic and stratigraphic position as FHSM VP-17564, and the record of pliosaurs (FHSM VP-17469) continues into younger Blue Hill Shale (*Prionocyclus hyatti* zone, middle Middle Turonian) demonstrating with certainty that pliosaurs and early mosasaurs inhabited the same stretch of seaway for roughly one million years.

## **Analysis of an associated *Cretoxyrhina mantelli* dentition from the Late Cretaceous (Smoky Hill Chalk, Late Coniacian) of western Kansas**

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Fossil shark teeth are common but are usually represented by shed examples and are seldom in associated or articulated groups. Complete dentition reconstruction from isolated teeth cannot be certain, even when large quantities are available from a single location and horizon. The Smoky Hill Chalk (Late Cretaceous) of western Kansas, U.S.A. has yielded a number of associated, and sometimes articulated, tooth sets of *Cretoxyrhina mantelli* Agassiz. Teeth from articulated sets are rarely removed from matrix which limits the understanding of positional characteristics to a single perspective. In this paper, we analyze and described an associated set of disarticulated *Cretoxyrhina* teeth. These teeth were arranged and compared with other disarticulated associated sets, then compared with a known articulated tooth set; resulting in a multi-perspective *Cretoxyrhina* tooth set. This reconstruction provides characteristics that permit upper and lower lateroposterior teeth to be differentiated and raise questions regarding the number of anterior tooth positions present.

## **Occurrence of the hybodont shark genus *Meristodonoides* (Chondrichthyes; Hybodontiformes) in the Cretaceous of Kansas**

**Michael J. Everhart**

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Although known from Mesozoic marine, fresh and brackish water deposits from North America, Europe, Africa and Asia, hybodont sharks have been rarely reported from the Cretaceous formations of Kansas. Remains of hybodonts reported from outside Kansas consist of small teeth, distinctive cephalic hooks, dorsal fin spines, and occasionally even complete fish. Collections of micro-vertebrate remains in Kansas since 1999 have confirmed the presence of hybodontiformes in the Kiowa (Albian), Dakota (Cenomanian) and Carlile (Turonian) formations in three different counties in the state. These specimens have been assigned to the genus *Meristodonoides* Underwood and Cumbaa 2010, and add an important element to the known marine faunas of the Western Interior Sea during late Early Cretaceous and early Late Cretaceous time.

## **The least shrew on Konza Prairie Biological Station, Kansas**

**Glennis A. Kaufman<sup>1</sup> and Donald W. Kaufman**

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We report specific locations and attributes of least shrews (*Cryptotis parva*) captured over a 29-year period on the Konza Prairie Biological Station, Kansas. We used large, non-folding Sherman live traps to survey small mammals in native tallgrass prairie habitats (by traplines and grids), woodland habitats (by traplines and grids) and planted brome fields (traplines only). Eighty-seven least shrews were captured over the 29 years of surveys (ca. 350,000 trap nights). Almost all captures (98%) occurred in prairie habitat; 80% of all captures occurred on a prairie grid during a 5-year period. Least shrews on prairie traplines were captured in a variety of topographic positions (upland, hillside slope and lowland) and in burned and unburned prairie, but not in prairie grazed by bison. We captured individuals that ranged in body size from 2.5-8.0 g. The mean body mass of all captured least shrews was 4.7 g (excluding pregnant females) and, when only adults were included (excluding pregnant females), it was 5.1 g. We noted 13 pregnancies among 12 females; the earliest pregnancy was recorded in mid-April and latest in mid-October. Most pregnancies (ca. 70%) were recorded in two months, July and September. Lactating females that were not pregnant were larger in size (5.5 g) than non-reproductive females (4.4 g). Response of least shrews to live traps was not neophobic; and, in fact, about 30% of the shrews were captured on day 1 of a 4-day trapping period on prairie sites. Our data add information about attributes of least shrews living in natural habitats, such as the tallgrass prairie, and support two previous studies, which suggested that least shrews are rare on Konza Prairie.

