

RENDEZVOUS ROOM

TUESDAY

ROOM: Rendezvous

TIME: Tuesday 8:00 AM

TITLE: Mountain sucker decline: patterns and probable causes in the Black Hills of South Dakota

AUTHOR(S):

Luke Schultz -- South Dakota State University, Department of Wildlife and Fisheries Sciences, Brookings, SD 57007. Phone: 605-688-6121 Email: Luke.Schultz@sdstate.edu

ABSTRACT: Recent studies have documented a dramatic increase in the number of imperiled fishes in North America, and ongoing global change might exacerbate current rates of species loss. Although mountain sucker (*Catostomus platyrhynchus*) are stable across their range, regional trends indicate declines at finer spatial scales, especially on the periphery of their range, including Black Hills populations. In addition, a paucity of information exists on their basic autecology and community dynamics. The objectives of this study were to (1) assess changes in mountain sucker distribution since the 1960s, and (2) evaluate the influence of physical and biological variables on the distribution of mountain sucker in the Black Hills of South Dakota. We analyzed stream fisheries survey data from the 1960s to the present and found that mountain sucker catch per unit effort (CPUE) declined at three nested spatial scales: site, stream, and watershed. None of our analyses indicated positive trends. At several locations, mountain sucker appear to have been extirpated. These results indicate that declines in mountain sucker in the Black Hills of South Dakota have occurred since routine sampling began in the 1960s. Our results from four of seven Black Hills streams with persistent mountain sucker populations indicate that streams with permanent baseflow and those that are not managed as salmonid fisheries might provide suitable conservation areas. Maintaining and restoring fisheries in the face of global change requires an understanding of native fish dynamics and habitat requirements.

KEYWORDS: *Catostomus*, conservation, native

ROOM: Rendezvous

TIME: Tuesday 8:20 AM

TITLE: Balancing restoration goals with design and function - the Melvin Price locks and dam fish passage project

AUTHOR(S):

Jason Farmer -- US Army Corps of Engineers St Louis District, 1222 Spruce Street , USACE
4th Floor, St Louis , MO 63103. Phone: (314) 331-8033 Email:

jason.w.farmer@usace.army.mil

ABSTRACT: The U.S. Army Corps of Engineers St. Louis District is planning a fish passage at the Melvin Price Locks and Dam Site (Mel Price). The goal of this project is to reestablish connectivity for migratory species attempting to move upstream from the unimpounded Lower Mississippi River into the Upper Mississippi River and Illinois River Basin. Mel Price is located in Alton, Illinois and is the first barrier fish encounter when attempting to make this migration. When completed, the passage would reconnect most of the mainstem portion of the Illinois River in addition to many of its tributaries.

A variety of complex engineering problems are being addressed by the designers. The passage must be available 95% of the year and must be usable by 37 species of migratory fish. Hinge-point control results in regular fluctuations of 7 feet at the fish passage location. The Missouri River radically effects tailwater elevations. The mouth of the fish passage must be located as close to the dam as possible in order to provide sufficient attraction to migrating fish. The project will be subject to major flood events, ice flows, and large debris. Taking precedent over all other factors is that Mel Price is a functioning lock and dam which must continue to operate effectively without compromise to safety or adverse impacts to navigation activities.

This presentation outlines the innovation and engineering expertise being utilized to accomplish this goal as well as the potential large-scale ecosystem benefits.

KEYWORDS: fish passage, Illinois River

ROOM: Rendezvous

TIME: Tuesday 8:40 AM

TITLE: Variable response times of different ecosystem components to dam removal

AUTHOR(S):

Steven Butler -- Illinois Natural History Survey, Kaskaskia Biological Station, RR1 Box 157, Sullivan, IL 61951. Phone: (217)728-4851 Email: sebutlr1@illinois.edu

ABSTRACT: An increasing number of dam removals are occurring on rivers and streams throughout North America. However, the ability to predict the rate and magnitude of ecological change after dam removal remains elusive. We evaluated the effects of the removal of the South Batavia Dam on physical habitat, macroinvertebrates, and fish assemblages in the Fox River, Illinois. The former upstream impoundment and downstream free-flowing site were compared to reference impoundment and free-flowing sites to evaluate the effects of dam removal against natural variation in response variables. Pre-removal (2000-2002), partial removal (2003-2005), and full removal (2005-2008) time periods were compared to assess response rates of different ecosystem components to dam removal. Physical habitat and benthic invertebrates appear to have rapidly responded to the initial dam breaching, with little evidence of further changes due to full dam removal. Many fish community metrics, however, did not exhibit a significant response until after full removal had occurred. Species richness increased in the former impoundment and the fish assemblage became similar to reference free-flowing sites. The fish assemblage at the impacted free-flowing site was somewhat negatively affected by dam removal, experiencing declines in several response variables. These observations highlight the need for long-term monitoring of multiple ecosystem components after dam removal, and reinforce the concept that different system attributes will respond to dam removal at different rates.

