H.3: Human Dimensions (Chair: Dean Smith)

H.3.1: Tapp

Evaluating the Migratory Bird Habitat Initiative after the Deep Water Horizon Oil Spill: Waterbird and Seed Abundances

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The USDA Natural Resources Conservation Service (NRCS) implemented the Migratory Bird Habitat Initiative (MBHI) in summer 2010 after the Deepwater Horizon Oil Spill to provide habitat inland from potential oil impacted wetlands. We studied waterfowl and other waterbird use and seed resources in NRCS Wetland Reserve Program (WRP) easements enrolled in MBHI and non-managed WRP easements in the Mississippi Alluvial Valley of Arkansas, Louisiana, Mississippi, and Missouri. We conducted waterfowl and other waterbird surveys from August 2011–April 2012 in Mississippi and from October 2011–April 2012 in Louisiana. In Arkansas and Missouri, we conducted waterfowl surveys from November 2011 through February 2012. In Louisiana and Mississippi, nearly 3 times more dabbling ducks and all ducks combined were observed on MBHI than non-managed wetlands. Additionally, waterbirds other than waterfowl and shorebirds were nearly twice more abundant on MBHI than non-managed wetlands. In Arkansas and Missouri, MBHI wetlands attracted over 2 times more dabbling ducks and 1.7 times more waterbird species than non-managed wetlands. Wetlands enrolled in MBHI in Mississippi and Louisiana contained ≥1.3 times more seeds (mass) known to be consumed by waterfowl than non-managed wetlands. In Arkansas and Missouri, seed mass estimates did not differ among MBHI, non-managed, and publicly managed wetlands. Additionally, seed mass did not differ among management practices of mowing, disking, or fall-winter inundation in these states. While other studies have documented greater waterbird densities on actively than non-managed or passively managed wetlands, our results highlighted the potential for MBHI and similar initiatives to increase waterbird use and energetic carrying capacity of privately owned wetlands for waterbirds. Our results complement other NRCS-supported research in the MAV and elsewhere in the USA that actively managed WRP wetlands received significantly greater use by waterbirds than passively or non-managed WRP wetlands.

H.3.2: Devers

Integrating Human Dimensions into Habitat Delivery: Relationships Among Landscape Characteristics and Recreation

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In 2012, the North American Waterfowl Management Plan (NAWMP) explicitly included a human dimension objective to grow the number of active supporters of waterfowl and wetland conservation. The inclusion of this objective has challenged the habitat management community, particularly the Joint Ventures, to consider how habitat delivery influences the recruitment and retention of active supporters. Habitat managers and science coordinators in the NAWMP community have hypothesized participation in waterfowl hunting and bird watching are limited by availability of lands that support wetland bird species and provide recreational opportunity. Specifically, availability is hypothesized to be a function of travel distance, quality of lands open to recreation, land ownership, presence of supporting infrastructure (i.e., boat ramps and signage), and the presence of birds that provide an opportunity for harvest or viewing. Our objective was to use data from the U.S. Fish and Wildlife Service Harvest Information Program, U.S. Geological Survey Bird Banding Laboratory, and the Cornell Lab of Ornithology E-bird Program with random utility models to investigate the hypothesized relationship between landscape characteristics and recreational site choice of Atlantic Flyway birdwatchers and waterfowl hunters. Using >150,000 trips for both hunters and bird watchers we found active participants take on average 6 trips a year, with>50% of the trips in their county of residence and >90% in their state of residence. In addition, the amount of wetlands and public lands available to users has a positive effect on the number of trips and the distance traveled to recreational sites. Using site choice models we are exploring how changes in the amount and location of public lands changes overall site use. These results can be incorporated into the Atlantic Coast Joint Venture waterfowl implementation plan to assist managers in identifying and managing areas that provide maximum benefit to waterfowl populations, waterfowl hunters, and birdwatchers.

H.3.3: Lindstrom

Prairie Pothole Politics: Opportunities and Challenges to Conserving the Duck Factory

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The Prairie Pothole Region (PPR) is one of the most important landscapes for continental waterfowl populations. However, intensive land-use pressures, economic drivers and public policies are fueling large-scale conversion of this region's important waterfowl breeding habitat (Wright and Wimberly 2013, Lark et al. 2015, Wright 2015). Functional and abundant small wetlands are the cornerstone of this region's ability to produce and sustain record waterfowl populations. However, current PPR conservation planning goals will not be met without significant increases in funding and policy reforms (Doherty et al. 2013). Public policy plays an important role in PPR habitat conservation through various incentives and disincentives. For example, as part of the 2014 Farm Bill, Congress recoupled conservation compliance ("Swampbuster") to federal crop insurance and enacted a new six state (North Dakota, South Dakota, Montana, Minnesota, Iowa and Nebraska) "Sodsaver" provision that discourages conversion of native grasslands through reduced crop insurance subsidies. Other federal habitat funding programs like the North American Wetlands Conservation Act (NAWCA) and federal duck stamp provide significant funding for voluntary incentive-based habitat conservation programs. During the past 80 years, the federal duck stamp program has raised over $800 million to protect more than 6 million acres of migratory bird habitat across the U.S. This effort has largely been funded by waterfowl hunters. Despite past and current political challenges, interest among private landowners for voluntary habitat conservation programs (both short- and long-term) remains strong. In this presentation, I will highlight some of the policy drivers, political challenges and urgent conservation funding needs in the U.S. PPR.

