

Annual Report for Period:04/2008 - 03/2009

Submitted on: 02/13/2009

Principal Investigator: Kelly, Jeffrey F.

Award ID: 0541740

Organization: U of Oklahoma

Submitted By:

Kelly, Jeffrey - Principal Investigator

Title:

RCN: Migration Interest Group: Research Applied Toward Education (MIGRATE)

Project Participants

Senior Personnel

Name: Kelly, Jeffrey

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Moore, Frank

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Smith, Thomas

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Mabey, Sarah

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Wikelski, Martin

Worked for more than 160 Hours: Yes

Contribution to Project:

Name: Smith, James

Worked for more than 160 Hours: Yes

Contribution to Project:

Original CO-PI on the grant proposal. Attended the 2007 MIGRATE meeting

Name: Robinson, Douglas

Worked for more than 160 Hours: Yes

Contribution to Project:

Chairs the Data Standards and Protocols Committee. Attendee at MIGRATE 2007 and MIGRATE 2008

Name: Haig, Susan

Worked for more than 160 Hours: Yes

Contribution to Project:

Co-chair of the Education Committee. Attendee at MIGRATE 2007 and MIGRATE 2008. Organized Migrate training courses in Portland OR (August 2008) and Mazatlan (March 2009)

Name: Winkler, David

Worked for more than 160 Hours: Yes

Contribution to Project:

Hosting the 2008 MIGRATE workshop at the Laboratory of Ornithology in Ithaca, NY. Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Education Committee. Taught at the 2008 MIGRATE Training course in Newport, OR in

August.

Name: Thorup, Kasper

Worked for more than 160 Hours: Yes

Contribution to Project:

Chair of the Training Committee. Attendee at MIGRATE 2007 and MIGRATE 2008. Has reviewed numerous student training projects funded through MIGRATE

Name: Hobson, Keith

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Attendee at MIGRATE 2007 and MIGRATE 2008. Taught at 2008 MIGRATE training course in Newport, OR.

Name: Celis, Tony

Worked for more than 160 Hours: Yes

Contribution to Project:

Has worked to expand the role of MIGRATE in Latin America. Translated the MIGRATE web pages to Espanol (www.migrate.ou.edu) Attendee at MIGRATE 2007 and MIGRATE 2008

Name: Deppe, Jill

Worked for more than 160 Hours: Yes

Contribution to Project:

Has worked to expand the role of MIGRATE in Latin America. Helped with translation of the MIGRATE web pages to Espanol (www.migrate.ou.edu) Attendee at MIGRATE 2007 and MIGRATE 2008

Name: Wunder, Michael

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Data Standards and Protocols Committee. Scientific Program Committee for MIGRATE 2010

Name: Skagen, Susan

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Co-chair of the Training Committee.

Name: Taylor, Caz

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Data Standards and Protocols Committee. Taught at the MIGRATE 2008 Course in Portland, OR

Name: Bearhop, Stuart

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Keynote presenter at MIGRATE 2007. Chair of the Citizen Science Committee

Name: Deihl, Robb

Worked for more than 160 Hours: Yes

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Keynote presenter at MIGRATE 2007. Member of the Citizen Science Committee. Has worked to develop MIGRATE's citizen science agenda

Name: Kays, Roland

Worked for more than 160 Hours: Yes

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008 and Organized a joint MIGRATE/ MOVEBANK Sponsored workshop in February 2009

Name: Norris, D. Ryan

Worked for more than 160 Hours: Yes

Contribution to Project:

Ryan Norris is the Co-chair of the education subcommittee and has worked to develop, advertise, and organize our student training courses in both 2008 and 2009

Post-doc**Graduate Student****Undergraduate Student****Technician, Programmer****Other Participant**

Name: Jahn, Alex

Worked for more than 160 Hours: Yes

Contribution to Project:

Has worked to expand the role of MIGRATE in Latin America. Attendee at MIGRATE 2007 and MIGRATE 2008

Name: Wassenaar, Len

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Data Standards and Protocols Committee

Name: Bowen, Gabe

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007. Member of the Data Standards and Protocols Committee

Name: Bridge, Eli

Worked for more than 160 Hours: No

Contribution to Project:

Has helped with organization and planning of MIGRATE 2008 workshop. helped to develop MIGRATE's citizen science agenda

Name: Fudickar, Adam

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Has helped with organization and planning of MIGRATE 2008 workshop. Member of the Data Standards and Protocols Committee

Name: Paritte, Jacqueline

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007.