## **Rediscovery of the *Hesperornis regalis* Marsh 1871 holotype locality indicates an earlier stratigraphic occurrence**

**Michael J. Everhart**

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The type specimen of a large, flightless marine bird, *Hesperornis regalis*, was collected by O.C. Marsh in 1871. Due to the practices of the time, and the lack of accurate maps, the type locality was initially recorded by Marsh in a letter simply as the “upper Cretaceous of Western Kansas,” and then later reported as “the gray shale near the Smoky Hill River in Western Kansas.” Since the Smoky Hill Chalk Member of the Niobrara Formation is exposed along the Smoky Hill River in present day Wallace, Logan and Gove counties over a distance of more than 75 miles, this vague locality information encompasses about 5 million years of depositional history. An 1880 account by Marsh narrows the locality down to the south bank of the Smoky Hill River about 20 miles east of Fort Wallace in Logan County. The results of a recent field investigation of the eastward route traveled by Marsh’s 1871 Yale College Scientific Expedition sheds light on the probable locality of both the type specimen (YPM 1200) of

*Hesperornis regalis*, and also the first specimen with a skull and teeth (YPM 1206) collected in 1872. In turn, this provides important new data supporting an earlier occurrence (Upper Santonian) of this species in the Western Interior Sea over Kansas than previously assumed.

## **Topographic Depressions on the High Plains of Western Kansas**

**Daniel F. Merriam**

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The High Plains physiographic province in western Kansas is dotted with shallow depressions preserved mostly in loosely consolidated Tertiary and Quaternary sediments. These topographic lows, best observed when they are wet, can be the result of solution, infiltration, animal activity, eolian action, or meteorite impact. Also, because of alteration of the topographic feature after formation, it is virtually impossible to tell the origin of these features from their size and shape and many may not be recognizable at all.

## **A new snakefly from the Eocene Green River Formation (Raphidioptera: Raphidiidae)**

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*Agulla protomaculata*, new species (Raphidiidae: Raphidiinae), is described and figured from a series of males and females preserved as fine compressions in middle Eocene shale from the Green River Formation of Colorado. The specimens are exquisitely preserved, complete with integumental color patterns. The species is compared with other Tertiary snakeflies.

## **A new genus and species of Orthoptera from the Lower Permian Wellington Formation of Noble County, Oklahoma, USA**

**Roy J. Beckemeyer**

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*Loxoedischia drewi* new genus and new species from Oklahoma, is described as the latest addition to the Orthoptera fauna of the Lower Permian Wellington Formation, bringing the total to eleven species, eight of which are known from Kansas, and three from Oklahoma. Family assignment is uncertain, but the taxon is closely related to the Oedischiidae.

## **Kansas from space: A century of viewing the Earth from above**

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The Earth has been viewed and photographed from above for more than a century utilizing a variety of platforms such as kites, balloons, airplanes, and now robotic and manned spacecraft. Imagery has been captured both by film and digital cameras from heights of a few hundred feet to hundreds of miles. This imagery has been used to construct topographic maps, identify man-made objects, and map surface features on Earth including the geology. Photographs taken at different altitudes have different resolution, aerial coverage, and levels of detail, and thus serve a number of different purposes. The quality and utility of Earth imagery has continuously improved during the last 100 years, including the photo-documentation of features in Kansas. Of special interest is the development of space-based photo-documentation including an extensive database of some 800,000 photographs maintained by NASA that have been taken by the astronauts since the beginning of human spaceflight. There are many high-quality photographs of Kansas most of which have been obtained from either Space Shuttle missions in high-inclination orbits or from the International Space Station. Images taken remotely over Kansas from different platforms at different heights for different purposes are shown as examples of how images from altitude can be used.