KEYWORDS: dam removal, ecosystem response, fish assemblages

ROOM: Rendezvous

TIME: Tuesday 9:00 AM

TITLE: Shovelnose sturgeon population dynamics and seasonal population characteristics in the Lower Platte River

AUTHOR(S):

Jeremy Hammen -- University of Nebraska , University of Nebraska, 243 Harding Hall, Lincoln, NE 68583. Phone: (402)472-0825 Email: hammenj@huskers.unl.edu

ABSTRACT: Declines in shovelnose sturgeon (*Scaphirhynchus platyrhynchus*) abundance have been observed throughout their native range for the past 100 years. These declines are accredited to anthropogenic disturbances associated with habitat destruction (e.g., dams), agricultural use (e.g., irrigation), and overharvest. This declining trend has also been thought to be occurring in the Platte River, NE where this species is both recreationally and ecologically important to the state. However, little information is available on the current status of the species in this system. We are conducting a study on the lower Platte River looking at the population dynamics, seasonal habitat selections and movements, and spatial distribution of shovelnose sturgeon. This region was broken into two segments with segment 1 stretching from the Loup River confluence to the Elkhorn River confluence and segment 2 stretching from the Elkhorn River confluence to the mouth of the Platte River. Trotlines and trammel nets are used to collect sturgeon over three seasons: spring, summer, and fall. Preliminary results from the spring showed a total catch of 261 shovelnose sturgeon. Segment 1 had a catch of 64 shovelnose sturgeon which was less than segment 2 which had a catch of 197. Trotlines caught 151 shovelnose while trammel nets caught 110 shovelnose. Total proportional stock density was equal to 99.6 and mean W_r was equal to 79.9. Results from this study will provide the information needed to appropriately make management decisions concerning shovelnose sturgeon and help provide information needed to better understand the range-wide decline of the species.

KEYWORDS: shovelnose, sturgeon, Platte

ROOM: Rendezvous

TIME: Tuesday 9:20 AM

TITLE: Demography and diet of shovelnose sturgeon in the Middle Wabash River, Indiana

AUTHOR(S):

Lindsey Bock -- Purdue University, 4315 Round Table Ct, West Lafayette, IN 47906. Phone: (313)549-9501 Email: lbock@purdue.edu

ABSTRACT: Shovelnose sturgeon are the smallest and currently most abundant sturgeon species in North America. Commercial harvest of this species has greatly increased to meet caviar market demands due to global harvest closures on other sturgeon fisheries. There is therefore considerable commercial and illegal harvest pressure on Wabash River shovelnose sturgeon and need to manage this population to maintain a sustainable fishery. However, the biology and population characteristics of shovelnose sturgeon can be system specific, and information based on Mississippi and Missouri River populations may not be applicable to the Wabash River. We therefore conducted demographic and food habits studies of shovelnose sturgeon in the middle Wabash River to gain a better understanding of this population. Analysis of sex ratios revealed a population highly skewed towards males, as well as seasonal differences in weight, fork length, condition factor and gonadosomatic index. Recaptures of shovelnose sturgeon were analyzed and revealed a very small number of fish that remained resident (i.e., recaptured <12 months from original tagging date) compared to a majority of fish that had remained at large for >30 months prior to recapture. Analysis of stomach contents supported the idea that shovelnose sturgeon are opportunistic feeders, and diet varies based on season. Fish remains were also reported in stomachs of shovelnose sturgeon for the first time. This research provides evidence that the shovelnose sturgeon population in the Wabash River may exhibit some system specific differences when compared to the Mississippi and Missouri River populations, and crossover of management methods may not be entirely applicable.