Name: Irwin, Darren

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007 in Sweetbriar VA

Name: Spina, Fernando

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Citizen Science Committee

Name: Bairlein, Franz

Worked for more than 160 Hours: No

Contribution to Project:

Attendee MIGRATE 2008.

Name: Shamoun-Baranes, Judy

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Data standards and Protocols Committee

Name: Kirsch, Eileen

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Citizen Science and Outreach Committee

Name: Gugleilmo, Chris

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Member of the Education Committee

Name: Bowlin, Melissa

Worked for more than 160 Hours: No

Contribution to Project:

Attendee at MIGRATE 2007 and MIGRATE 2008. Keynote presenter at MIGRATE 2007. Member of the Citizen Science Committee

Name: Gauthreaux, Sid

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007 and has served on the data standards and protocols committee

Name: Belser, Carol

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007 and has served on the data standards and protocols committee

Name: Senner, Nate

Worked for more than 160 Hours: Yes

Contribution to Project:

Helped to organize MIGRATE 2008

Name: Mata, Alstolfo

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007 and has served on the Education Committee

Name: Bisson, Isabella

Worked for more than 160 Hours: No

Contribution to Project:

Attendee for MIGRATE 2007 and MIGRATE 2008. Member of the citizen science and outreach committee.

Name: Buler, Jeff

Worked for more than 160 Hours: No

Contribution to Project:

Attended MIGRATE 2007 and member of the data standards and outreach committee

Name: Kunz, Tom

Worked for more than 160 Hours: No

Contribution to Project:

Attendee of MIGRATE 2007 and MIGRATE 2008. Keynote speaker for MIGRATE 2007. Member of the Education committee

Name: Paxton, Kristina

Worked for more than 160 Hours: No

Contribution to Project:

Attendee MIGRATE 2007 and Member of the Data Standards and Protocols Committee

Name: Alvarado, Allison

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Bairlein, Franz

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Breen, Brandon

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Bridge, Eli

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Bianchi, Carlos

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Cameron, Alison

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Carlisle, Jay

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Bonter, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Cerasale, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Dickinson, Janis

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Cline, Britt

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Craig, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Farnsworth, Andrew

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008, and taught at the 1st MIGRATE training course in Portland, OR August 2008

Name: Cueto, Victor

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Fink, Daniel

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Fleron, Rene

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Dennis, Deborah

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Gabrielson, Rich

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Henke, Blake

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Gill, Robert

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Huber, Gernot

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Hunnewell, Robin

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Harrigan, Ryan

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Johnson, Tom

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Harvey, Mike

Worked for more than 160 Hours: No

Contribution to Project:

Attended Annual Meeting in Ithaca, NY April 2008

Name: Johnson, Matthew

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Justiniano-Cruz, Patricia

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Kapetanakos, Yula

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Lank, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Lanzone, Mike

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Lovette, Irby

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: MacCurdy, Rob

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Manami, Ana Maria

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Mandel, Jamie

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Piersma, Theunis

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Marra, Peter

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Mehlman, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Quillen Vidoz, Julian

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Pollinger, John

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Roshier, David

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Ruela-Inzunza, Ernesto

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Sagario, Cecelia

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: Seewagen, Chad

Worked for more than 160 Hours: No

Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Name: uryan, Robert

Worked for more than 160 Hours: No
Contribution to Project:
 Attended the 2008 Network Meeting in Ithaca NY - April 2008
Name: Taylor, Audrey
Worked for more than 160 Hours: No
Contribution to Project:

Name: Sheldon, Daniel
Worked for more than 160 Hours: No
Contribution to Project:
 Attended the 2008 Network Meeting in Ithaca NY - April 2008
Name: Sillett, Scott
Worked for more than 160 Hours: No
Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008
Name: Tottrup, Anders
Worked for more than 160 Hours: No
Contribution to Project:
 Attended the 2008 Network Meeting in Ithaca NY - April 2008
Name: Warnaoek, Nils
Worked for more than 160 Hours: No
Contribution to Project:

Attended the 2008 Network Meeting in Ithaca NY - April 2008

Research Experience for Undergraduates

Organizational Partners

ISOSCAPES

MIGRATE members work with ISOSCAPE members to advance tracking methods. Presenters at both annual meetings

Sweet Briar College

Provided facilities and support for MIGRATE 2007 Workshop

Laboratory of Ornithology

Hosting the 2008 MIGRATE workshop

MOVEBANK

Movebank and MIGRATE are jointly sponsoring a workshop on raptor migration at the Acopian Center - Hawkmountian in February 2009.

