

# AMBASSADOR ROOM

## TUESDAY

ROOM: Ambassador

TIME: Tuesday 8:00 AM

TITLE: Assessing the effects of eutrophication on the prevalence of parasite infection in planorbid snails within forested vs agricultural landscapes

AUTHOR(S):

Ashley Daniels -- Purdue University, 195 Marsteller Street, West Lafayette, IN 47907.

Phone: (773)841-0282 Email: aadaniel@purdue.edu

Rod N Williams -- Purdue University

ABSTRACT: Recent increases in observed rates of amphibian malformations have been linked to infection of larvae by the trematode, *Ribeiroia ondatrae*, while aquatic snail hosts (*Planorbella spp.*) are significant predictors of both the presence and abundance of the parasite. This study addressed the relationship between aquatic nutrient loads planorbid snail abundance, and parasite (*Ribeiroia ondatrae*) prevalence among eight naturally occurring wetlands (four adjacent to agriculture and four wetlands buffered by forests) across central and southern Indiana. Water samples were collected weekly from each site from March through June 2009 and analyzed for levels of ammonia, nitrite, nitrate, orthophosphate, and chlorophyll a. In addition *Planorbella* snails were sampled weekly from each site to estimate population densities and to calculate infection prevalence. At the conclusion of the field season over 2000 *Planorbella* snails were sampled among the eight sites. The prevalence of snails infected with trematode cercariae varied considerably (0-59%). The results of this study will be crucial to assessing the impacts of anthropogenic effects on *Ribeiroia* densities throughout the state and possible implications for the future survival of amphibian populations.

KEYWORDS: parasite, water quality, nutrient loading

ROOM: Ambassador

TIME: Tuesday 8:20 AM

TITLE: Assessing the prevalence of salamander malformations in central and southern Indiana

AUTHOR(S):

Margo Wagner -- Purdue University, Department of Forestry and Natural Resources, 195 Marshall Street, West Lafayette, IN 47907. Phone: (219)765-8778 Email:

wagner7@purdue.edu

Rod N Williams -- Purdue University

ABSTRACT: Amphibians infected with the trematode parasite *Ribeiroia ondatrae* have resulted in high levels of gross abnormalities. Aquatic ecosystems that host *Ribeiroia* often produce malformed salamanders exhibiting extra digits extra limbs and malfunctioning limbs. Amphibian deformities have been reported in 43 states with suspicion that increased eutrophication from agricultural runoff (particularly nitrogen and phosphorous) are linked to increases in snail hosts increases in densities of metacercaria, and ultimately increases in the frequency of malformations. Current studies which focus on the relationship between *Ribeiroia* and amphibian malformations typically assess frogs and toads while largely ignoring the relationship among Urodele amphibians. Moreover estimates of malformations in salamander populations do not exist for the state of Indiana. This study compared levels of malformations between salamanders within agricultural settings to those within forested settings. In the spring of 2009 a total of 1704 larval Ambystomatid salamanders representing five species from eight naturally occurring systems in central and southern Indiana were assessed for malformation type location and severity. Current malformation rates occur from 0 to 26% among the eight field sites. Preliminary results reveal that ectrodactyly, brachydactyly, and limb hyperextension are the most common malformations. Future work involving clearing and staining will evaluate differences among the infection rates between malformed and non-malformed salamanders. The final results of this study will provide the first empirical data on the rate of parasite infection and prevalence of malformations among salamanders across the state of Indiana.

KEYWORDS: amphibian, parasite, abnormality

ROOM: Ambassador

TIME: Tuesday 8:40 AM

TITLE: Deer tick distribution and habitat use in Illinois

AUTHOR(S):

Jennifer Rydzewski -- University of Illinois Urbana Champaign, 1816 S Oak St, Champaign, IL 61820. Phone: (708)334-3403 Email: rydzewsk@illinois.edu

Nohra E Mateus Pinilla -- UIUC Institute of Natural Resource Sustainability

Richard E Warner -- UIUC Office of Sustainability

HsinYi Weng -- UIUC Pathobiology

Sarah A Hamer -- Michigan State University

ABSTRACT: In the Midwest, the deer tick, *Ixodes scapularis*, is the vector responsible for spreading the Lyme disease-causing spirochete, *Borrelia burgdorferi*. The tick was once limited to Wisconsin in the late 1960s. Within the past twenty years, the deer tick has continued to expand its established geographic range farther south into Illinois. However, the extent of its distribution within the state has not been formally surveyed. This study focuses on current deer tick distribution and habitat use in northeast and east central areas of Illinois. We investigated whether prevalence of the deer tick in these areas was related to a predictive risk map of deer tick habitat suitability. We implemented several survey methods including drag sampling and small mammal trapping to collect deer ticks during times of peak activity and to measure microclimate conditions contributing to deer tick distribution and habitat use. Our results indicate that deer ticks are widely distributed within natural forested areas in northeast Illinois as the previous predictive model suggests. However, contrary to the predictive model, deer ticks are well established in east central Illinois. As the model predicts, tick prevalence in northeast Illinois was related positively to habitat, namely oak-dominated forests along riparian corridors. Small mammal trapping results from central Illinois indicate that deer tick habitat use depends significantly on habitat type, abundance of small mammal hosts, time of year, and microclimate conditions. These results suggest additional variables to be considered for improving the predictive model for deer tick spread in Illinois.

