

# **NASA-MSU Professional Enhancement Awards Program**

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<http://www.csis.msu.edu/nasa-msu.htm>

# History

- Started in 1998
- Annual meeting of IALE (International Association for Landscape Ecology)
- Michigan State University (MSU)
- NASA support (LCLUC)
  - Tony Janetos (1998)
  - Jon Ranson (1999)
  - Garik Gutman (2000-present)



# Landscape Ecology

- An interdisciplinary field focusing on landscape pattern, process, and dynamics
  - Land cover and land use change
  - Ecosystem services
  - Climate change
  - Biodiversity
  - Human well-being
  - Integration of natural and social sciences with remote sensing data

# Themes of Recent IALE Meetings

- **2016:** Landscape Change
- **2015:** Crossing Scales, Crossing Borders: Global Approaches to Complex Challenges
- **2014:** Cumulative Impacts and Landscape Initiatives: A Sustainability Check During Climate Change
- **2013:** Landscape Dynamics Along Environmental Gradients
- **2012:** Informing Decisions in a Changing World

# Goal of the NASA-MSU Program

Support some outstanding students to attend the annual meetings of IALE

- Help awardees establish and expand professional networks
- Train future generations of scientists
- Nurture future leaders in areas related to the mission of NASA

# Criteria for Awardee Selection

- Abstracts:
  - Significance of the issue(s)
  - Innovation and soundness of methods
  - Novelty of results
  - Clarity of the writing
- Professional backgrounds and goals:
  - Publications (number and quality)
  - Awards and honors
  - Leadership positions/experience
  - Career plans
- Financial needs:
  - Travel cost
  - Accommodation cost

# Activities

# Learn from Leading Scientists



Eugene Odum



John Wiens



Monica Turner



Richard Forman



Steve Carpenter



Simon Levin



# Listen to Garik Gutman: NASA's Funding Opportunities

2000

2004

2006

2012



# Give Presentations



# Dinner with Leading Scientists



# Receive Recognition



# Organize and Attend Symposia (Examples)

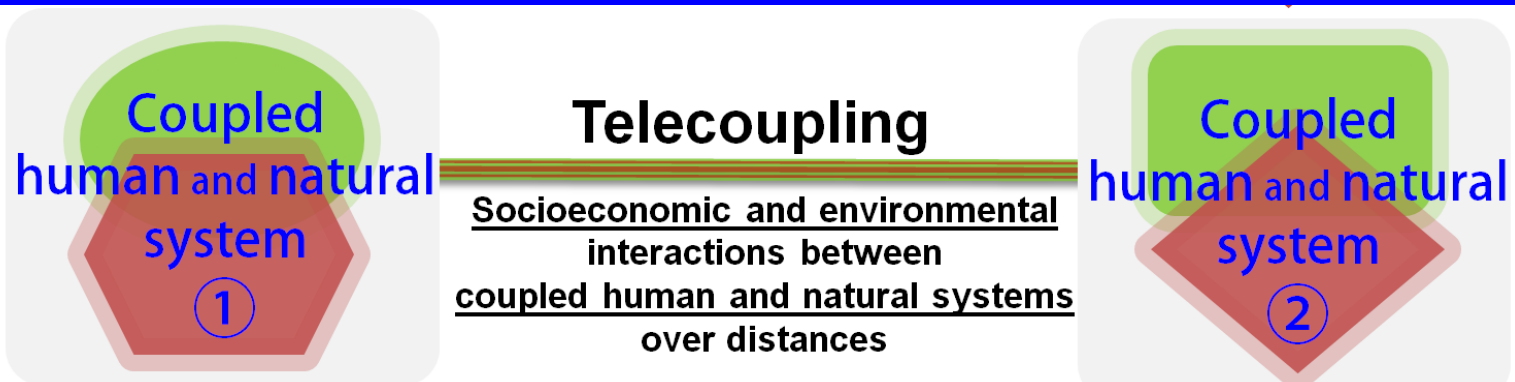
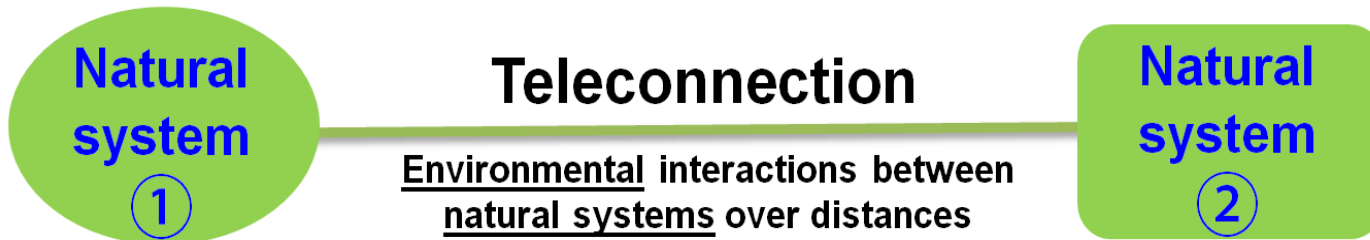
- Landscape networks as telecoupled human and natural systems
- Drivers and implications of land use and land cover change
- Integrating remote sensing of forest disturbances with models at broad scales
- Defining and modeling species-habitat associations: challenges across landscapes (and seascapes)
- Sources, Sinks, and Sustainability across landscapes