H.3.4: Slattery

Roads, Pipelines, and Seismic Lines…What Do They Mean for Boreal Ducks?

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The Western Boreal Forest (WBF) is changing rapidly due to industrial development. Implications of these changes for waterfowl are unknown though landscape changes are thought to alter food availability and predation with subsequent negative impacts on demography. Linear features (roads, seismic lines, and pipelines) have the second largest anthropogenic footprint in the WBF and our objective was to assess relationships between these features and waterfowl settling and productivity. Waterfowl surveys were conducted using helicopters to count pairs and broods on grids (2.5km x 2.5km, n = 100 per year, 2013 and 2014) distributed across gradients of linear feature densities in north-central Alberta. We employed a double observer and repeated visit methodology then used hierarchical models to examine relationships with linear features while correcting for detection probability and habitat biases. Analyses were conducted at both the wetland and grid levels. Preliminary results indicate both negative and positive relationships with pair and brood abundance depending on the survey period (pair, brood), nesting guild (cavity, overwater, upland) and spatial scale (wetland, grid). Overall, relationships with distance to or density of linear features for both pair and brood abundance were 31% positive, 15% mixed (±), and 17% negative, while 37% had no detectable relationship. However, not all relationships were robust. Our index of breeding success (brood:pair ratios, hereafter productivity) was positively correlated with individual and cumulative linear feature density for cavity nesters and generally negative for the upland nesting guild. We also observed a weak positive correlation between productivity and roads for the overwater nesting guild. Collectively, these preliminary results provide limited support for a priori predictions that settling or productivity decline at either higher densities of or closer to linear features. Additional fieldwork is underway to further assess spatial and temporal variation in patterns.

H.3.5: Dorak^

Urban Takeover: Canada Geese Shifting from City Parks to Industrial Rooftops

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In the past several decades, temperate-breeding Canada geese (*Branta canadensis*) have increased throughout the midwestern United States. Moreover, subarctic-breeding populations of Canada geese appear to be shifting their wintering range northward from the south and central portions of the Mississippi Flyway to more northern latitudes. We investigated Canada geese wintering in the Greater Chicago Metropolitan Area (GCMA), including determining genetic composition of birds using locations nearby Midway International Airport, home range sizes, spatial and temporal use of thermal refugia, and response to harassment.

During summers 2014–2015, we captured 690 Canada geese within the GCMA during their annual molt. We obtained morphological measurements (i.e., culmen length, skull length, tarsus length, mass) and DNA samples to determine a baseline for temperate-breeding Canada geese. We also affixed an aluminum leg band and a plastic waterfowl neck collar with unique alpha/numeric codes on all birds for use in re-sighting efforts.

During the autumn and winters of 2014–2016, we captured 152 Canada geese using a combination of rocket nets, net guns, and cast nets within the urban area. We attached solar-powered global positioning system (GPS) CTT-1040a transmitters (Cellular Tracking Technologies, Somerset, PA) to neck collars of 39 geese spread throughout the two winter field seasons to collect detailed information on their movements and habitat use. DNA analysis from the first field season shows that the population of captured birds consisted of ~58% from subarctic-breeding populations and ~42% from the temperate-breeding population. The transmitters acquire a GPS location once per hour and relay data through global system for mobile communication (GSM) towers, also used by cell phones. By using GSM technology, we are able to receive data in near real time and have the ability to change transmission rates for finer scale resolution when needed.

Multiple thermal refugia within close proximity to food sources were used by geese staying within the GCMA. During extreme cold periods, geese moved from parks and cemeteries to rooftops and warm water discharge areas along the canal to aid in thermal regulation. Geese sought thermal refuge on black rooftops, with as many as 450 individuals occupying a rooftop at one time. Temperature recorders and anemometers were deployed in these thermal refugia locations to compare weather variables between sites used during harsh weather and sites used during warmer periods of the winter to identify shifts in spatial use in relation to climactic variables. Operative temperature models were created for areas with and without roosting geese in order to determine if the thermal environment differs, and if so whether there is a "threshold" thermal environment needed for Canada geese to winter in the GCMA. We then took the weather data collected from each sight used and created an agent-based model to identify future goose movements in response to shifts in weather variables and assessed those movements with our transmitter data. The data gathered from this research will help evaluate current management practices and help design future management practices of Canada geese that winter in the GCMA area.