KEYWORDS: ticks, distribution, Illinois

ROOM: Ambassador

TIME: Tuesday 9:00 AM

TITLE: Model-based evaluation of HP and LP avian influenza dynamics in wild birds

AUTHOR(S): Viviane Henaux -- University of Wisconsin, Department of Forest and Wildlife Ecology, 1630 Linden Dr, Madison, WI 53506. Phone: (608)265-9758 Email:

henaux@wisc.edu

Michael D SAMUEL -- USGS Wisconsin Cooperative Wildlife Research Unit

Christine M Bunck -- USGS National Wildlife Health Center Madison

ABSTRACT: Since the emergence of highly pathogenic (HP) H5N1 in southern China, there is growing interest in avian influenza (AI) epidemiology to predict disease risk in wild and domestic birds, and prevent further transmission to humans. However, understanding the dynamics of HP viruses remains challenging because HPAI viruses have been rarely detected in wild birds. In order to understand the temporal and spatial dynamics of AI viruses, we developed an epidemiological model describing the course of the disease in a population of waterbirds. We estimated initial epidemiological parameters among disease states from a meta-analysis of published laboratory challenge studies. Infectious contact leads to rapid progression to infection and virus shedding within 1 to 2 days, followed by a relatively slower period for recovery or mortality. Our model predicted a rapid low pathogenic AI epidemic curve, with a median duration of infection of 12 days and no fatalities. In contrast, HPAI dynamics was characterized by protracted infection, a prolonged epidemic curve at low prevalence, and high mortality. Young waterbirds infected with HPAI exhibited a higher mortality rates than older individuals, resulting in a shorter duration of epidemics in post breeding than wintering grounds. We discussed these model predictions with regard to field observations of prevalence. Our model framework offers the opportunity to test AI related hypotheses and predict AI spread in wild bird populations. We suggest that the development of appropriate serological methods to detecting previous exposure to AI viruses is an important condition to improve our understanding of the infection and immunity processes and bridge the gap in current knowledge.

KEYWORDS: avian influenza, epidemiological model, waterbird

ROOM: Ambassador

TIME: Tuesday 9:20 AM

TITLE: Southern flying squirrel nest tree selection in northern Wisconsin

AUTHOR(S):

Stephanie Steinhoff -- University of Wisconsin Madison, Department of Forest and Wildlife Ecology, 1630 Linden Drive, Madison, WI 53706. Phone: 303-241-9655 Email: ssteinhoff@wisc.edu

Timothy R VanDeelen -- University of Wisconsin Madison

Karl J Martin -- Wisconsin Department of Natural Resources

Kate R Witkowski -- University of Wisconsin Stevens Point

ABSTRACT: Over the past 50 years the range of southern flying squirrels (*Glaucomys volans*) has expanded from central to northern Wisconsin. Southern flying squirrels are a host for an intestinal parasite (*Strongyloides robustus*), which can be lethal to Northern flying squirrels (*Glaucomys sabrinus*). One potential mode of *S. robustus* intra- and interspecific transmission is through fecal material deposition in nest sites. To better understand this potential transmission route, we quantified rates at which southern flying squirrels (*Glaucomys volans*) switch nest trees in northern hardwood forests. Study sites included two levels of coarse woody debris (CWD) in both shelterwoods and selective cut stands along with a no treatment site. Our goal was to determine how availability of potential nest trees and downed wood affects southern flying squirrel nest tree fidelity. We trapped and radio collared 34 flying squirrels in the northern Wisconsin from May to August 2009 to determine their nest tree switching frequency. We tracked each squirrel once a week for 4 weeks and located 60 nest trees (2.8 per squirrel). We are using logistic regression analysis to assess potential differences in nest site selection across treatments. Learning more about southern flying squirrel nest tree switching patterns in northern Wisconsin will give us a better idea of the risk of *S. robustus* transmission through nest tree reservoirs.

