



ScienceWatch-Little Birds, Big Trips

“The big surprise is they are in no hurry going south. The other big surprise is how fast they came back.” – B. Stutchbury

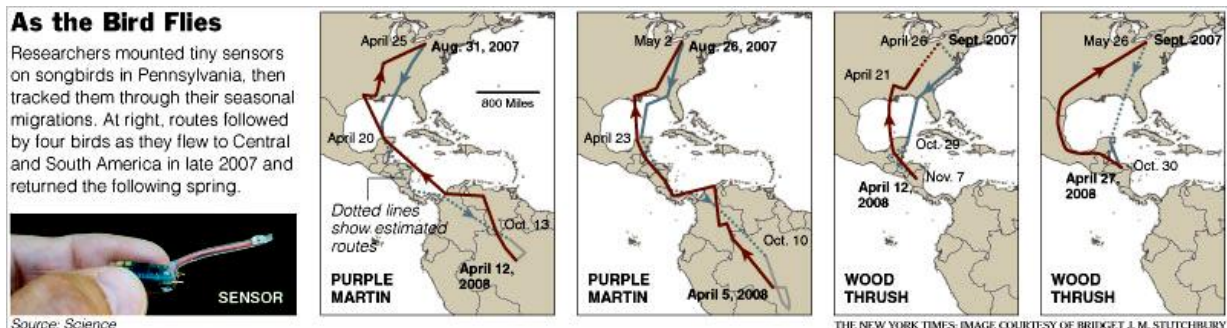
Songbird migration has been extremely difficult to track. Too small to be seen by satellites or to carry radio collars, only brief snapshots of their journeys have been taken by opportunistic recapturing of banded individuals while they refuel on the ground.

But now researchers have developed a novel tracking device, a miniature geolocator, weighing 1.5 grams, less than a dime, which fits on the birds like a tiny backpack and straps to their legs. By measuring light levels the geolocators tell the researchers when sunrise and sunset occur. This enables them to determine where the birds are each day, but to do that they must recapture the birds to download the data.

Reporting in the February 13, 2009 issue of *Science*, a team led by Bridgette Stutchbury, a biologist at York University in Toronto, Canada, captured purple martins (*Progne subis*) and wood thrushes (*Hylocichla mustelina*) during the 2007 breeding season in northern Pennsylvania and recaptured them the next summer. Twenty purple martins (10 of each gender) and 14 wood thrushes (11 males, 9 females) were tagged. In 2008 five sensors were retrieved from the thrushes, two from the martins.

“We knew that the purple martins flew to Brazil and wood thrush went to Central America, but the details of how an individual gets there, and what routes they take, how fast they fly, how often they stop to rest – these are the kinds of details we have never been able to have,” said Stutchbury.

By reconstructing the migration routes (see figure), the team found that the birds flew faster and took more prolonged stopovers than anyone previously knew. The Yucatan Peninsula turned out to be an important stopover. The two purple martins flew south 1550 mi, crossing the Gulf of Mexico (over 500 mi) to the Yucatan Peninsula in just 5 days, and spent 3 to 4 weeks there before continuing on to Brazil. Four of the five wood thrushes spent 1 to 2 weeks in the southeastern U.S. before crossing the Gulf. Two of these birds then spent another 2 to 4 weeks in the Yucatan before heading to Central America.



In general, the trip north was 2 to 6 times more rapid than the southern flight. One female martin flew 4660 mi in 13 days, averaging an astonishing 360mi/day. Nine days were spent flying, 4 days on stopovers, so her true speed was even greater. Most wood thrushes returned to the breeding territory in only 13 to 15 days, and averaged 140 to 165mi/day. But one female thrush avoided the Gulf, taking 29 days to complete the 2850 mi overland trip. While the longer route was less risky, this female paid for it by breeding 3 weeks later than those who flew over the Gulf.

Studies like this that can accurately map migration routes and wintering locations will greatly aid scientists in predicting the impact of climate change and habitat loss that is threatening many migratory species.

“This is the first time anyone has been able to track these tiny birds. For the first time now we can find out what threats they face”, said Stutchbury.

The researchers pointed out that a ten percent return (2 out of 20) for the purple martins is much lower than the ~50% return for non-tagged birds, and they plan to fit another 50 birds with an even lighter sensor for a second round of tagging. “We’re trying to learn whether they molt and are therefore taking their time going south”, said Stutchbury.

By contrast, I drive to Florida each winter as fast as I can, and come back rather slowly.

Saul Scheinbach