Other Collaborators or Contacts

9 February 2009

The 2008 workshop at the Laboratory of Ornithology at Cornell University was a success. We also hosted a student training course at the Hatfield Marine Science Station in August 2008 in conjunction with the American Ornithologists' Union Meeting. We sponsored network participants' attendance at the ISOSCAPES RCN meeting in Santa Barbara in April 2008. MIGRATE is sponsoring THE FIRST workshop on GLOBAL raptor migration at the Acopian Center FOR CONSERVATION LEARNING with MOVEBANK in February 2009. In March of 2009 we will operate our 2nd student training course with the Western Hemisphere Shorebird Group meeting in Mazatlan, MX

Activities and Findings

Research and Education Activities: (See PDF version submitted by PI at the end of the report)

Added 9 February 2009

2008 activities

1. Annual Network Meeting in Ithaca NY in April 2008 - Agenda Attached
2. Co-sponsored ISOSCAPE meeting in Santa Barbara April 2008 (www.isoscapes.org)
3. Sponsoring THE FIRST workshop on GLOBAL raptor migration at the Acopian Center FOR CONSERVATION LEARNING at Hawk Mountain - February 2009
4. Held 1st Student Training Course in Newport OR August 2008 - Agenda Attached
5. Planning 2nd student training course March 2009 - Mazatlan, MX - Agenda Attached
6. Planning international conference in Germany Spring 2010
7. Sponsored numerous laboratory exchange and student training visits

Findings:

added 9 February 2009

Synthesis Publications Facilitated by MIGRATE:

1. Keith Hobson and Leonard Wassenaar produced a book whose authors were primarily MIGRATE members. The book was an outcome of the 2007 network meeting.

Hobson, KA and LI Wassenaar (Eds). Tracking animal migration with stable isotopes. 2008., Elsevier, Terrestrial Ecology Series

2. The MIGRATE data standards committee produced:

Robinson, W. D., M. Bowlin, I. Bisson, R. Diehl, T. Kunz, S. Mabey, J. Shamoun-Baranes, K. Thorup, and D. Winkler. In press 2009. Integrating concepts and technologies to advance the study of bird migration. *Frontiers of Ecology and the Environment*

3. Tom Kunz and others from MIGRATE produced a symposium on Aeroecology

Kunz T.H., S.A. Gauthreaux, Jr., N.I. Hristov, J.W. Horn, G. Jones, E.K.V. Kalko, R.P. Larkin, G.F. McCracken, S.W. Swartz, R.B. Srygley, R. Dudley, J.K. Westbrook, and M. Wikelski. 2008. Aeroecology: probing and modelling the aerosphere. *Integrative and Comparative Biology*, 48: 1-11, doi:10.1093/icb/icn037.

Training and Development:

9 February 2009

1. Training Courses

- a. MIGRATE held its first student training course in Newport, OR from 29 July through 2 August 2008. This Course trained 19 students from 8 Countries. These students were:

First/Last Country (University)
 Adam Smith USA (U Rhode Island)
 Even Adams USA (U Maine)
 Amy Schwarzer USA (U Florida)
 Randi Rhodes USA (U Hawaii)
 Gabriel Colorado USA (Ohio State)
 Pedro Chavarria USA (Texas A&M)

Abigail Darrah USA (U of Arkansas)
 Jesse D'Elia USA (Oregon State U)
 Traish Miller USA (Penn State)
 Anna Peterson USA (U Minnesota)
 Terry Korodaj Australia
 Loren Morales Mexico
 Carlos Vinueza Ecuador
 Luciana Pozzi Argentina
 Cesar Cestari Brazil
 Valeria Ojeda Argentina
 Jose Sarasola Argentina
 Macarena Sarroca Uruguay

b. The 2009 training course will be held in Mazatlan, MX from 16 to 19 March.