KEYWORDS: flying, squirrels, nests

ROOM: Ambassador

TIME: Tuesday 9:40 AM

TITLE: Genetic analysis demonstrates long-distance connectivity in white-tailed deer

AUTHOR(S):

Amy Kelly -- University of Illinois, 1503 South Maryland Drive, Urbana, IL 61801. Phone: (217)714-2619 Email: amykelly@illinois.edu

Nohra E Mateus Pinilla -- Illinois Natural History Survey

Marlis Douglas -- Illinois Natural History Survey

Michael Douglas -- Illinois Natural History Survey

William Brown -- University of Illinois

Marilyn Ruiz -- University of Illinois

John Killefer -- University of Illinois

Paul Shelton -- Illinois Department of Natural Resources

Tom Beissel -- Illinois Department of Natural Resources

Jan Novakofski -- University of Illinois

ABSTRACT: Landscape connectivity for White-tailed Deer (*Odocoileus virginianus*) remains difficult to quantify, despite decades spent researching their behavior and ecology. Deer in Illinois have adapted behaviors to accommodate regional variation in fragmented habitats, thus their perceptions of the landscape and dispersal patterns are complex. Understanding the relation between dispersal, gene flow and Chronic Wasting Disease is extremely important because it can reveal patterns of disease spread and improve our ability to predict, prevent and respond to disease outbreaks. We genotyped 1,410 deer using 10 microsatellites and measured gene flow, determined genetic structure and quantified gender-specific differences in allele frequencies for sampled animals. These molecular methods allowed us to estimate dispersal and determine population substructure for deer across the northern half of Illinois. Females consistently showed philopatry and higher levels of differentiation than males, who dispersed greater than 100 km on average. Therefore, our results suggest that males, more so than females, have great potential to spread disease through local and long-distance dispersal. While gender-specific behaviors impacted genetic structuring of deer, fragmented forest habitats were also correlated with genetic homogeneity across the study area. The genetic signature of deer in Illinois suggests that translocations in the 1940s and ongoing fragmentation has contributed to maintenance of genetic integrity between geographically distant populations. Our understanding of deer dispersal is enhanced by the genetic data we present, and this study allows for comparative analyses with deer populations within the region and across the continent.

KEYWORDS: dispersal, fragmentation, microsatellites

ROOM: Ambassador

TIME: Tuesday 10:20 AM

TITLE: Efficacy of electronic proximity loggers for detection of contacts between individual white-tailed deer

AUTHOR(S):

Ryan Walrath -- University of Wisconsin Madison, 3113 Lindbergh St, Apt 2, Madison, WI 53704. Phone: (608)630-6766 Email: ryanwalrath@yahoo.com

Timothy R Van Deelen -- University of Wisconsin Madison

Kurt C VerCauteren -- USDA National Wildlife Research Center

ABSTRACT: The frequency and duration of contacts between individuals is important to understanding behavioral ecology and the epidemiology of infectious diseases. Previous studies have used visual observations, standard VHF radio-collars and Global Positioning System (GPS) collars to estimate contact rates. A newer technology uses individual-mounted proximity loggers which record time and duration of contacts with other loggers. We designed an experiment using proximity loggers deployed on collars affixed to white-tailed deer to estimate the efficacy of the proximity loggers ability to detect contacts between individuals. We defined 6 discrete probabilities of detection of a contact in terms of  $P$  (probability of detection by a proximity logger) and  $V$  (probability of detection by visual observer) and estimated  $P$  and  $V$  by minimizing the Kullback-Liebler distance between theoretical probabilities and observed distributions in experimental data. We used parametric jackknifing to estimate means and variances for  $P$  and  $V$ . Mean estimates of  $P$  and  $V$  were 0.64 (95% CI: 0.62 - 0.67) and 0.34 (0.32 - 0.35), respectively. Estimates of  $P$  and  $V$  enabled the calculation of the probability that an encounter was undetected by both proximity loggers and the visual observer  $((1-P)^2(1-V))$  which was 0.09. Estimates of  $P$  and  $V$  provide reliable calibration for future studies that use proximity loggers to estimate frequencies of encounters. Management concerns such as chronic wasting disease (CWD) and bovine tuberculosis (TB) could be better understood by using proximity loggers in core areas where efforts to trap a representative sample of the target population is feasible.

