

**Migration Ecology of American Woodcock
Arkansas Cooperative Research Unit RWO 43
Annual Report 2015**

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Research Objectives:

1. Document timing of migration initiation, rate of migration, stopover length, routes taken, and final destination for both spring and fall migration of American woodcock.
2. Describe land use characteristics at American woodcock stopover sites

Management Implications:

1. This project will generate data on both American woodcock migratory stopover habitat characteristics and migration routes used. Combining the information from both spatial scales will allow us to identify priority areas to focus habitat management and acquisition efforts for American woodcock along these routes.
2. An increased understanding of the timing of migration initiation and migratory routes can be used to fine-tune hunting-season dates.

Project Summary and History:

American woodcock (*Scolopax minor*) are a species of conservation concern across eastern North America. Results from the Singing-ground Survey, an index used to monitor woodcock populations, show long-term declines across the species' range (Cooper and Rau 2014). Understanding American woodcock migration as it relates to population ecology is a high-priority information need—in part, because the migratory period is believed to be a period of high mortality (D.J. Case and Associates 2010). The current understanding of woodcock migration ecology has been limited by available technology such as VHF telemetry, band-recovery, and wing collection survey data (Myatt and Krementz 2007a, 2007b). Recent developments in the miniaturization of satellite transmitters (PTTs) now allow satellite telemetry of American woodcock. We are deploying PTTs on woodcock in their breeding and wintering grounds of the Central Management Region, an area with boundaries similar to that of the Mississippi Flyway (Coon et al 1977, Cooper and Rau 2014). This will allow us to document timing of migration initiation, rate of migration, stopover length, routes taken, and final destination for both spring and fall migration, and to describe land use characteristics at migratory stopover sites.

In fall 2013, we initiated a pilot project evaluating the use of satellite transmitters (PTTs) to investigate woodcock migration ecology. We refurbished seven 9.5 g PTTs available to us and, with an exception from the U.S. Geological Survey Bird Banding Laboratory regarding transmitter mass restrictions, deployed these PTTs on adult female woodcock with mass >200 g. We attached PTTs using a modified thigh harness (Rappole and Tipton 1991). Woodcock were trapped using night-lighting with hand nets and mist-netting techniques (McAuley et al. 1993).

We deployed PTTs on females captured at Tamarac National Wildlife Refuge in northwest Minnesota September 2013 (n = 1), Sherburne Wildlife Management Area in Louisiana January 2014 (n = 4), and Ozark National Forest in northwest Arkansas March 2014 (n = 1). With the exception of one marked female in Louisiana, which we believe was killed by an owl upon release, all females (n = 5) successfully migrated; the Minnesota female migrated both during the fall and spring. All females (n = 3) marked in Louisiana migrated to the Eastern Management Region whereas the Arkansas and Minnesota females migrated within the Central Management Region (Fig. 1). We deployed three additional 9.5 g PTTs on American woodcock at Sherburne National Wildlife Refuge, Minnesota during fall 2014. We also received data during fall migration from three of the PTTs previously deployed. These woodcock reached locations in Texas, Louisiana, Mississippi, Missouri, Tennessee, and Virginia. Our initial results suggest: (1) that larger females can successfully migrate with a 9.5 g PTT, (2) that the harness attachment method does not inhibit 'normal' migration, and (3) that the 9.5 g solar-powered units are receiving sufficient light energy to recharge the battery.

In January 2015 we were able to acquire ten 5 g PTTs. The 5 g PTTs, recently developed by Microwave Telemetry, are in theory preferable to the 9.5 g units. Their reduced size allows us to deploy units on any woodcock greater than 150 g (instead of only females >200 g), however had concerns whether the smaller unit will receive enough light energy to charge the battery. In January and February of 2015 we deployed three 9.5 g and four 5 g PTTs in Texas, and five 9.5 g and six 5 g PTTs in Louisiana. In spring of 2015, we recorded 15 successful migrations from Texas and Louisiana. These woodcock are spread among 10 states and provinces in the breeding grounds: South Dakota, Minnesota, Wisconsin, Michigan, New York, Vermont, Maine, New Brunswick, Quebec and Ontario (Fig. 1). The 5 g units had higher failure rates and recorded fewer locations than the 9.5 g PTTs. We discontinued their use after this season.

