

# IDENTITY, INTEGRATION, AND ASSIMILATION RECORDED IN MANITOBA'S POLISH AND UKRAINIAN CEMETERIES

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**ABSTRACT**—Polish and Ukrainian rural cemeteries in southeastern Manitoba reflect the process of negotiating complex religious, geographic, and ethnic identities within Canadian society. Before 1914 the identities of Slavic immigrants from eastern Europe to western Canada were influenced more by religious affiliation than by geographic origins. This Slavic population, now assimilated into mainstream Anglophone society, retains elements of Polish and Ukrainian on grave markers as expressions of difference and acts of resistance against total homogeneity. In rural Manitoba grave markers record the process of exogamy and cultural blending, while cemetery landscapes replicate the social relationship between cultural groups from the same region in Europe. Headstone designs reflect economic progress, while language use reveals how ethnic identities were, and are, imagined and expressed.

Key Words: cemeteries, ethnicity, Manitoba, Poles, Ukrainians

# MAPPING BURNED AREAS IN THE FLINT HILLS OF KANSAS AND OKLAHOMA, 2000–2010

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**ABSTRACT**—Prescribed burning is commonly used to prevent succession of tallgrass prairie to woody vegetation, which preserves the prairie's value to ranching and native wildlife. However, burning has negative effects as well, including potentially harming wildlife and releasing pollutants into the atmosphere. Research concerning the effects of fire on vegetation dynamics, wildlife, and air quality would benefit greatly from maps of burned areas in the Flint Hills, as no reliable quantification of burned areas currently exists. We used Moderate Resolution Imaging Spectroradiometer (MODIS) satellite imagery to map burned areas in the Flint Hills for each year from 2000 to 2010. Our maps revealed the total amount and spatial pattern of burning for each year. They also revealed the frequency with which different parts of the study area were burned during the 11-year study period. Finally, our maps showed that nearly all burning took place during the month of April.

**Key Words:** burned-area mapping, MODIS, prescribed fire, remote sensing, tallgrass prairie

## *PAROCHLUS KIEFFERI* (GARRETT, 1925) IN NEBRASKA (DIPTERA: CHIRONOMIDAE)

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**ABSTRACT**—A rare species of nonbiting aquatic midge, *Parochlus kiefferi* (Garrett, 1925), was discovered in Squaw Creek in the Pine Ridge of northwest Nebraska. *Parochlus* is a genus of midge found throughout the Southern Hemisphere and is only represented by this one species in the Northern Hemisphere. The typical North American species distribution of *P. kiefferi* includes high alpine and northern latitude streams, so the collection of *P. kiefferi* from a low elevation and low-latitude stream in Nebraska represents a range extension for the species. A survey for *P. kiefferi* from 83 samples from 53 stream sites in northern Nebraska yielded only four specimens of *P. kiefferi*, indicating that this species has a limited distribution. The stream survey was combined with a review of historical data dating back to the 1980s for stream macroinvertebrates from Nebraska, and the results confirmed that *P. kiefferi* is a rare species in the state.

**Key Words:** Chironomidae, freshwater conservation, rare species, stream ecology

# ADAPTATION OF ANNUAL FORAGE LEGUMES IN THE SOUTHERN GREAT PLAINS

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**ABSTRACT**—Our objective was to evaluate adaptation and compatibility of cool-season annual legumes overseeded into perennial grasses in the southern Great Plains. Freeze damage, vigor, and standing crop of 14 annual legume species were evaluated during spring at three locations in Oklahoma and Texas from 2006 to 2008. Across locations and years, standing crop of hairy vetch (*Vicia villosa* Roth) and Austrian winter pea [*Pisum sativum* L. ssp. *arvense* (L.) Poir.] averaged 3,513 and 3,210 kg dry matter (DM) ha<sup>-1</sup>, respectively. Standing crop of crimson clover (*Trifolium incarnatum* L.) and arrowleaf clover (*T. vesiculosum* Savi) averaged 1,138 and 1,071 kg DM ha<sup>-1</sup>, respectively. Although subject to freeze damage, annual medics produced more spring forage than annual clovers on soil with pH > 8.0. Most of the annual legumes survived winter, demonstrating their adaptability to pastures in the southern Great Plains, but hairy vetch and Austrian winter pea consistently provided the most spring forage.