KEYWORDS: logger, contact, deer

ROOM: Ambassador

TIME: Tuesday 10:40 AM

TITLE: Effects of baiting and relatedness on contacts between individual white-tailed deer

AUTHOR(S):

Ryan Walrath -- University of Wisconsin Madison, 3113 Lindbergh St, Apt 2, Madison, WI 53704. Phone: (608)630-6766 Email: ryanwalrath@yahoo.com

Timothy R VanDeelen -- University of Wisconsin Madison

Kurt C VerCauteren -- USDA National Wildlife Research Center

**ABSTRACT:** Supplemental feeding and baiting of wildlife have been used by resource managers, researchers, wildlife viewers, and hunters across the United States for decades. Placing natural or artificial food on the landscape can affect physical condition of, reproductive success of, population densities and spatial distributions of, competition at food sources of, and effectiveness of hunters to harvest deer. We designed an experiment that used proximity loggers and visual observations to determine effects of feeding regimes and relatedness on contact rates between individual white-tailed deer. Weibull regression suggested that related individuals have longer encounters than unrelated individuals. We used generalized logit models to analyze variability of frequency and duration of contacts by behavior. The probability of aggressive encounters between unrelated individuals in baited and control treatments was 0.74 and 0.58, respectively. The probability of feeding <1 m of another related deer in control and baited feeding regimes was 0.73 and 0.39, respectively. Removing concentrated food sources from the landscape could substantially reduce indirect contact rates and duration of contact between related and unrelated individuals. Furthermore, concentrated food sources could produce biased results for population estimates that use count techniques as part of their sampling regime.

**KEYWORDS:** bait, deer, contact

ROOM: Ambassador

TIME: Tuesday 11:00 AM

TITLE: Contact rates among white-tailed deer: effects of landscape and social structure

AUTHOR(S):

Eric Schaubert -- Cooperative Wildlife Research Laboratory, SIU, Mailcode 6504, Carbondale, IL 62901. Phone: (618)453-6940 Email: schaubert@siu.edu

Lene J Kjaer -- SIUC Cooperative Wildlife Research Laboratory

Charles Anderson -- SIUC Cooperative Wildlife Research Laboratory

Clayton K Nielsen -- SIUC Cooperative Wildlife Research Laboratory

ABSTRACT: Direct contact is important or necessary for transmission of many important wildlife diseases. Contact patterns depend on social structure, movement patterns, and landscape structure. To examine the influence of social and landscape structure on contact patterns we used GPS collars to collect intensive movement data on white-tailed deer (mainly adult does but some fawns and males) in two Illinois study areas: a largely forested landscape near Carbondale (2002-2006) and a landscape of fragmented forest embedded in agricultural fields near Lake Shelbyville (2006-2009). Based on a subset of data (up to 2005) from deer near Carbondale we previously determined that deer in the same social group have up to 20-fold greater direct contact rates than deer in neighboring groups with overlapping home ranges, but little elevation in indirect contact rates. Here we compare contact rates estimated from the full Carbondale data set with contact rates among deer in the fragmented habitat near Lake Shelbyville. Our results provide crucial empirical estimates of contact rates needed for disease models. Management implications include the potential ability to predict differences in disease spread based on landscape structure and the need to consider how management interventions to control or eradicate disease could impact deer social structure.

KEYWORDS: contact, deer, landscape

ROOM: Ambassador

TIME: Tuesday 11:20 AM

TITLE: Spatially explicit individual-based modeling of chronic wasting disease transmission

AUTHOR(S):

Lene Kjaer -- Cooperative Wildlife Research Laboratory, SIU, Mailcode 6504, Carbondale, IL 62901. Phone: (618)536-7766 Email: [jung@siu.edu](mailto:jung@siu.edu)

Eric M Schaubert -- SIU Cooperative Wildlife Research Laboratory

Clayton K Nielsen -- SIU Cooperative Wildlife Research Laboratory

**ABSTRACT:** Wildlife diseases can threaten human health livestock health and the value of free-ranging populations. Understanding the transmission dynamics of wildlife diseases is crucial to evaluating potential management interventions and such transmission typically hinges on animal movements and social behavior. Individual-based models (IBMs) provide a straightforward approach to incorporating realistic movement and social behaviors and assessing their impacts on disease transmission. IBMs are also advantageous because they allow comparison of real landscapes (comma) modes of transmission (comma) and simulated management interventions. We developed a spatially explicit IBM of chronic wasting disease (CWD) in white-tailed deer. Two different Illinois landscapes were incorporated into the model: a landscape of fragmented forest in an agricultural matrix (Lake Shelbyville area) and a landscape dominated by forest (Carbondale area). Deer social behavior and movements rules were modeled using field data from GPS-collared deer in these two study areas. Transmission of CWD was modeled as being either via direct contact alone or via indirect contact alone (e.g. contact with prion deposits in the environment). Transmission rates were tuned to match observed rates of increase of CWD prevalence in Wisconsin. In model runs CWD prevalence increased more rapidly with indirect than direct transmission, and increased more rapidly in the fragmented landscape. These results highlight the potential importance of environmental contamination once CWD becomes entrenched and the potential exacerbation of diseases by high animal densities in fragmented patches.