2. MIGRATE Sponsored training and exchange visits that included.

a. Participation of 4 scientists in the ISOSCAPES meeting in Santa Barbara in April 2008

b. Heriberto Verdugo Mung³ia traveled from Mexico to Idaho and collaborated on a fall songbird migration project with the Idaho Bird Observatory.

c. Nikita Chernetsov traveled from Moscow to Mississippi to work with Frank Moore on migration stopover ecology.

d. MIGRATE funded travel for Alex Jahn to the IV International Partners in Flight conference in McAllen, TX, 13-16 February, 2008. Where he presented: i. The role of cerrado in eastern Bolivia as a wintering habitat for migratory birds; and ii. Opportunities for research and conservation of migratory birds on private lands in eastern Bolivia. These presentations led to a proceedings paper (in review): Jahn, A.E., S. Ouly, E. Chiang, D.J. Levey, and J.A. Clavijo. 2009. Opportunities Through Partnerships for Conservation and Research of Austral Migrants.

3. The 2008 Annual Meeting Resulted in Significant new Collaborations

a. T. Piersma, D. Winkler and D. Roshier - began working on a synthesis paper at MIGRATE 2008.

b. Robison et al (in press) begun at MIGRATE 2007 and revised at MIGRATE 2008.

c. Kunz et al. (2008) developed, in part, at MIGRATE 2007

d. T. Smith and A. Jahn - Employing a broad network of prominent scientists, bird banders, and volunteers, the Center for Tropical Research (CTR), headed by Dr. Thomas Smith, has collected cloacal swabs for influenza detection and feather samples for genetic and isotopic investigations of migratory connectivity from migratory birds across North America, Central America, and parts of South America. Collaborations fostered at the second annual MIGRATE meeting (2008) between CTR, doctoral candidate Alex Jahn (University of Florida, Gainesville) have allowed for the expansion of sampling efforts to include much of South America, with new sampling in Bolivia, Argentina, Colombia, and Chile. In addition to providing CTR with a large number of new samples, the collaboration has created an opportunity to train local field biologists in the latest techniques for sampling migratory birds and surveying for avian diseases. These collaborative efforts in South America are essential to ongoing NSF- and NIH-funded investigations into the role that migratory birds play in the spread of avian influenza.

e. E. Bisson, M. Bowlin, and Wikelski - 2009 SCIB symposium on integrative migration research.

f. E. Paxton gave a presentation based on discussions at MIGRATE 2008. Paxton, E.H. Population regulation of migratory birds. Migration and Coastal Ecology Symposium at the joint meeting of the Wilson Ornithological Society and the Association of Field Ornithologists, 2008, Mobile, AL. Invited speaker.

g. Keith Hobson started the following collaborations at MIGRATE 2008

1. Theunis Piersma on the hydrogen isotope analysis of House Martins in Holland.

2. Ryan Norris on isotope analysis of Tree Swallows in Ontario.

3. Peter Marra on ongoing isotope work on AMRE in Jamaica.

h. Matthew Johnson furthered the following projects at MIGRATE 2008

1. Organizing a 2-hour symposium at the American Ornithologists' Union in Portland, Oregon (4-9 Aug 2008). Using trace element and stable isotope analyses to study avian movement and habitat use. Collaboration with MIGRATE participants helped to facilitate this symposium, and MIGRATE funds provided travel for one participant to attend.
2. Presentation at the American Ornithologists' Union in Portland, Oregon (4-9 Aug 2008).
3. Johnson, M., et al. 2008. Inter-seasonal movements, habitat use and migratory connectivity of Black Oystercatchers.
4. Presentation at Oregon State University (spring 2008).
5. Johnson, M., et al. 2008. Inter-seasonal movements, habitat use and migratory connectivity of Black Oystercatchers. Publication in review.
6. Johnson, M., et al. in review. Inter-seasonal movements, habitat use and migratory connectivity of Black Oystercatcher.

