Migratory connectivity of Rusty Blackbirds

Luke L. Powell
Smithsonian Migratory Bird Center
International Rusty Blackbird Technical Group

Jim Johnson, USFWS
Erin Bayne, University of Alberta
Pete Marra, SMBC
Migratory Connectivity

- Migratory connectivity is the spatial and temporal linkages of individuals between life cycle stages.
- The strength, or degree, of migratory connectivity is the extent to which individuals and populations remain together between phases of the annual cycle (ie, strong, weak, diffuse, etc).
- Migratory connectivity plays a key role in the evolution of species, limitation of populations, and effectiveness of conservation strategies.

Cohen et al in review. Quantitative metric for the strength of migratory connectivity, R package MigConnectivity
RUBL connectivity w/ Isotopes

Mississippi samples (n = 255)

South Carolina & Virginia samples (n = 281)

Sample collection 2005-2009

Hobson et al. 2010, Condor
Little winter fidelity!

Hobson, Greenberg et al. 2010, Condor
Missing piece: Spatiotemporal variability in migratory connectivity

Spatiotemporal variability in migratory connectivity

South Carolina samples
More with isotopes?

• Can we match breeding grounds feathers to wintering grounds?!

• Mettle-Hoffman et al. 2010 found a pre-alternate cheek molt in winter

• But this molt continues through spring migration (Ohio; Wright and Tonra unpublished)

• So this angle is a DEAD END
More with isotopes - Ohio etc.

- Wright and Tonra have feathers from RUBL migrating in fall (n=55) and spring (n=56) near Lake Erie
- Combining efforts with other banding stations that catch RUBL (e.g. Black Swamp OH, Powdermill, PA)
- Use isotopes besides H to improve accuracy of geographical assignments (sulfur to biangulate?)
- Hobson may help with RUBL “feather base map”.
- Q: Are the great lakes a funnel point for RUBL coming from east AND west?
**Light Level Geolocators**

- 17 deployed in 2009, 3 recovered in 2010
- 2.0g tag + harness; 5-mm teflon ribbon
  - mean 3.4% of body weight
- Birds were “beat up” when they returned

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Johnson, Matsuoka, Tessler, Greenberg & Fox, 2012, WJO
Smithsonian Migratory Bird Center’s Migratory Connectivity Project

- Rusty Blackbird: a focal species
- Archival GPS tags (“GPS pinpoints”)
- 50+ high-res fixes

light-level

GPS
**Archival GPS tags**

- **2015 deployments (all Pinpoint 50s - 2.0g)**
  - About 25 locations per bird
  - 8 deployed in north eastern Alberta
    - 2 recovered
  - 8 deployed in Anchorage, AK
    - 2 recovered
  - 4 deployed in NH
    - 0 recovered (poor year for NH)
- **2016 deployments**
  - 6 NEW swiftX GPS tags (50 locs., 1g) deployed in AK
Nov 8- Nov 18
Jan 9 - Feb 26

No real water bodies visible - ag areas and riparian
Alberta Fen
Male is Red
Female is yellow
Male is Red
Female is yellow
AB Female
1 Jan - 26 Feb
25 ha
AB Female
13 Mar - 29 Mar
Coon Island Conservation Area
Missouri/Arkansas border
All 6 birds
Conclusions

- Long Fall stopover (5 weeks?)
- Long Spring stopover (3 weeks+?)
- Remarkably matching paths by AB birds
- East/west migratory split
- Greater MS River drainage appears critical
What’s next

• Combine data sources for more comprehensive migration map?

• 2017 fieldwork
  • Deploy swiftX tags in Alberta, Anchorage & NH (and Maine?)

• 2018 fieldwork
  • Recover tags (& deploy more?)

• 2019 fieldwork- GPS-Argos pinpoints?

• Need more breeding locations! Esp. in the east & in central Canada

• Need price of gas to go up or to raise more funds to pay for tags and fieldwork
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