**KEYWORDS:** disease, deer, model

ROOM: Ambassador

TIME: Tuesday 11:40 AM

TITLE: Spatial genetic analyses reveal correlation between deer dispersal and CWD spread in WI

AUTHOR(S):

Stacie Robinson -- U Wisconsin Madison Forest and Wildlife Ecology, 208 Russell Labs, 1630 Linden Dr, Madison, WI 53706. Phone: (608)630-0541 Email: sjrobinson@wisc.edu

Michael Samuel -- University of Wisconsin Madison

Julie Blanchong -- University of Iowa

Kim Scribner -- Michigan State University

Julie Langenberg -- Wisconsin Dept of Natural Resources

ABSTRACT: Chronic wasting disease, CWD, a fatal neurological disease of cervids, is a concern for white-tailed deer management in Wisconsin. In the Midwest CWD is concentrated in two foci of higher prevalence, a western core in Wisconsin and eastern core at the Wisconsin-Illinois border, each with lower prevalence areas and isolated disease sparks radiating from the core infected area. While there are uncertainties about the mechanisms of CWD transmission, it is suspected that deer dispersing from CWD affected areas into naive populations are important drivers of the spread of CWD. Thus to understand the pattern and risk of CWD spread in Wisconsin, it will be important to investigate the patterns of white-tailed deer dispersal in relationship to the landscape surrounding the infected areas. We used a landscape genetic approach to correlate patterns of genetic dispersal to landscape and habitat features around the western and eastern CWD cores in southern Wisconsin. We used measures of genetic autocorrelation to define the extent genetic neighborhoods in each area. We also used spatial autocorrelation to describe the clustering of CWD prevalence around each core area. We found marked differences in the genetic neighborhoods of the western versus eastern core areas. Dispersal and gene flow were more localized in the heavily forested west, while gene flow ranged much further in the east where deer habitat was more scattered. The degree to which genetic dispersal predicted CWD spread also differed between west and east indicating that different factors may be contributing to disease spread around each core area.

KEYWORDS: CWD, deer, genetics

ROOM: Ambassador

TIME: Tuesday 1:00 PM

TITLE: Monitoring for bird conservation in the midwest

AUTHOR(S):

Katherine Koch -- US Fish and Wildlife Service, Marquette Biological Station, 3090 Wright St, Marquette, MI 49855. Phone: (906) 226-1249 Email: katie\_koch@fws.gov

ABSTRACT: Monitoring for bird conservation assumes many auspices, ranging from status and trend measurement to setting population and conservation goals for species, determining the causes of population changes and ultimately informing management to make conservation decisions. Collecting bird monitoring data can be expensive and time-consuming. For the more than 1,000 bird monitoring programs in the United States, there has been little effort to share data, unify coverage, standardize protocols, or incorporate new and powerful techniques for managing and analyzing data until very recently. Midwest Coordinated Bird Monitoring partnerships are being forged to: 1) improve communication and awareness among bird conservation researchers, managers and policymakers, 2) align bird monitoring programs with conservation, management and policy priorities within a strategic context, 3) promote and develop standardized protocols and statistically-based sampling frameworks, and 4) implement modern data management and analysis strategies. In addition to facilitating regional bird monitoring networks, we are developing a fully functional coordinated bird website to assist partners with describing their monitoring projects, sharing monitoring results and accessing monitoring data from major databases (e.g., Avian Knowledge Network). Coordinated bird monitoring is not just about the monitoring itself, but rather placing that information in a conservation context such that it can INFORM management decisions. By adopting a more efficient, strategic, and cooperative framework, we will develop a regional network for bird conservation through increased coordination and exchange of monitoring information.

KEYWORDS: bird, monitoring, conservation

ROOM: Ambassador

TIME: Tuesday 1:20 PM

TITLE: Secretive marshbird monitoring in the midwest

AUTHOR(S):

Andy Paulios -- Wisconsin Department of Natural Resources , 101 S Webster St, Madison, WI 53707. Phone: (608) 264-6137 Email: andy.paulios@wisconsin.gov

Ryan Brady -- Wisconsin Department of Natural Resources

Katherine E Koch -- US Fish and Wildlife Service

ABSTRACT: Secretive marshbirds such as rails, bitterns, coots, and grebes are among the most poorly monitored bird groups in North America, largely because of low detection rates and difficult to access habitats. With information on status, abundance, population trends, and habitat associations generally lacking for many species, a National Marshbird Monitoring Program is being developed to fill these gaps and inform management and conservation of marshbirds and the wetlands they inhabit. Standardized survey protocols (Conway 2009), which were extensively developed and tested on National Wildlife Refuges, allow for estimation of abundance or occupancy at various spatial scales using a generalized random tessellation stratified sampling framework. Survey data are stored in a national database maintained by the Patuxent Wildlife Research Center and will be used to inform management decisions regarding harvest, endangered species status, and habitat management. In 2008, Wisconsin became the first state to pilot the framework for the program before its application on regional or national scales. Further refinements in assessment of habitat characteristics, targeting specific wetland properties of interest, and focusing on private lands will be incorporated following the 2009 and 2010 field seasons. Michigan will become the second Midwest state to adopt the program starting in 2010. Efforts are underway to facilitate implementation of the National Secretive Marshbird Monitoring Program in six additional Midwest states. Coordinated marshbird monitoring at a regional scale can provide context needed for understanding changes in marshbird population trends within individual states and to inform decisions for high priority species.