KEYWORDS: sturgeon, demography, diet

ROOM: Rendezvous

TIME: Tuesday 9:40 AM

TITLE: Movements of shovelnose sturgeon on the Wabash River Indiana

AUTHOR(S):

Michael Wellman -- Purdue Dept of Forestry and Natural Resources, 715 W State Street, West Lafayette, IN 47907. Phone: (419)305-3646 Email: mwellma@purdue.edu

ABSTRACT: The shovelnose sturgeon is one of the last remaining sturgeon species able to support a commercial harvest and the only sturgeon of the North American genus *Scaphirhynchus* not currently listed as endangered. The Wabash River supports an important population of shovelnose sturgeon, but it may become one of the last available areas open to commercial fishing due to recent legislation. Documenting movement patterns of shovelnose sturgeon is critical in recognizing habitat use, understanding seasonal migration patterns, and implementing management objectives. During the spring of 2009, 30 sturgeon, 15 males and 15 gravid females, were implanted with ultrasonic tags in the middle Wabash River. Manual tracking was implemented near Lafayette, Indiana, a known spawning area, to describe small scale movements and habitat use. In conjunction, 6 passive receivers were deployed throughout the river to monitor larger movement. Early results indicate a high potential for long distance, post-spawn migrations of at least 200 miles. These distances could be traveled over a relatively short time span, 8 days, covering up to 25 miles per day. Most tagged sturgeon seemed to have moved out of the concentrated study area by the end of June suggesting the end of the spring spawning period. These movement data suggest that shovelnose sturgeon use the majority of the lower and middle Wabash River as a migratory corridor during spawning seasons. With increased commercial harvest probable in the lower Wabash, areas above Lafayette closed to commercial fishing may not be sufficient to protect the population and maintain a sustainable fishery.

KEYWORDS: sturgeon, telemetry, movement

ROOM: Rendezvous

TIME: Tuesday 10:20 AM

TITLE: Lake sturgeon population attributes in Namakan Reservoir Voyageurs National Park

AUTHOR(S):

Stephanie Shaw -- South Dakota State University, Department of Wildlife and Fisheries Sciences, Brookings, SD 57007. Phone: 419-266-2510 Email: Stephanie.Shaw@sdstate.edu

ABSTRACT: Lake sturgeon (*Acipenser fulvescens*) populations in the border waters of Minnesota/Ontario have mimicked the declines of populations throughout North America. The purpose of this study was to determine the population attributes of the internationally shared stock of lake sturgeon that inhabit the Namakan Reservoir and assess any impacts a proposed dam project could have. A multi-agency team sampled a total of 672 adult lake sturgeon using large mesh multifilament gillnets. Captured lake sturgeon were measured for total length, fork length, girth and weight. A section of the leading pectoral fin ray was taken for age analysis and a blood sample was taken from a subset of fish to determine sex and maturity levels. Mean total length of captured lake sturgeon was 1244 mm (range 605 to 1746 mm). Mean age was 36 years (range 7 to 86 years) and represented 61 year classes (range 1923 to 1999). Of 42 sexed fish (26 males, 16 females) females were generally larger and older than males (mean TL females 1421 mm, mean age 47, mean TL males 1218 mm, mean age 31 years). Comparing Namakan Reservoir lake sturgeon to 32 populations throughout North America (Fortin et. al. 1996) showed fish were mid-range in both weight (mean W1000mm 5.56 kg) and total length (mean TL23-27 1155 mm). Namakan Reservoir fish were smaller in mean total length and weight than either Rainy Lake (mean W1000mm 5.97 kg, mean TL23-27 1289 mm) or Lake of the Woods-Rainy River populations (mean W1000mm 6.12 kg, mean TL23-27 1361 mm) which are the closest populations geographically.

KEYWORDS: sturgeon, population

ROOM: Rendezvous

TIME: Tuesday 10:40 AM

TITLE: Reproductive status and juvenile ecology of lake sturgeon in the Muskegon River

AUTHOR(S):

Matthew Altenritter -- Grand Valley State University AWRI, 740 West Shoreline Drive, Muskegon, MI 49441. Phone: (517)449-0486 Email: altenrim@mail.gvsu.edu