i. Richard Lanctot started the following projects at MIGRATE 2008

1. Discussions surrounding holding the International Course on Avian Movements and Migration Technology led to the 2nd workshop being held in conjunction with the III Western Hemisphere Shorebird Group meeting in Mazatlan, Mexico in March 2009. By holding this workshop in conjunction with the conference, the two groups will be able to bring more people to their individual meetings, resulting in substantial financial savings and interchange of ideas.
2. Began a study using stable isotopes to differentiate five subspecies of Dunlin with Mike Wunder, Len Wassenaar, and Craig Stricker after meeting Mike and Len in Cornell.
3. Met with David Winkler at the Cornell Migrate Conference and this led to David coming to Barrow in June 2008 and eventually adding this location to his Golondrinas study.

Outreach Activities:

An integral part of the mission of MIGRATE is to promote interaction between citizenry and migratory scientists. Subsequently, the goal of the MIGRATE citizen science/public outreach committee is to identify and facilitate projects with the most potential to accomplish this interaction. After much discussion it will focus effort and resources on one or two projects rather than working on multiple ideas simultaneously. This targeted effort should produce tangible results more rapidly.

The citizen science/public outreach committee will primarily facilitate development of a migration monitoring network along the southern United States border. This idea is already being advanced by committee member Robb Diehl and MIGRATE Lead Investigator Frank Moore as a network of 15 banding stations run partially by volunteers and partially by full or part time researchers. Because this project is already in progress, MIGRATE will serve as a support network. In the initial stages, the committee will strive to coordinate a brainstorming session, most likely associated with a professional organization annual meeting, to bring together interested individuals and stakeholders to develop a project action plan. Once the action plan is developed, the committee will help develop the outreach capacity of the banding network, which may involve hiring a network coordinator, among other tasks.

Initially, the financial support needed from MIGRATE for this project will most likely be travel reimbursement for brainstorming session attendees. Also the committee will target individuals with interest in the banding network for invitation to the 2008 MIGRATE meeting, requiring additional travel funding. The committee may also request salary support for the network coordinator position, but this is a long-term goal and is not foreseeable in the current fiscal year.

The second committee project will publicize the use of RADAR technology to track migration by developing a 'Migration Watch' segment series for the Weather Channel. Some previous work has been done on this project by researchers including MIGRATE member Sid Gauthreaux. It is thought that this project will be more difficult to accomplish than the banding network; thus, the objective for this plan by the next meeting is simply to contact the Weather Channel and develop a clear outline of what needs to be done in this regard. We do not expect any financial burden from this project during this allocation year. If it continues to be a possibility in coming years, future support may be requested.

The project foci of the citizen science/public outreach committee will maximize effectiveness, despite the committee's five-person constituency, by augmenting projects already in development. The two projects chosen will reach two distinct audiences, with the banding network serving on individual and local scales with intense interaction among participants, and the Weather Channel project reaching a national audience with a less concentrated experience. The projects chosen fulfill the outreach components of the MIGRATE mission in an efficient and effective manner and will reflect highly upon the MIGRATE organization.

Journal Publications

Martin Wikelski, Roland W. Kays, Jeremy Kasdin, Kasper Thorup, James A. Smith, and George W. Swenson, Jr, "Going wild: what a global small-animal tracking system could do for experimental biologists", *Journal of Experimental Biology*, p. , vol. , (2007). Accepted,

Kelly, JF. M Johnson, M Whitfield, and S Langridge, "Efficacy of stable isotope ratios for identifying wintering sites used by endangered southwestern willow flycatchers", *Ecological Applications*, p. 568, vol. 18, (2008). Published,

Kunz, TH, SA. Gauthreaux, Jr., NI. Hristov, JW Horn, GJ, EKV Kalko, TA Kelly, RPLarkin, GF McCracken, SM. Swartz, RB. Srygley, R Dudley, JK Westbrook, M Wikelski, "Aeroecology: Probing and Modeling the Aerosphere", *Journal of Integrative and Comparative Biology*, p. 1, vol. 48:, (2008). Published, 10.1093/icb/icn037

Robinson, W. D., M. Bowlin, I. Bisson, R. Diehl, T. Kunz, S. Mabey, J. Shamoun-Baranes, K. Thorup, and D. Winkler., "Integrating concepts and technologies to advance the study of bird migration.", *Frontiers in Ecology and the Environment*, p. , vol. , (2009). Accepted,