KEYWORDS: marshbird, monitoring, Midwest

ROOM: Ambassador

TIME: Tuesday 1:40 PM

TITLE: Developing a monitoring strategy for grassland bird populations and habitat in the central hardwoods bird conservation region

AUTHOR(S):

David Buehler -- University of Tennessee, Department of Forestry Wildlife and Fisheries, Box 1071, Knoxville, TN 37901. Phone: (865) 974-8845 Email: dbuehler@utk.edu

ABSTRACT: Eastern grassland bird populations have been declining at greater rates than most other avian groups (Sauer et al. 2008). The North American Breeding Bird Survey has been adequate in documenting these declines across broad geographic regions but has been inadequate for most priority species at scales relevant to conservation design and decision-making. Therefore, a different approach is needed to allow for tracking of progress towards meeting conservation goals. We have developed such an approach for grassland birds in the Central Hardwoods Region. The monitoring strategy is based on stratified random sampling of potential grassland habitat at the county level with roadside counts distributed along five transects per county. Counties monitored generally have been identified as focal areas for Northern Bobwhite restoration in each state. Counts are based on five-minute, unlimited radius point counts that are divided into one-minute intervals. Count stations are located every 0.5 mile along transects (30 stations located per transect). Count data are corrected for detection based on distance and time interval. We implemented this monitoring strategy in the Central Hardwoods Bird Conservation Region (TN, KY, IL, IN, MO, AR, and OK) and additionally in Iowa and Ohio from 2008 to 2009. The success of this monitoring protocol for select priority grassland birds at various spatial scales will be discussed. Implications for coordinated monitoring in general will also be discussed.

KEYWORDS: grassland, bird, monitoring

ROOM: Ambassador

TIME: Tuesday 2:00 PM

TITLE: Monitoring for forest bird conservation in the midwestern United States

AUTHOR(S):

Gerald Niemi -- University of Minnesota Duluth, 5013 Miller Trunk Highway, , Duluth, MN 55811. Phone: (218)720-4270 Email: gniemi@d.umn.edu

Robert W Howe -- University of Wisconsin Green Bay

Nick P Danz -- University of Wisconsin Superior

Matthew A Etterson -- US EPA MidContinent Ecology Division

Anna C Peterson -- University of Minnesota

ABSTRACT: For over 20 years, breeding birds in the upper Midwest states of Minnesota and Wisconsin have been systematically monitored on several national forests: the Chequamegon National Forest (NF) (starting in 1992), the Nicolet NF (1987), the Chippewa NF (1991), and Superior NF (1991). Over 1200 survey points in more than 400 forest stands have been sampled annually in the Chequamegon, Chippewa, and Superior NFs, and over 300 points in separate stands have been monitored annually in the Nicolet NF. Trends in relative abundance have been calculated for over 70 breeding bird species within at least one NF, while 42 common species had trends statistically combined for all NFs. Of 167 trends, 68 (43%) were significant ( $P < 0.05$ ), including 23 species that have increased and 25 species that have decreased in at least one NF. Of the 42 species with combined trends, 15 species have increased and 11 have decreased over the 18 plus years of study. Across all NFs, the most consistent pattern observed thus far has been a significant decline in birds that nest on the ground, including Winter Wren, Veery, Hermit Thrush, and Ovenbird. In contrast, permanent residents have been increasing over the same period. Trends often are inconsistent among regions, however, suggesting that complex demographic processes are occurring at large landscape scales. In addition, a detailed analysis of detection probability and overdispersion was completed on 16 species of varying abundance and detectability. These results indicated that using raw counts gives reliable estimates of trends, especially if detection probability does not change systematically over time and the time series is long.

KEYWORDS: trends, monitoring, detection

ROOM: Ambassador

TIME: Tuesday 2:20 PM

TITLE: Are we accounting for rangewide population objectives and focusing on the highest priority regional landscapes for bird monitoring and conservation?