ABSTRACT: The lake sturgeon (*Acipenser fulvescens*) is a large, benthic fish that is threatened throughout much of its native range. This study aims to provide important information about the ecology of lake sturgeon, which will facilitate rehabilitation efforts. Our on-going study is focused on a Lake Michigan tributary system that supports a remnant population of lake sturgeon. Specific objectives are to: 1) estimate the annual number of spawning adults in the Muskegon River, 2) identify spawning habitats in the river, 3) assess spawning success by sampling larval drift, and 4) assess juvenile habitat preferences and movements. During 2008 and 2009, we captured 39 adult lake sturgeon (121.0–181.0 cm TL) in the Muskegon River and observed fish spawning at one location in the river. We conducted a total of 30 nighttime drift sampling events downstream of the known spawning site in the river and captured and released 0 larval lake sturgeon in 2008 and 21 larval lake sturgeon in 2009. Three juveniles (39.0–78.0 cm TL) were captured in 2008 and four (44.5–69.4 cm TL) have been captured thus far in 2009. Movement patterns of two juveniles were observed in 2008, and we are currently tracking movements of four juveniles during fall 2009. As our research continues, we will further monitor the movements of juvenile lake sturgeon and attempt to discern variables influencing movement patterns. Our preliminary results suggest that successful spawning by lake sturgeon occurs in the Muskegon River and that juvenile lake sturgeon utilize Muskegon Lake as a nursery habitat before entering Lake Michigan.

KEYWORDS: sturgeon, reproduction, movement

ROOM: Rendezvous

TIME: Tuesday 11:00 AM

TITLE: Size-dependent feeding patterns of pallid and shovelnose sturgeon inferred from stable isotope analysis

AUTHOR(S):

William French -- South Dakota State University, NPB lab 138 Box 2140B, , Brookings, SD 57007. Phone: 608-213-0242 Email: william.french@sdstate.edu

ABSTRACT: Ontogenetic diet shifts are an important component of development in many fish species. While traditional diet studies offer a snapshot of recent feeding history, stable isotope ($^{15}\text{N}/^{13}\text{C}$) analysis allows a broader view of trophic position and energy pathways. We used stable isotope analysis to examine shifts in trophic patterns for pallid (*Scaphirhynchus albus*) and shovelnose (*Scaphirhynchus platoryncus*) sturgeon across a wide range of sizes within the Missouri River. Pallid sturgeon ^{15}N values (^{15}N range 12.8 to 17.0) were positively correlated with fork length (range 325 to 1057mm) and appear to separate out into three length groups (325 to 500mm, 500 to 800mm, 800 to 1057mm). These groups correspond with two trophic levels, and a transitional group. Shovelnose sturgeon ^{15}N values (^{15}N range 14.6 to 17.2), while also positively correlated with fork length (range 341 to 719mm), span a narrower range than pallid sturgeon and suggest fish feed at a similar trophic level across the size range sampled. Pallid sturgeon ^{13}C values (^{13}C range -23.4 to 18.0) were also positively correlated with fork length, and suggest two groups utilizing distinct carbon sources with a transitional group in between, whereas shovelnose sturgeon ^{13}C values (^{13}C range -23.7 to 20.1) were not correlated with fork length suggesting a single carbon source. Patterns in isotopic composition were consistent with diet studies showing that pallid sturgeon shift from invertebrates to fish prey at larger sizes (>600 mm FL) and thus, can be used to track and compare energy acquisition by sturgeons in large rivers.

KEYWORDS: sturgeon, isotope, diet

ROOM: Rendezvous

TIME: Tuesday 11:20 AM

TITLE: Seasonal use of Missouri River reservoir deltas by fishes

AUTHOR(S):

Will Schreck -- South Dakota State University, Northern Plains Biostress Lab, Brookings, SD 57007. Phone: (605)688-4787 Email: william.schreck@sdstate.edu

ABSTRACT: The aging of Missouri River reservoirs challenges both reservoir operators and resource managers. Although sedimentation threatens the function of reservoirs, the deltas created by this process may provide valuable aquatic habitat. Extensive sampling of the Niobrara River delta (Lewis and Clark Lake) and the White River delta (Lake Francis Case) was performed to assess the seasonal use and abundance of fishes within these habitats. Standardized gears, including gill nets, mini-fyke nets, electrofishing and a push trawl, were employed to sample fishes in April, June, August and October of 2008 and 2009. In total, 50 species and over 12,000 individuals were collected. Fish communities associated with both deltas were variable throughout sampling with some species remaining abundant in the delta throughout spring, summer, and fall, whereas some were found within the deltas on a seasonal basis. The potential use of the Niobrara River delta for spawning was highlighted by the increased presence of some species in spring and early summer (e.g., sauger *Sander canadensis*, walleye *Sander vitreus*, and channel catfish *Ictalurus punctatus*). The White River delta supported a greater diversity of fishes during spring and early summer, as well as a higher relative abundance of large river species (e.g., sauger and goldeye *Hiodon alosoides*). Results indicate reservoir deltas may provide fishes many ecological benefits, and as these areas expand as reservoirs age they may increase habitat for many fishes.