## **Effect of mid-summer haying on growth and reproduction in prairie forbs**

### **Becky Begay<sup>1</sup>, Helen M. Alexander<sup>2</sup> and Erin Questad<sup>3</sup>**

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Mid-summer haying is a common management practice for prairies; plant species could differ in the effect of haying on subsequent growth and reproduction. We examined the effect of haying on prairie species by performing a clipping experiment. For each of seven species, sixteen plants were chosen and half were randomly assigned to a clipping treatment and half to a control treatment. Experimental plants (and surrounding vegetation) in the clipped treatment were cut to a ten cm height in summer for two years. Measurements of plant height and the number of inflorescences were taken on all plants prior to clipping in June and in the fall each year. For many species, clipped plants were smaller than control plants in the fall after clipping. However, after overwintering, there were few significant differences in plant size or reproductive output between plants that were previously clipped and control plants. Some species, however, did show persistent effects of clipping. For example, both plant size and number of inflorescences were reduced by clipping in *Lespedeza capitata*. Similarly, clipped plants of *Amorpha canescens* had fewer inflorescences the year after clipping compared to control plants. Future studies should examine long-term effects of haying on plant growth and reproduction, and explore whether such effects depend on plant life forms or flowering phenologies.

## **Remains of small ornithurine birds from a Late Cretaceous (Cenomanian) microsite in Russell County, north-central Kansas**

### **Alyssa Bell<sup>1</sup> and Michael J. Everhart<sup>2</sup>**

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Our analysis of vertebrate remains collected from a Cenomanian microsite in the Lincoln Limestone, the basal-most

member of the Greenhorn Formation in Russell County, Kansas, identifies ornithurine (*sensu* Chiappe, 1996) avian fossils. The specimens presented here are slightly younger than the oldest avian remains known from North America (from the Woodbine Formation, Texas) and of a similar age as the avians from the Asheville Formation in Saskatchewan, Canada. This find thus connects the extensive geographic range of the earliest North American birds from Saskatchewan south through central Kansas and on to Texas. The specimens discussed here are fragmentary, yet show features definitive of ornithurine birds. One specimen is attributable to *Ichthyornis*, whereas another preserves teeth characteristic of ornithurine birds. In addition to bird bones, the microsite yielded numerous bony fish remains, shark teeth, coniasaur vertebrae, and other lizard bones.

## **A tale of four Lhwys: Early research materials on fossil marine vertebrates available to Edward Drinker Cope in Philadelphia Prior to 1868.**

**Jane P. Davidson**

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Edward Drinker Cope (1840-1897) reconstructed and named the type specimen of *Elasmosaurus platyurus* in 1869. In publishing this specimen, he made reference to various early 19<sup>th</sup> century publications on plesiosaurs. Along with these publications, he would have had access to images of various fossil bones including vertebrae of ichthyosaurs and plesiosaurs which were printed in Edward Lhwyd's *Lithophylacii Britannici Ichnographia* (1699) as copies of the book were readily available to him in three Philadelphia research institutions. Cope did not refer to Lhwyd even though he had access to the book, and reasons for this are presented.

## **A comparison of CPD (critical point drying) and HMDS (hexamethyldisilazane) in the preparation of *Corallorhiza* spp. rhizomes and associated mycorrhizae for SEM (scanning electron microscopy)**

**Scott A. Thomasson<sup>1</sup> and Joseph R. Thomasson<sup>2</sup>**

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Rhizomes of *Corallorhiza maculata* and *Corallorhiza striata* and associated mycorrhizal fungi were dried with critical point drying (CPD) and air drying from hexamethyldisilazane (HMDS) to compare the effectiveness of both methods in preparing specimens for scanning electron microscopy. Drying artifacts such as collapsed cells and lines and ridges on rhizome epidermal cells due to shrinkage resulted from both methods, but CPD produced the least artifacts. CPD and HMDS drying were equally effective at producing good to excellent preservation of internal features of the rhizomes and associated fungi with minimal artifacts.

## **A mysterious king-sized Mesozoic lungfish from North America**

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Lungfishes (dipnoans) are lobe-finned fishes that lived from the Devonian to Recent. Here, we describe a previously unreported Mesozoic lungfish species assigned to the genus *Ceratodus* on the basis of an isolated upper tooth plate from the Western Interior of North America. The morphology of the tooth specimen clearly suggests that it represents an undescribed taxon, but although distinct, the species cannot be given a new taxonomic name because of its mysterious provenance data. The specimen is noteworthy because it is the largest known lungfish tooth reported to date. We estimate the total length of this durophagous fish to be about 4 m in life. This discovery adds a remarkable new component to the paleoecology of North America during the 'Age of Reptiles.'