Books or Other One-time Publications

Hobson, KA and LI Wassenaar, "Tracking animal migration with stable isotopes", (2008). Book, Published

Editor(s): Hobson, KA and LI Wassenaar

Collection: Terrestrial Ecology Series

Bibliography: Elsevier

Web/Internet Site

URL(s):

www.migrate.ou.edu

Description:

Other Specific Products

Contributions

Contributions within Discipline:

MIGRATE has formed an interdisciplinary community in which we have reached consensus on the critical biological questions to be answered. This consensus will allow us to narrow down the potential technological options for answering these questions using small bodied migrants. In 2008 biologist and engineers will come together to facilitate wider commercial availability of new technologies.

We have hosted one student training course, will be host another in March 2009 and plan a third for 2010. We have worked to be inclusive in our annual meeting and in our courses with wide representation of women and minorities as well as a wide variety of nationalities

Contributions to Other Disciplines:

Contributions to Human Resource Development:

MIGRATE has been very attentive to maintaining influx on new scientists and to maintaining both racial and gender diversity. MIGRATE is pushing to be more influential internationally. We will continue to train young scientists to use new technologies to better understand animal movement. We plan to host training courses in Central and South America and Host a network meeting in Germany. All of these events will emphasize a diversity of attendees across gender, ethnicity and career stage.

Contributions to Resources for Research and Education:

We have posted all of the educational materials for the courses that we operate on our web page at www.migrate.ou.edu

Contributions Beyond Science and Engineering:

Special Requirements

Special reporting requirements: None

Change in Objectives or Scope: None

Animal, Human Subjects, Biohazards: None

Categories for which nothing is reported:

Any Product

Contributions: To Any Other Disciplines

Contributions: To Any Beyond Science and Engineering

2008 MIGRATE WORKSHOP
 New Technologies For Studying Bird Migration
 3 through 5 April 2008
 Hosted By Laboratory of Ornithology, Cornell University, Ithaca, NY

MIGRATE



THURSDAY 3 APRIL

Time	Speaker	Topic – MIGRATE Citizen Science and Data	Annotation
800	Jeff Kelly	Welcome to MIGRATE 2008	What is MIGRATE? Why are you here?
815	David Winkler John Fitzpatrick	Welcome to Lab of O and Cornell	What do we hope to get done? How can we go from developing new tracking technologies to making them available for use in the field by non-engineers
830	David Bonter	Laboratory of Ornithology - Citizen Science and Migration	How new technologies are being used in ongoing citizen science projects at the Lab of Ornithology
900	Rob Diehl	MIGRATE and Citizen Science	In 2007 MIGRATE formed a citizen science committee. This committee has been working on ideas for MIGRATE citizen science projects. The ideas have revolved around integrating banding efforts with radar technologies.
930	David Craig	Public sightings on Caspian Terns	Using GPS and Flickr tags to engage the public in science
1000	Eli Bridge	RFID and Smart Feeders – feeder watch	Radio frequency identification tags can be used to remotely identify individuals over small spatial extends. This presentation will explore ideas for how RFID technology coupled with smart feeders might be used to track migrants
1030		Break	
1100	Stuart Bearhop	Citizen Science and MIGRATE – Group	Where is the bang for the buck? MIGRATE has limited funding to advance a citizen science agenda. Where should this funding be placed and what partnerships ought to be the highest priorities?
1200		Lunch	

1315	Doug Robinson	Data Standards and Protocols	In 2007 MIGRATE formed a data standards and Protocols committee. This committee is charged with determining what types of data on migrants that can be collected and archived with the greatest efficiency
1345	P. Marra/S.Sillett	Long term data on migrants	Long-term studies of migrant's annual cycle have provided insights into the types of data that accrue value over time. What data types would be most valuable if collected across taxa and geographic space? How should they be curated?
1415	Roland Kays	MOVEBANK	MOVEBANK is an effort to build the cyber-infrastructure needed to collect existing movement data
1445	J. Shamoun-Baranes	E-Science Infrastructure For Animal Tracking	A European Science Foundation funded initiative to development of shared analysis tools for movement data
1515	Tom Smith	Tissue Archiving for understanding migration	Increasingly we are able to reconstruct the histories of animal's lives from their tissues. What is MIGRATE's role in ensuring these collections are available to answer questions about migratory movements?
1545		Break	
1615	Sarah Mabey	MIGRATE Data Priorities – Group Discussion	Where should MIGRATE focus its time and energy to improve standardized data collection, archival and analysis?
1715		Break	
1800		DINNER	
1900	Ernesto Ruelas-Inzunza	The Veracruz River of Raptors Project: Research, monitoring, education, ecotourism, and conservation at the world's busiest flyway for hawks	