**Key Words:** annual clovers, annual medics, hairy vetch, overseeding, pasture management, Austrian winter pea

# A CONCEPTUAL MODEL TO FACILITATE AMPHIBIAN CONSERVATION IN THE NORTHERN GREAT PLAINS

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**ABSTRACT**—As pressures on agricultural landscapes to meet worldwide resource needs increase, amphibian populations face numerous threats including habitat destruction, chemical contaminants, disease outbreaks, wetland sedimentation, and synergistic effects of these perturbations. To facilitate conservation planning, we developed a conceptual model depicting elements critical for amphibian conservation in the northern Great Plains. First, we linked upland, wetland, and landscape features to specific ecological attributes. Ecological attributes included adult survival; reproduction and survival to metamorphosis; and successful dispersal and recolonization. Second, we linked ecosystem drivers, ecosystem stressors, and ecological effects of the region to each ecological attribute. Lastly, we summarized information on these ecological attributes and the drivers, stressors, and effects that work in concert to influence the maintenance of viable and genetically diverse amphibian populations in the northern Great Plains. While our focus was on the northern Great Plains, our conceptual model can be tailored to other geographic regions and taxa.

**Key Words:** amphibian conservation, adaptive management, conceptual models, ecological attributes, ecological effects, ecosystem drivers, ecosystem stressors

# CHANNEL WIDTH AND LEAST TERN AND PIPING PLOVER NESTING INCIDENCE ON THE LOWER PLATTE RIVER, NEBRASKA

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**ABSTRACT**—Endangered interior least terns (*Sternula antillarum athalassos*) and threatened northern Great Plains piping plovers (*Charadrius melodus*) nest together on midstream sandbars in large rivers in the interior of North America. We investigated the relationship between river channel width and tern and plover nesting incidence on the lower Platte River, Nebraska, using a model-based logistic regression analysis. Multiple channel width measurements and a long-term nesting data set were used in the analysis. Nesting incidence was positively associated with increasing river channel width proximal to the nesting site. At a greater distance, up to 802 m away from the nesting site, there was no relationship with channel width. Managers and regulators should use these results to aid decisions pertaining to habitat creation and assessing impacts of future projects. Future research should address whether relationships exist between river channel width and nest counts and reproductive rates of interior least tern and piping plovers on the lower Platte River.

**Key Words:** channel width, *Charadrius melodus*, interior least tern, lower Platte River, piping plover, *Sternula antillarum athalassos*

# WETLAND HYDRODYNAMICS AND LONG-TERM USE OF SPRING MIGRATION AREAS BY LESSER SCAUP IN EASTERN SOUTH DAKOTA

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**ABSTRACT**—Lesser scaup (*Aythya affinis* [Eyton]) populations remain below their long-term average despite improved habitat conditions along spring migration routes and at breeding grounds. Scaup are typically associated with large, semipermanent wetlands and exhibit regional preferences along migration routes. Identifying consistently used habitats for conservation and restoration is complicated by irregular wetland availability due to the dynamic climate. We modeled long-term wetland use by lesser scaup in eastern South Dakota based on surveys conducted during below-average (1987–1989) and above-average (1993–2002) water condition years. Wetland permanence, longitude, and physiographic region were all significant determinants of use ( $P < 0.01$ ). Long-term use was best described by a quadratic equation including wetland surface area variability, an index of wetland hydrodynamics that is linked to productivity, biodiversity, and value to waterfowl. Contrary to previous findings, our study shows that over the long term, lesser scaup are more than twice as likely to use permanent wetlands as they are semipermanent wetlands. The northern region of South Dakota's Prairie Coteau, which holds the highest density of hydrologically dynamic permanent wetlands, should be considered an area of conservation concern for lesser scaup. The criteria we identified may be used to identify important lesser scaup habitats in other regions of the Prairie Pothole Region.

**Key Words:** lesser scaup, Prairie Coteau, Prairie Pothole Region, wetland hydrodynamics, wetland surface area

# REPRODUCTION AND POPULATION CHARACTERISTICS OF WHITE-TAILED JACKRABBITS IN SOUTH DAKOTA

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**ABSTRACT**—We evaluated the reproductive biology of 314 white-tailed jackrabbits (*Lepus townsendii*) in 44 counties throughout South Dakota from June 2004 to September 2005. We classified jackrabbits as juveniles or adults based on the closure of the proximal epiphysis of the humerus using X-ray analysis. We determined annual reproductive activity through fluctuations in measured weights of reproductive organs for both sexes. The 2005 breeding season started in late February and proceeded until mid-July, approximately 142 days, allowing for females to potentially produce 3.3 litters. We found four distinct breeding periods by the overlap of estimated conception and parturition dates. Mean litter size was 4.6 per female (range 1–8). Prenatal mortality from preimplantation and postimplantation loss was highest (32%) in the first littering period in 2005.

**Key Words:** fecundity, population characteristics, reproduction, South Dakota, white-tailed jackrabbit