## **Observation of porcupine in Geary County, Kansas**

**Donald W. Kaufman<sup>1</sup> and Glennis A. Kaufman**

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No abstract published

## **Presentation Awards - 143<sup>rd</sup> Annual Meeting of the Kansas Academy of Science- Baker University**

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## **First Annual Photo Contest - 143<sup>rd</sup> Annual Meeting of the Kansas Academy of Science**

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## **Abstracts of the 143rd annual meeting of the Kansas Academy of Science, Baker University, Baldwin City, Kansas, April 8-9, 2011**

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**Transactions of the Kansas Academy of Science**  
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**NUMBERS 3-4 (Abstracts listed below)**

Changing the guard...Or in this case, changing the Co-editors of the KAS Transactions. Michael J. Everhart and Roy J. Beckemeyer

Entomology and the WPA Federal Art Project in Kansas: Artists drawn to science. Jordan D. Marché II

Abundance and spatiotemporal distribution of the non-native house mouse in native tallgrass prairie. Donald W. Kaufman, Dawn M. Kaufman, and Glennis A. Kaufman

Site and soil relationships in natural stands of black walnut in the Flint Hills of central Kansas. Wayne A. Geyer and Felix Ponder, Jr.

Selected aspects of semi-aquatic turtle assemblages in east-central Kansas ponds. William J. House, Ian M. Nall, and R. Brent Thomas

The first oil well in Kansas in 1860. Dan Merriam and K. David Newell

Surveys of live unionid mussels in the urban reach of the Little Arkansas River separated by thirty years. William G. Welch, Charles H. Cope, Donald A. Distler, and Mark A. Schneeegurt

Kansas Academy of Science: Historical Sketch – 1911

Simulation of kernel number and yield using CERES-Maize 3.51. Annette A. James, Richard L. Vanderlip, and Steve Welch

Errata

A labyrinthodont amphibian from the margin of the Pennsylvanian epicontinental sea in Kansas. L.D. Martin and Dan Merriam

Some notable Swedish-American geologists with a Kansas connection. Dan Merriam

KAS Board of Directors – 2011 Summer Meeting

Announcement of the 144<sup>th</sup> Annual Meeting of the Kansas Academy of Science

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**Changing the guard...Or in this case, changing the Co-editors of the KAS Transactions.**

**Michael J. Everhart and Roy J. Beckemeyer**

No Abstract

**Entomology and the WPA Federal Art Project in Kansas: Artists drawn to science.**

## **Jordan D. Marché II**

Faculty members from the Department of Entomology at Kansas State College (now Kansas State University) in Manhattan received support (ca. 1940-43) from a somewhat unusual source to complete a work of practical utility describing the region's insect fauna. Their patron was none other than the Federal Art Project (FAP) of the Works Progress Administration (WPA) - the largest agencies of their kind that provided employment relief during the Great Depression under President Franklin D. Roosevelt's New Deal policies. More than a dozen and a half regional artists were recruited and trained in the exacting techniques of scientific illustration, for which stringent standards of performance were uniformly applied. Through their efforts, more than a hundred pen-and-ink habitus drawings were prepared for the identification manual, *Insects of Kansas* (1943), published by the Kansas State Board of Agriculture. Seemingly exploiting an opportunity provided by the WPA/FAP to demonstrate an integration of "the arts in general with the daily life of the community," the entomologists' rationale almost certainly drew upon the model of cooperative agricultural extension used in diffusing practical (i.e., vocational) scientific knowledge. This investigation has also revealed what it meant to be a WPA artist employed on the project. It has likewise enabled the artistic work (and profiles) of two notable Kansas women scientific illustrators - Bertha (Kimball) Dickens and Ella (Weeks) Menoher - each a member of the Kansas Academy of Science - to be placed into historical context.