AUTHOR(S):

Thomas Will -- US Fish and Wildlife Service, Regional Office 6th Floor, One Federal Drive, Fort Snelling, MN 55111. Phone: (612) 713-5362 Email: tom\_will@fws.gov

Wayne Thogmartin -- US Geological Survey

Bradly Potter -- US Fish and Wildlife Service

ABSTRACT: Partnership-based initiatives covering four main bird groups have developed continental or national plans for bird conservation that include species status assessments, population objectives, habitat conservation issues and objectives, and monitoring needs. Regionally-based partnerships have stepped down continental bird population and habitat goals to intermediate scales. To help partners meet bird population goals at more local scales, the Upper Mississippi River and Great Lakes Region Joint Venture (JV) has developed tools to describe discrepancies in JV bird habitat objectives and landscape cover types for Bird Conservation Region x state polygons. These same tools will lay the foundation for modeling capacity for protecting or restoring available cover types and monitoring success in meeting continental goals from the ground up. Other decision support tools and systems are being developed to guide the distribution of management and monitoring activities across regional landscapes in order to integrate population objectives for multiple priority birds. At the same time, our traditional paradigms for habitat protection are being increasingly challenged by threats associated with proximity to human communities, necessitating new suites of management decisions to evaluate the likelihood that conservation actions will actually result in source populations that will sum to reverse continental declines. Our collective ability to focus and monitor our conservation activities at landscape scales where they will have the greatest likelihood of success hinges on setting attainable population goals (within the context of available and restorable cover types) with realistic appraisal of significant anthropogenic threats.

KEYWORDS: landscape, bird, conservation

ROOM: Ambassador

TIME: Tuesday 2:40 PM

TITLE: Advances in nocturnal bird monitoring

AUTHOR(S):

Michael Ward -- Illinois Natural History Survey, 1816 S Oak St, Champaign, IL 61820.

Phone: 217-244-4089 Email: mpward@illinois.edu

Tara A Beveroth -- Illinois Natural History Survey

Thomas J Benson -- Illinois Natural History Survey

David A Enstrom -- Illinois Natural History Survey

David Tchong -- NCSA

Antonio Celis-Murillo -- University of Illinois

ABSTRACT: While bird-monitoring programs provide one of the key data sets used to assess the health of both bird populations and overall environmental health, the way in which monitoring is conducted introduces large sources of error. All of the most common bird monitoring techniques (e.g., point counts, transects) are conducted by humans. Although many statistical advances have allowed researchers to better control for sources of error in data over the last decade, recent research has demonstrated that these data can have significant biases. As a collaboration among the Illinois Natural History Survey, National Center for Supercomputing Applications, Graduate School of Library and Information Sciences, and the Department of Electrical and Computer Engineering, we have developed a system to remotely record bird vocalizations and a separate web-based system to analyze these recordings for both the identity of species recorded and estimate how many individuals of each species are present. This recording system can have up to 32 listening stations transmitting data back to a laptop computer. Because these listening stations are synchronized in time, researchers can use the time of arrival of bird vocalizations at different microphones to trilaterate on a location. We will present preliminary data on both the remote recording systems and the software to identify individual birds. While these applications have the potential to improve all bird monitoring some of the less frequently monitored birds are nocturnal and we will discuss implications for future nocturnal-bird monitoring programs.

KEYWORDS: monitoring, birds, technology

ROOM: Ambassador

TIME: Tuesday 3:40 PM

TITLE: How do we link monitoring to the big picture: an example from important bird areas

AUTHOR(S):

Tania Homayoun -- University of Minnesota, 200 Hodson Hall, St Paul, MN 55108.

Phone: (612) 624-4796 Email: homay001@umn.edu

ABSTRACT: Across much of America, habitat loss and degradation due to urban development drive major changes in native bird communities and populations. With the accelerating conversion of land to human-dominated uses, conservation and management of native bird populations will require a deeper understanding of how urbanization impacts both resident and migrating birds (Blair 2009). The Mississippi River Twin Cities Important Bird Area (IBA) was designated in 2005 because of its potential to act as valuable migration stopover habitat, recognized importance to migratory waterfowl, breeding waterbirds, and listed species, and long-term research value. More recently, the University of Minnesota and Minnesota Audubon partnered to design a citizen science landbird monitoring program to provide information on how landbirds use the IBA during breeding and migration periods (Homayoun 2007). Paramount to this monitoring effort is a sound data management strategy that facilitates coordination of volunteers, on-line data submission, increased data sharing with multiple entities, and presentation of spatial and temporal bird data for habitat management and conservation planning (Blair 2009). An intermediate database is being developed to enable local users (e.g., other IBAs using the same landbird monitoring protocol) to share bird and habitat data while also linking the bird monitoring data with the Avian Knowledge Network and other partner databases (e.g., National Park Service Great Lakes Monitoring Network) (Blair 2009). Our ultimate goal is to export this tool to other local-scale monitoring efforts to link them the bird monitoring community at large.