KEYWORDS: reservoirs, deltas, habitat

ROOM: Rendezvous

TIME: Tuesday 11:40 AM

TITLE: Stormwater runoff in an urban stream: Impacts on central mudminnows

AUTHOR(S):

William Keiper -- Grand Valley State University, 740 West Shoreline Drive, , Muskegon, MI 49441. Phone: 906-322-5425 Email: keiperw@mail.gvsu.edu

ABSTRACT: Stormwater runoff can be an important factor that affects fish community health in urban areas. We studied growth and survival of central mudminnows (*Umbra limi*) to stormwater runoff into Little Black Creek, Muskegon, Michigan. We used a factorial design to investigate the effects of runoff concentration (0, 25, 50, 75, and 100%), location where runoff was collected (US-31 or Seaway Drive), and source of central mudminnows (Little Black Creek or Bark Creek) on fish growth and survival over a 28-d laboratory experiment conducted in individual 2-L aquaria. Fish growth did not respond significantly to runoff concentration, runoff location, fish source or any of the interactions among the three factors. Similarly, survival did not respond significantly to runoff concentration or fish source. However, survival of central mudminnows exposed to US-31 runoff had significantly higher survival (80.5%) than fish exposed to runoff from Seaway Drive (26.9%). On-going laboratory analyses are underway to ascertain the constituent concentrations of the stormwater runoff, which will be used to identify underlying causes for responses of fish to runoff. Our preliminary results from one rain event suggest the effects of runoff may differ among road-stream crossings

KEYWORDS: stormwater

ROOM: Rendezvous

TIME: Tuesday 1:00 PM

TITLE: Novel microsatellite markers permit the genetic assessment of eastern hellbenders at multiple spatial scales

AUTHOR(S):

Shem Unger -- Purdue University, 195 Marsteller Street, West Lafayette, IN 47907. Phone: (765) 414-5435 Email: sunger@purdue.edu

ABSTRACT: Cryptobranchid salamanders are large, fully aquatic amphibians that are suffering drastic population declines throughout their range. There are many fascinating facets of cryptobranchid biology that warrant molecular investigation, however the relative paucity of molecular markers has greatly hampered genetic studies of movement, population size, and spatial structure. We developed a suite of 12 hyper-variable tetranucleotide genetic markers (microsatellites) for the eastern hellbender *Cryptobranchus alleganiensis alleganiensis*. Preliminary screening revealed that these markers were highly polymorphic (Na:8.83, He:0.838, Ho:0.781). We discuss the use of these markers to calculate effective population sizes, levels of genetic variation, and estimate gene flow at multiple spatial scales in hellbender populations from Indiana and Georgia. These highly polymorphic microsatellite loci will prove useful as a conservation tool to assess genetic diversity and structure throughout the range of this salamander.

KEYWORDS: amphibian, microsatellites, genetics

ROOM: Rendezvous

TIME: Tuesday 1:20 PM

TITLE: Chemical contaminants and their role in the decline of the eastern hellbender in Indiana

AUTHOR(S):

Nicholas Burgmeier -- Purdue University, 128 Kirkham Avenue, Corydon, IN 47112. Phone: (812)767-0057 Email: nburgmei@purdue.edu

ABSTRACT: Sediment and water quality testing conducted concurrently with blood chemistry analyses could provide valuable insights into the relationship between environmental quality and animal health. The eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) is a large aquatic salamander that has suffered substantial population declines throughout its range. Weekly water samples were collected from November 2008 through August 2009, and tested for a suite of 27 multi-residue pesticides from five locations and three nutrients from seven locations throughout the Blue River, Indiana. In September 2009, stream sediment samples from seven sites were tested for 22 organochlorine insecticides. Blood samples were taken from 70 captured hellbenders from September 2007–October 2009 and analyzed for 14 parameters related to various aspects of overall health. Atrazine, simazine, and metolachlor were found in concentrations (micrograms/L) ranging from <0.5 – 11.1, <0.5 – 1.1, and <0.5 – 2.7, respectively. Orthophosphate (PO₄³⁻), nitrate (NO₃⁻-N), and ammonia (NH₃-N) were found in relatively low concentrations of 0–1.7 mg/L, 0–3.5 mg/L, and 0–0.33 mg/L, respectively. We discuss a potential link between water quality and blood chemistry parameters and the role water quality might be playing in the continued decline of the hellbender.