## **Abundance and spatiotemporal distribution of the non-native house mouse in native tallgrass prairie.**

**Donald W. Kaufman, Dawn M. Kaufman, and Glennis A. Kaufman**

We have sampled small mammals on the Konza Prairie Biological Station, in eastern Kansas, from autumn 1981 through the present. One part of this effort has involved sampling rodents and shrews on 14 permanent traplines (20 stations, 15-m interstation intervals and 4 consecutive nights) situated in native tallgrass prairie during each of 29 autumns and 29 springs as well as 6 summers. In these permanent sites, house mice (*Mus musculus*) were extremely uncommon as illustrated by average abundances of 0.023 mice/100 trap nights (TN) in autumn, 0.022 mice/100 TN in summer and 0.000 mice/100 TN in spring. Precipitation in summer influenced autumn use of tallgrass prairie by house mice; captures only occurred in autumn when precipitation was  $\geq 300$  mm in the previous summer. House mice were slightly more likely (though not significantly) to be captured in lowland than upland or hill slope prairie. The distribution of occurrence was not influenced by fire (burned or unburned) or grazing history (grazed or ungrazed). Over our total trapping efforts on Konza Prairie (sampling on the permanent traplines plus other traplines and grids), we captured only 36 house mice or about 0.01 individual/100 TN. Overall, more males (64%) than females were captured; males, on average, were larger (14.0 g) than females (10.5 g) in body size; females typically were non-reproductive (only one of 13 was pregnant) and individuals typically were trapped only once. Captures were distributed broadly in both space and time and lacked predictability (i.e., exhibited an "anti-nested" distribution of captures). These and other patterns suggest that most house mice were transients in the tallgrass prairie. Distribution and abundance of house mice also imply that this introduced species is extremely uncommon and likely will never be invasive in native tallgrass prairie.

## **Site and soil relationships in natural stands of black walnut in the Flint Hills of central Kansas.**

**Wayne A. Geyer and Felix Ponder, Jr.**

Factors important to tree growth in the Midwest are generally related to moisture availability. By relating site quality to site and soil characteristics of forests, potential productivity can be estimated for non-forested areas. Our study measured the growth potential of black walnut in natural stands. We looked at 28 stands on unglaciated soils in the Flint Hills of east central Kansas and evaluated numerous environmental factors including site and chemical and physical soil properties. These factors were related to tree height at the standard age of 50 years. Simple correlation and multiple regression analyses were run with site index using 31 variables of soil and topographic characteristics.

These analyses explained 80% of the variation in height with chemical and physical variables. Soil type and depth to a restrictive layer (DRL) accounted for 55% of the variation in height.

## **Selected aspects of semi-aquatic turtle assemblages in east-central Kansas ponds.**

**William J. House, Ian M. Nall, and R. Brent Thomas**

Ponds are common in many agricultural landscapes and provide aquatic habitat for wildlife. Most studies of semi-aquatic turtle assemblages have been conducted in lotic environments or large lentic habitats (e.g., lakes, reservoirs), but few studies have described pond communities. We used Frame nets and basking traps to sample turtle assemblages within eight ponds located in east-central Kansas (Lyon Co.) from 15 May 2007 – 1 October 2007. Our objective was to describe selected aspects of the semi-aquatic turtle assemblages in these ponds: species richness, relative abundance, catch per unit effort, and density. A total of 655 unique individuals were captured and four species were detected (*Chrysemys picta bellii*, N = 387; *Trachemys scripta elegans*, N = 188; *Chelydra serpentina*, N = 79; *Pseudemys concinna*, N = 1). *Chrysemys picta bellii* was usually the most abundant species, with *T. s. elegans* and *C. serpentina* ranked second and third, respectively. Likewise, catch per unit effort (an index of abundance) was usually greatest for *C. p. bellii*, and there was significant agreement ( $W = 0.67$ ) among the rank abundances of the three most commonly encountered species among the eight ponds ( $\chi^2 = 10.8$ ; d.f. = 2;  $P = 0.005$ ). However, the identity of the numerically dominant species was not the same in all ponds. Mean density (i.e., number of turtles/ha) across all ponds was 178.6, 49.2, and 29.8 for *C. p. bellii*, *T. s. elegans*, and *C. serpentina*, respectively.