FRIDAY 4 APRIL

Time	Speaker	Topic – New Technology For MIGRATE	
800	David Winkler et al.	Introduction and Announcements	Updates on meeting logistics etc.
815	Rob MacCurdy	Spread spectrum tag w/ toa receiver	These talks will be aimed at familiarizing everyone in the room with the latest in radio and cell phone technology as well as development of infrastructure needed for large- scale tracking projects.
845	Alejandro Pargue	Smart sensor tag w/ receiver	
915	Doug Robinson et al.	Cell Phone technology	
945	Martin Wikelski	ICARUS	
1015	Kasper Thorup	European Tracking Initiatives	
1045		Break	
1100	Jeff Kelly	Biological Questions - Group Discussion	What are the questions that we are trying to answer? How do the technologies we've just heard about apply to these questions?
1100	Rob MacCurdy (?)	Engineer's Shop Talk	What ideas transfer among technologies?
1200		Lunch –	
1330	David Roshier	Tales of Woe and Joy: successes and failures of tracking in Australia	Roshier will share his experiences regarding methods that lead unexpectedly to successful or unsuccessful tracking
1400	Martin Wikelski	Tales of Woe and Joy: Experiences of the Group. How does what we already know lead us to priorities for MIGRATE? Can we narrow our objectives?	In this time period the group needs to focus on winnowing the tracking priorities for MIGRATE. There are a lot of great technologies out there, but we can't do it all. Where is our best chance to make a big difference? Which technologies look like the highest priorities in the near term
1500		Break	
1530	David Winkler	How does MIGRATE move technology forward? What hurdles remain?	What specifically can migrate do to bring new technology to the broader migration community? How do we go from innovation in the lab or at the bench to useful and available technologies for field research?
1700		Break	
1800		DINNER	
1900	Piersma/Warnock/Gill	Tracking Shorebirds	

SATURDAY 5 APRIL

Time	Speaker	Topic – MIGRATE Education and Training	
800	Sarah Mabey	Introductions and Announcements	
815	Kasper Thorup	MIGRATE’s Scientist Training Program	In 2007 MIGRATE formed a training committee. Where should MIGRATE focus its training opportunities? Examples include students attending this year’s workshop
845	Sue Haig and Ryan Norris	MIGRATE’s Graduate Student Course	In 2007 MIGRATE formed an education committee. A primary objective of this committee is to plan and host a migration-training course in August prior to the AOU/COS/SCO meeting.
945	Jeff Kelly	Ideas for MIGRATE Projects for 2008	As an NSF funded RCN we are responsible for demonstrating concrete progress in the field of migration. External evaluations of the success of this project depend on member’s documenting the benefits of being affiliated with MIGRATE.
1015		Break	
1045	Tony Celis and Alex Jahn	Nurturing Participation In Latin America – Group Discussion	Understanding both Nearctic-Neotropic and Austral Migration Systems require international collaborations. Part of our mission is to advance these collaborations throughout the western hemisphere. How do we improve our effectiveness in this area?
1200		Lunch	
1330	Jeff Kelly	Sites and Topics For MIGRATE 2009	Where is MIGRATE 2009 and What is the theme?
1400	Sarah Mabey	Re-constituting MIGRATE subcommittees	We currently have a steering committee and four subcommittees is this structure adequate? We must maintain an open membership of these committees
1500		Working on Collaborations	This time is specifically set aside to begin new collaborations and work on those that exist. We hope that for existing collaborations, new partners will be added. Documenting these start-ups as part of MIGRATE is important to justifying our funding.
1800		Dinner	