KEYWORDS: hellbender, pesticides, aquatic

ROOM: Rendezvous

TIME: Tuesday 1:40 PM

TITLE: Recovery of the alligator snapping turtle in Illinois

AUTHOR(S):

Joseph Kath -- Illinois Department of Natural Resources , Division of Natural Heritage , One Natural Resources Way, Springfield, IL 62702-1271. Phone: (217)785-8764 Email:

Joe.Kath@illinois.gov

ABSTRACT: The alligator snapping turtle is the largest freshwater turtle in North America. This secretive reptile is classified as an endangered species in Illinois and a species of similar conservation concern throughout its range. During 2007 and 2008, Illinois biologists traveled to the state of Louisiana, where a total of 29 alligator snapping turtles were trapped. Additional animals of various age classes were donated for the recovery project by private citizens, AZA accredited zoos, and licensed hatcheries. All donated animals were of the same genotypic integrity of animals native to the greater Mississippi River drainage (haplotype "A"). A series of radio telemetry pilot studies were initiated in southern Illinois using juvenile turtles beginning Spring 2008 and will continue to Spring 2010. Information on daily movement, habitat use, and overall mortality is currently under analysis. Based on the results of the current pilot study, the first full scale release of alligator snapping turtles is tentatively scheduled for 2011, with additional releases occurring for the next 10-15 years. Dispersal of animals will be monitored and methods for managing alligator snapping turtle habitat throughout Illinois will also be considered.

KEYWORDS: turtle, recovery, Illinois

ROOM: Rendezvous

TIME: Tuesday 2:00 PM

TITLE: Illinois greater prairie chickens past present and future

AUTHOR(S):

Scott Simpson -- Prairie Ridge State Natural Area, 4295 North 1000th Street, Newton, IL 62448. Phone: (618)783-2685 Email: scott.simpson@illinois.gov

ABSTRACT: The Greater Prairie chicken (*Tympanuchus cupido pinnatus*), once an abundant species in Illinois, is now endangered due to loss of grassland habitat. Currently, a remnant population of about 200 birds persists in southeastern Illinois at Prairie Ridge State Natural Area. During a 35 year study of Illinois prairie chickens the population declined from 2000 individuals in 1962 to fewer than 50 by 1994. Prairie chickens are well known for the males elaborate communal breeding displays. A few males perform the majority of copulations on a lek and this contributes to an increased risk of inbreeding depression within small populations. Due to isolation and chronically low population levels, the remnant flocks of prairie chickens in Illinois showed signs of inbreeding depression after 1980. Fitness, as measured by egg success and fertility, declined significantly by 1990. This population faced eminent extinction due to genetic and demographic problems. In 1992, the Illinois Department of Natural Resources initiated a Genetic Action Plan in an attempt to restore genetic diversity. From 1992 to 1998, 518 prairie-chickens were translocated to Illinois from Minnesota, Kansas and Nebraska. Egg fertility returned to normal levels immediately following translocations. Genetic analysis of 27 Illinois male prairie chickens in 2003 indicate that translocations were effective in removing detrimental variation associated with inbreeding depression and restored genetic variation to historic levels. Although the translocations resulted in increases in fitness, the demographic recovery and long term viability of the population depends on the increased availability of suitable habitat.

KEYWORDS: prairie chicken, fitness, habitat

ROOM: Rendezvous

TIME: Tuesday 2:20 PM

TITLE: The use of conspecific attraction in the conservation of endangered terns

AUTHOR(S):

Brad Semel -- Illinois Department of Natural Resources, 8916 Wilmot Road, Spring Grove, IL 60081. Phone: (630)399-3242 Email: brad.semel@illinois.gov

ABSTRACT: Conspecific attraction is known to occur in both colonial-nesting and territorial avian species, and has been shown to influence habitat and nest site selection. These attributes have made this behavior suitable for use in the management of a number of bird populations, most notably by modifying nest site selection. The Forsters tern (*Sterna forsterii*) was extirpated as a breeding species in Illinois in 1999. We used dredge spoil and vegetation modifications to create suitable nesting habitat and employed conspecific attraction (models and electronic callbacks) to successfully re-establish a nesting colony after a four-year absence. We also attempted to establish a secondary nesting colony to ensure yearly nesting success. The interior population of the Least tern (*S. antillarum*) is listed as Federally endangered throughout its range. Habitat loss, nest predation, fluctuating water levels, and human disturbance have been cited as primary factors leading to population declines. We constructed suitable nesting habitat on floating barges to minimize these limiting factors, and used conspecific attraction techniques to establish a viable nesting colony in a protected backwater of the Mississippi River. Construction of suitable and safe nesting habitat, together with conspecific attraction techniques, can together be used as effective tools in the management of endangered tern populations.