## **The first oil well in Kansas in 1860.**

**Dan Merriam and K. David Newell**

No abstract

## **Surveys of live unionid mussels in the urban reach of the Little Arkansas River separated by thirty years.**

**William G. Welch, Charles H. Cope, Donald A. Distler, and Mark A. Schneegurt**

The Little Arkansas River extends 102 miles through south-central Kansas to its confluence with the Arkansas River at Wichita. Historical studies along the most urban reach of this river at Wichita reported 12 unionid species. Unionid mussel surveys were conducted at 250 sites within the Little Arkansas River basin in 1978-79. Along the reach at Wichita, seven species were found alive: *Lasmigona complanata*, *Leptodea fragilis*, *Potamilus ohioensis*, *Pyganodon grandis*, *Quadrula pustulosa*, *Quadrula quadrula*, and *Uniomerus tetralasmus*. In 2008-09, surveys were conducted at the Wichita sites between 11th Street North and 109th Street North. Live representatives of five of these species were detected, missing *P. ohioensis* and *U. tetralasmus*. An exotic species, *Corbicula fluminea*, only was detected in the 2008-09 study. Mussel abundance in the current study was significantly lower than in the 1978-79 survey. In addition, there was a significantly different species distribution in this reach between the two surveys. Mussel length class frequency was not significantly different between surveys for any of the mussel species. A combination of environmental changes during the urban development of this river reach may have caused the decline in mussel populations.

## **Kansas Academy of Science: Historical Sketch – 1911**

No abstract

## **Simulation of kernel number and yield using CERES-Maize 3.51.**

**Annette A. James, Richard L. Vanderlip, and Steve Welch**

The primary objective in corn production is to produce maximum yield, but many factors can interact to reduce yields. Crop models can be used as management tools to maximize returns to the producer and help manage resources. However, crop models need to accurately predict yield and yield components to be accepted on a large scale. The objective of this study was to evaluate and compare the simulation of kernel number and yield in the CERES-Maize crop model using four equations for kernel number calculation. Data sets from various plant populations, planting dates, and hybrid maturities under irrigated and dryland conditions from Kansas were used for evaluation of the four kernel number calculation methods incorporated into CERES-Maize version 3.51. None of the four equations adequately simulated kernel number across plant populations, locations, and hybrids for irrigated or dryland conditions. Simulated kernel numbers were generally high at low kernel numbers and low at high kernel numbers. However, under irrigated conditions kernel number was better simulated for late hybrids than for early hybrids. None of the equations accounted for a significant portion of the variability in kernel number under dryland conditions. Simulated yield was high at low yield levels and low at high yield levels under irrigated conditions with all four equations. The inability of these equations to accurately simulate kernel number may have affected the accuracy of yield simulations. Therefore, factors such as average plant growth rates and intercepted radiation during critical periods around silking need to be examined more closely if kernel number and yield are to be accurately simulated.

## **A labyrinthodont amphibian from the margin of the Pennsylvanian epicontinental sea in Kansas.**

**L.D. Martin and Dan Merriam**

A partial labyrinthodont amphibian skull was collected from the Pony Creek Shale Member of the Wood Siding Formation (Virgilian Stage, Upper Pennsylvanian) in Wabaunsee County, Kansas. The partial skull provides supporting evidence that labyrinthodonts frequented marginal marine environments. The fossil is from an animal that probably was about 1.5 meters long in life and was ecologically similar to an alligator.

## **Some notable Swedish-American geologists with a Kansas connection.**

**Dan Merriam**

Seven Swedish-American geologists who have made notable contributions to the study of the geology of Kansas are discussed. Two immigrated from Sweden and five are first or second generation descendants. All taught in a college or university, had connections with a state or the federal geological survey, and all had an international outlook.