Fall 2015 Field Work

During fall 2015, two types of transmitters were deployed. One type was the solar-powered 9.5 g PTT that has been in use since the beginning of the study. The other was a 4.9 g GPS/Argos unit made by Lotek. This GPS unit is battery powered and will store the locations on board the unit until it transmits them all at once. The unit can record up to thirty locations collected by a user defined schedule. We defined our schedule to collect a point every three days during fall migration, and to transmit them to us all at once in January.

Ten 9.5 g PTTs and twelve 4.9 g GPS tags were deployed in September, October, and November 2015: three PTTs in Michigan's Upper Peninsula, three PTTs and eight GPS units in Michigan's lower peninsula, three GPS units in Wisconsin, and two PTTs and two SPD units in

Minnesota, and 2 PTTs in NJ. As of 11/5/15 we are still attempting to deploy the final two GPS units in Minnesota.

As of 11/5/15 all ten PTTs deployed in fall 2015 are functioning, as well as ten of the previously deployed PTTs. Twelve out of twenty of these woodcock have initiated migration at this point (this includes the two woodcock captured in NJ that may have been captured mid-migration).

Future Plans

We plan to deploy additional PTTs and GPS tags during January and February of 2016. This will take place on the woodcock's wintering grounds in Louisiana and Texas. We are planning on deploying 23 9.5 g PTTs and 9 4.9 g GPS units at multiple sites in Louisiana and Texas.

Funding Agencies:

In addition to funding from the Webless Migratory Gamebird Program, this project is supported by the USGS Arkansas Cooperative Fish and Wildlife Research Unit, USGS Minnesota Cooperative Fish and Wildlife Research Unit, USFWS, Ruffed Grouse Society and American Woodcock Society, Texas Parks & Wildlife Department, the Glassen Foundation, Michigan Department of Natural Resources, Louisiana Department of Wildlife & Fisheries, the University of Arkansas, and Woodcock Limited