KEYWORDS: terns, conspecific, conservation

ROOM: Rendezvous

TIME: Tuesday 2:40 PM

TITLE: The dynamics and viability of the endangered streaked horned lark

AUTHOR(S):

Adam Schapaugh -- University of Nebraska Lincoln, 249 Hardin Hall Section 23, 3310 Holdrege St, Lincoln, NE 68583. Phone: (785) 317-2571 Email: adam.schapaugh@huskers.unl.edu

ABSTRACT: The Streaked Horned Lark (*Eremophila alpestris strigata*) is an endangered songbird endemic to prairie and open coastal habitats west of the Cascade Mountains. Its persistence is handicapped by dramatic habitat loss and human disturbance. By combining demographic data and information on size and distribution of subpopulations I developed a stage- and space-structured demographic model to analyze *E. a. strigata*'s viability in Washington State. Importantly simulations that include variation and correlation in survival rates yield variable yet qualitatively consistent forecasts of population growth. The model predicted a continuing statewide population decline and near certain risk of extinction over the next 25 years. To determine where conservation efforts are best focused I performed a series of perturbation analyses in which the effects of changing vital rates were quantified. Under a modest scenario increasing the survivorship of adults by 10% was sufficient to lengthen the median time to extinction by more than 5 years. A more optimistic improvement (20%) yielded a viable Coastal subpopulation. In contrast I found that some well-meaning management activities in particular efforts solely targeting annual fecundity, are unlikely to be either cost effective or biologically sound. Although many anthropogenic impacts threaten *E. a. strigata* the subspecies future could be bright, provided that research and management focus on biologically significant aspects of its life history. However I demonstrate that complacency is ill-advised decisive action to quickly improve demographic rates is needed, given the consistent qualitative output across models and the inherent uncertainty in predictions of future trends.

KEYWORDS: PVA

ROOM: Rendezvous

TIME: Tuesday 3:40 PM

TITLE: Monitoring abundance of gray wolf packs and populations with noninvasive genetic sampling at predicted rendezvous sites

AUTHOR(S):

Jennifer Stenglein -- University of Wisconsin Madison, Department of Forest and Wildlife Ecology, 1630 Linden Drive, Madison, WI 53706. Phone: (330)465-8176 Email: jstenglein@wisc.edu

ABSTRACT: Developing and evaluating new methods for monitoring gray wolves (*Canis lupus*) is particularly important as population sizes are increasing and available funding is decreasing. In this two-year study, we demonstrated that noninvasive genetic sampling (NGS) can be used to monitor abundance and density of a gray wolf population and individual wolf packs. To focus sampling efforts across a large study area (11,335 km²) and increase our chances of detecting reproductive packs, we targeted 964 areas in central Idaho with landscape characteristics similar to known wolf rendezvous sites. Over 1,700 scat and hair samples were collected and 122 wolves were identified, of which only 18 (15%) were radio-collared. The minimum count of wolves was used to accurately detect differences in known wolf density. Population estimates from single-session NGS models matched the population estimate derived from radiotelemetry-assisted pack counts. Additionally, five pack pedigrees were constructed from genotypes collected at occupied rendezvous sites. The wolves in each pack were highly related to one another and all packs included at least two years of offspring from the current breeding pair. Two packs had additional breeding pairs present, and inbreeding was detected in one pack. This NGS approach holds much promise for accurate monitoring of wolf packs and populations where number of breeding units, pack counts, and wolf abundance estimates are management goals. The application of NGS to monitoring the Midwest wolf population is discussed.

KEYWORDS: wolves, management, noninvasive

ROOM: Rendezvous

TIME: Tuesday 4:00 PM

TITLE: Evaluation of the status and distribution of the state-threatened marsh rice rat in Illinois

AUTHOR(S):

Bryan Eubanks -- SIUC Cooperative Wildlife Research Lab, 3461 North Illinois Highway 148, Waltonville, IL 62894. Phone: (618)927-6898 Email: banks53@hotmail.com