KEYWORDS: IBA, database, bird

ROOM: Ambassador

TIME: Tuesday 4:00 PM

TITLE: Taking the leap: from status and trend assessment to monitoring demographics across regional landscapes

AUTHOR(S):

Thomas Will -- US Fish and Wildlife Service, BHW Federal Building, One Federal Drive, Fort Snelling, MN 55111. Phone: (612) 713-5362 Email: tom\_will@fws.gov

Phillip Nott -- Institute for Bird Populations

ABSTRACT: Trend monitoring has provided the foundation for assessing and conserving bird populations. At finer scales, however, abundance may not always be the best metric for evaluating and guiding ecosystem management. Data on vital rates are critical for designing effective strategies to create and maintain source habitat and for providing insights about limiting factors, particularly for migratory birds with complex life cycles. Since 1989, The Institute for Bird Populations has coordinated the Monitoring Avian Productivity and Survivorship (MAPS) program, a cooperative effort to provide information on vital rates of landbirds to identify demographic causes of population change. Detailed analyses of MAPS data have revealed strong relationships between annual climatic variation and demographic performance for multiple species in the Pacific Northwest, Texas, and the Central Hardwoods. This review of the MAPS program in the Midwest provides insights on how well the program addresses priority landbird species, suggests decision-support tools for assessing management scenarios on resident and migratory species, and provides a foundation for the development of climate change bird atlases. A Midwest coordinated demographic monitoring program would provide a stronger conservation context for individual bird banding stations and bird observatories to contribute to priority information needs like changes migration timing, changes in survival and recruitment rates for priority bird species, and assessment of migratory condition to inform bioenergetics models. By presenting possible components of a Midwest demographic monitoring network, we hope to inspire conference attendees and others to collaborate in making this idea a reality.

KEYWORDS: bird, demographic, monitoring

ROOM: Ambassador

TIME: Tuesday 4:20 PM

TITLE: Supporting bird monitoring programs with forest inventory-based habitat assessments

AUTHOR(S):

Mark Nelson -- USDA Forest Service FIA, 1992 Folwell Avenue, St Paul, MN 55108. Phone: (651) 649-5104 Email: mdnelson@fs.fed.us

ABSTRACT: Quantity and quality of forest-associated bird habitats are affected by extent, composition, and structure of forest lands. Forest attributes are quantified by Forest Inventory and Analysis (FIA), a research program within the U.S. Department of Agriculture Forest Service. This paper describes the FIA program and introduces FIA data, estimates, maps, and tools that portray amount and distribution of forest habitat attributes. Status and trends are reported for vegetation composition (e.g., tree species, forest types), structure (e.g., forest successional stage, tree canopy cover, snag density), and spatial pattern (e.g., size and number of forest patches). Past and present assessments that link FIA-based habitat information with bird monitoring are summarized. Detailed examples are presented for using FIA data in concert with bird monitoring programs to inform strategic bird conservation decisions.

KEYWORDS: forest, habitat, FIA

ROOM: Ambassador

TIME: Tuesday 4:40 PM

TITLE: Are we effectively sharing and using bird monitoring information?

AUTHOR(S):

Katherine Koch -- US Fish and Wildlife Service, Marquette Biological Station, 3090 Wright St, Marquette, MI 49855. Phone: (906) 226-1249 Email: katie\_koch@fws.gov

ABSTRACT: Everyone has a role to play in bird monitoring data management. The Avian Knowledge Alliance (AKA) is dedicated to promoting the dissemination of bird data and has identified five major data analyses needs to greatly improve our ability of bird conservation partners to address priority issues: 1) develop predictive models for species occurrence, 2) generate bird abundance estimates at various scales, 3) understand and predict spatially explicit changes in bird abundance, survival and recruitment over time, 4) determine and predict changes in distribution using occupancy modeling, and 5) calculate potential species richness for a given area over time (Stephens and Sullivan 2008). In order to meet these goals, the Avian Knowledge Network (AKN) is working to gather, archive, visualize, and disseminate observational data on birds in order to better understand their spatial and temporal patterns. The AKN accomplishes this through organizing data in a common format, summarizing these data using maps, graphs and other visualizations, and providing direct downloads of the data when permitted by the data owner (Sullivan 2009). As Coordinated Bird Monitoring takes hold in the Midwest, we must address our collective data management needs. By developing a Midwestern node to the AKN, we are aiming to prevent data degradation through improved archiving, reveal patterns by organizing data (and metadata), and improve the scientific foundation for conservation and management decisions through increased bird monitoring data exchange.

KEYWORDS: bird, data, AKN