Adjourn

MIGRATE: International Course on Avian Movement Migration

	TUESDAY 29-Jul-2008	WEDNESDAY 30-Jul-2008	THURSDAY 31-Jul-2008	FRIDAY 1-Aug-2008
Time	Overview/Field Techniques	Field Techniques cont	Lab Techniques	Wrap-Up
815	Opening remarks		Field: Stopover Ecology	
830	Connectivity overview	Satellite TM/GPS/Geolocator Overview	Field: Stopover Ecology	Emerging techniques
900	Connectivity overview	Satellite TM/GPS/Geolocator Overview	Physiology: body condition	Emerging techniques
930	Break	Break	Physiology: body condition	Student proposal focus groups
1000	Migration theory and models	Satellite TM/GPS/Geolocator analyses	Break	Student proposal focus groups
1030	Migration theory and models	Satellite TM/GPS/Geolocator analyses	Stable Isotope/Trace Elements Overview	Student proposal focus groups
1100	Break	Break	Stable Isotope/Trace Elements Overview	Student proposal focus groups
1130	Orientation	Satellite TM Case Study: Albatrosses	Lunch	Student proposal focus groups
1200	Orientation	Satellite TM Case Study: Albatrosses	Lunch	Lunch
1230	Lunch	Lunch	Stable Isotope Data Analyses	Lunch
1300	Lunch	Lunch	Stable Isotope Data Analyses	Student presentations
1330	Stopover ecology	RADAR overview	Break	Student presentations
1400	Stopover ecology	RADAR overview	Molecular Markers Overview	Student presentations
1430	break	Break	Molecular Markers Overview	Student presentations
1500	VHF Overview	Acoustic monitoring	Break	Student presentations
1530	VHF Overview	Acoustic monitoring	Molecular Markers Data Analyses	Student presentations
1600	VHF data analyses	Lab: ArcGIS	Molecular Markers Data Analyses	Student presentations
1630	VHF data analyses	Lab: ArcGIS	Lab: Molecular Lab	Wrap-Up
1700	Field: VHF techniques	Field: Tracking tag attachment lab	Lab: Molecular Lab	Wrap-Up
1730	Field: VHF techniques	Field: Molt, morph, bleeding, band attachment	Lab: Molecular Lab	
1800	Dinner	Field: Molt, morph, bleeding, band attachment	Dinner	Dinner
1830	Dinner	Dinner	Dinner	Dinner
1900	Student 10 min talks	Dinner	Case study: John Matthews	
1930	Student 10 min talks	Field:RADAR, acoustic monitoring, Emlen funnel	Case study: John Matthews	
2000	Student 10 min talks	Field:RADAR, acoustic monitoring, Emlen funnel		
2030	Student 10 min talks	Field:RADAR, acoustic monitoring, Emlen funnel		
2100	Student 10 min talks	Field:RADAR, acoustic monitoring, Emlen funnel		
2130	Student 10 min talks			

Name	Email Address	Topics to Address
Bairlein, Franz	franz.bairlein@ifv.terramare.de	Stopover Ecology
Craig, David	dpcraig@willamette.edu	Color band ID
Farnsworth, Andrew	af27@cornell.edu	Acoustic monitoring, RADAR, Orientation
Haggerty, Patty	phaggerty@usgs.gov	ArcGIS
Haig, Sue	Susan_haig@usgs.gov	Connectivity
Hobson, Keith	keith.hobson@ec.gc.ca	Stable Isotope overview
Johnson, Matthew	matthew_johnson@usgs.gov	Satellite/Geolocator/GPS/PTT
Kesler, Dylan	keslerd@missouri.edu	VHF issues
Matthews, John	John.Matthews@wwfus.org	Case Study--overview of techniques
Miller, Mark	mark.miller@usu.edu	Molecular Marker overview
Norris, Ryan	rnorris@uoguelph.ca	Stable Isotope overview
Roby, Dan	daniel.robby@oregonstate.edu	Body condition
Suryan, Rob	rob.suryan@oregonstate.edu	Satellite/Geolocator/GPS/PTT
Taylor, Caz	caz_taylor@sfu.ca	Model/migration theory+modelling
Trail, Pepper	pepper_trail@fws.gov	Molt and morph
Winkler, David	dww4@cornell.edu	Emerging Techniques
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