ABSTRACT: The marsh rice rat (*Oryzomys palustris*) is a semi-aquatic rodent classified as state-threatened in Illinois due to historical wetland loss coupled with being on the northern edge of its range. The most recent survey for this species in Illinois occurred in 1988, and our study reassessed its status and distribution. From 2007-2009, we used live traps to sample for rice rats at historic sites and random wetland-dominated sites in 5 southern Illinois watersheds. We captured 131 individual rice rats 202 times in 13,248 trap nights. Capture success was 15.25 captures/1,000 trap nights. We detected rice rats at 16 of 48 (33.3%) sites, including 5 new locations. Density at sites with ≥ 10 captures ranged from 0.13/ha to 1.74/ha. Most rice rat captures occurred in permanent or semi-permanent emergent wetlands. We collected microhabitat measurements at 10% of trap locations and recorded landcover types within and around sites. We analyzed data using t-tests, logistic regression, and occupancy modeling. Percent herbaceous cover and percent visual obstruction (0.0-0.5m) positively influenced rice rat occupancy and were among the top microhabitat models. The best model in the candidate set of landcover variables included proportion of upland grass in areas surrounding wetlands as a predictor of rice rat occurrence. We believe insufficient evidence exists to warrant the removal of the marsh rice rats threatened status. However, current management practices, such as wetland restoration, grassland restoration, and mowing of roadside ditches, likely benefit rice rat populations. Slight modification of these management activities may facilitate their eventual delisting.

KEYWORDS: *Oryzomys palustris*

ROOM: Rendezvous

TIME: Tuesday 4:20 PM

TITLE: Comparing use of detection dog-handler teams to live trapping for surveys of Franklins ground squirrels

AUTHOR(S):

Jennifer Duggan -- University of Illinois at Urbana Champaign, 1816 S Oak St, Champaign, IL 61820. Phone: (217)721-8829 Email: jduggan2@illinois.edu

ABSTRACT: *Poliocitellus franklinii* (Franklins ground squirrel) is a species of conservation concern throughout the Midwestern U.S. *P. franklinii* is difficult to survey as it burrows underground in dense vegetation. Efficient survey methods are needed to conduct research to guide conservation of this species. We compared detection rate, time, and cost of surveys for *P. franklinii* using new detection dog methods to traditional live trapping. Detection dogs were trained to alert to presence of scent of *P. franklinii* by sitting and making eye contact with handlers. In addition to recording dog alerts, handlers also recorded information on general dog behavior and made a recommendation at each site on whether *P. franklinii* could be present. During the summer of 2009, we employed two detection dog-handler teams, as well as live trapping, to survey 40 sites in Illinois, Indiana, Iowa, and Missouri for *P. franklinii*. We found moderate rates of both false absences and assumed false presences for the results based on dog alerts. Rates of false absences were lower, but rates of assumed false presences were higher, for occupancy determination based on general dog behavior. Unlike most studies using detection dogs in which presence of a species is verified by scat, false presences are likely to be a problem when detection dogs are trained to scent of a live animal that leaves little visual sign of its presence. However, detection dogs may be used effectively in a two-stage survey for *P. franklinii* in which live trapping is conducted only on those sites recommended by handlers based on general dog behavior.

KEYWORDS: conservation, detection, occupancy

ROOM: Rendezvous

TIME: Tuesday 4:40 PM

TITLE: Abandoned microcrystalline silica mines: characteristics, stability, and long-term viability for hibernating bats

AUTHOR(S):

Timothy Carter -- Ball State University, Department of Biology, Ball State University, Muncie, IN 47306-0440. Phone: (765)285-8842 Email: tcarter@bsu.edu

ABSTRACT: Many cavernicolous bat species rely on abandoned mines for hibernacula because of destruction of natural cave habitats. We conducted 110 surveys of bats in 45 abandoned microcrystalline silica mines between 2003 and 2006 in southern Illinois, and measured physical features of the mines, to determine predictive factors for the total number of bats of each species. Features measured included: size of the opening, number of openings, mean temperature during hibernation (November through March), temperature variability, distance to water, distance to nearest road, and evidence of disturbance. We also quantified the amount of spalling (falling material) from walls and ceilings of 14 mines in relation to moisture and temperature variables to assess stability for hibernating bats during winters of 2006 and 2007. We observed 90,119 hibernating bats during the study period. Temperature was the primary significant variable. There was a negative relationship between temperature and the number of bats, and a positive relationship between number of bats and temperature stability. Similarly, temperature, temperature variation, and moisture were significant predictors of spalling. However, because bats prefer stable temperatures and spalling occurs more often at highly variable temperatures, bats were usually in areas of silica mines that exhibited little or no spalling. As a result, these mines provide suitable and much-needed hibernacula.

KEYWORDS: bats, mines, habitat