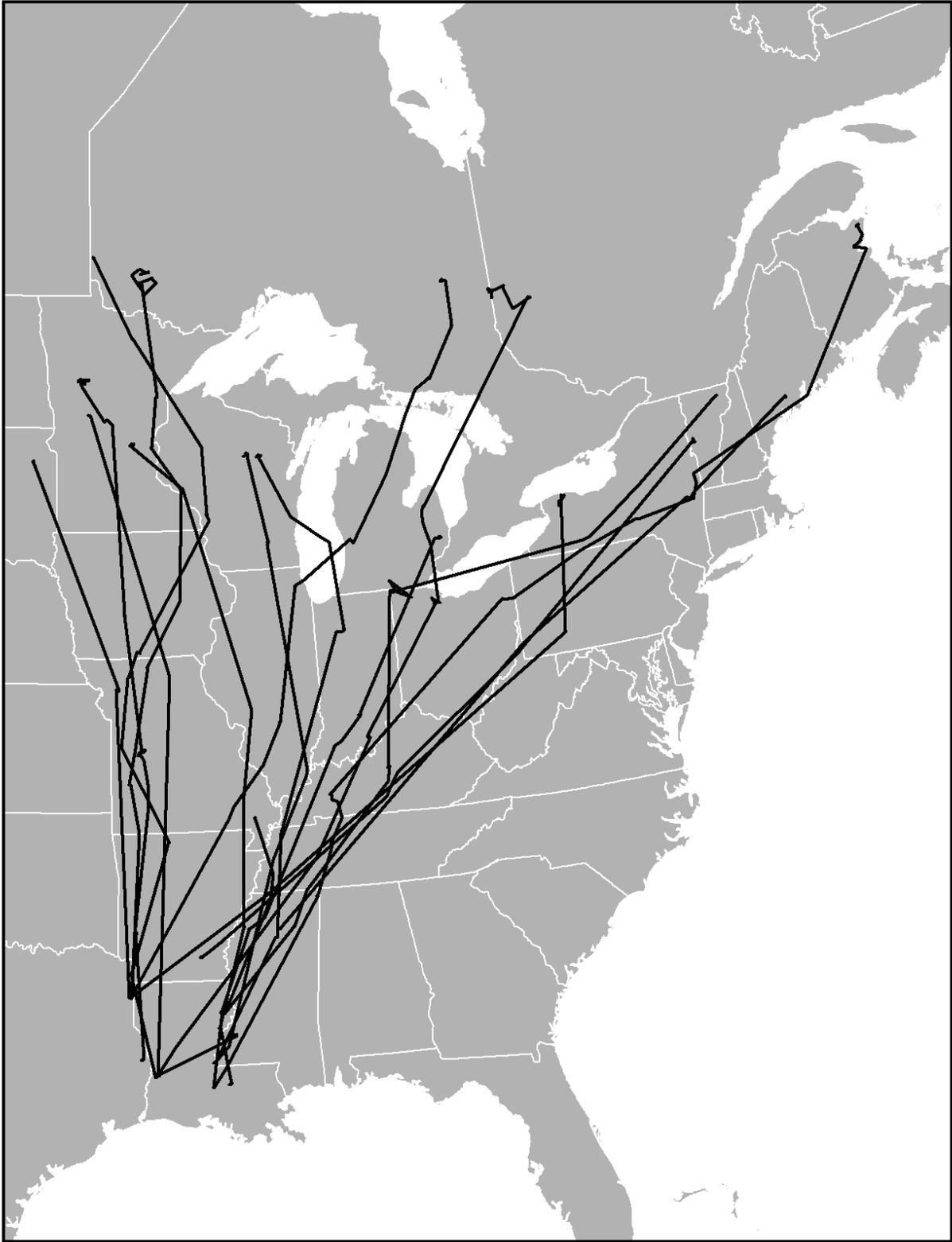


Fig. 1 Spring 2015 American woodcock migration routes (n =18)

Literature Cited:

- Coon, R. A., T. J. Dwyer, and J. W. Artmann. 1977. Identification of potential harvest units in the United States for the American woodcock. *Proceedings of the Woodcock Symposium* 6:147–153.
- Cooper, T.R., and R.D. Rau. 2014. American woodcock population status, 2014. U.S. Fish and Wildlife Service, Laurel, Maryland. 16 pp.
- D.J. Case and Associates (editor). 2010. Priority information needs for American woodcock: a funding strategy. Developed for the Association of Fish and Wildlife Agencies by the Migratory Shore and Upland Game Bird Support Task Force. 16pp.
- McAuley, D.G., J.R. Longcore, and G.F. Sepik. 1993. Techniques for research into woodcock: experiences and recommendations. Pages 5-11 *in* J.R. Longcore and G.F. Sepik, editors. Eighth woodcock symposium. U.S. Fish and Wildlife Service Wildlife Resource Biological Report 16, Washington, D.C., USA.
- Myatt, N.A. and D.G. Krementz. 2007*a*. American woodcock fall migration using Central Region band-recovery and wing-collection survey data. *Journal of Wildlife Management* 71: 336–344.
- Myatt, N.A. and D.G. Krementz. 2007*b*. Fall migration and habitat use of American woodcock in the central United States. *Journal of Wildlife Management* 71:1197-1205.
- Rappole, J.H. and A.R. Tipton. 1991. New harness design for attachment of radio transmitters to small passerines. *Journal of Field Ornithology* 62:335–337.