# Organize and Attend Workshops (Examples)

- Telecoupling framework for the landscape ecology community
- Job hunting experiences of recent graduates
- Constructing and teaching a great Landscape Ecology course
- Applying for fellowships and grants: Tips from the pros
- Interviewing for landscape ecology jobs
- Building collaborative research with landscape ecology
- Grant-writing: Tips from experienced researchers

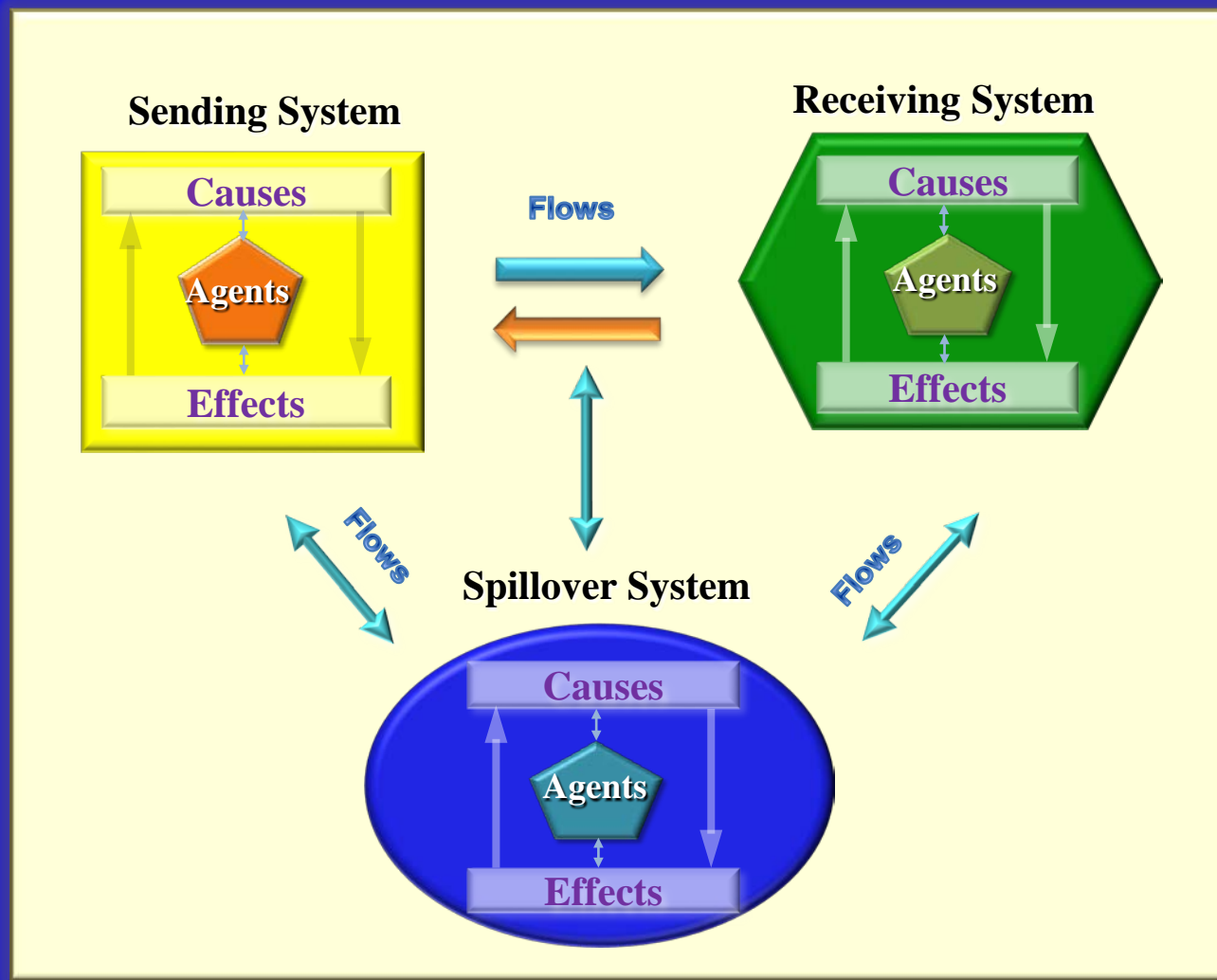
# Telecoupling Framework

# Three Types of Distant Interactions

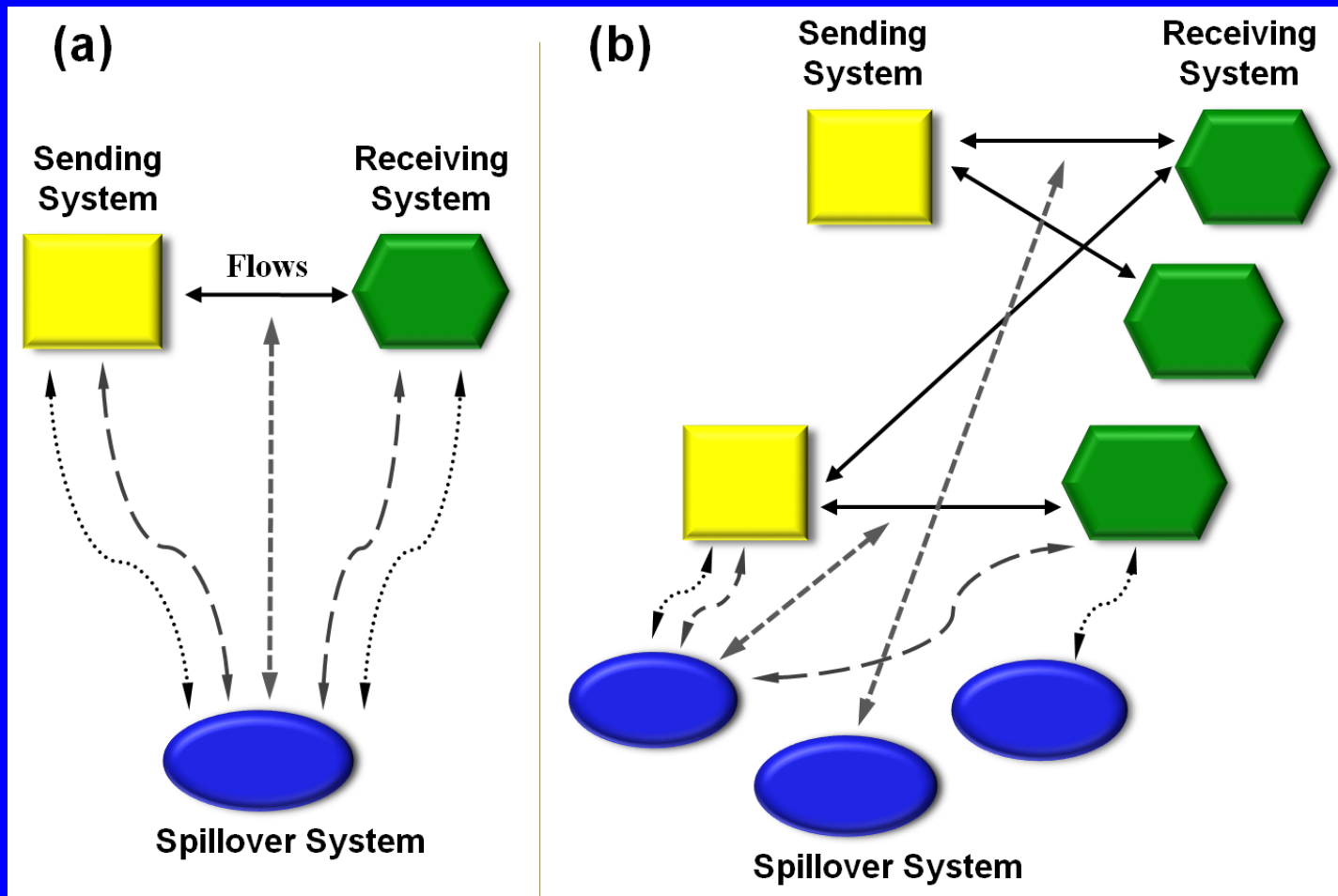




# Major Components of the Telecoupling Framework



# Example Typologies of Relationships between Sending, Receiving, and Spillover Systems. (a) One-One-One relationship and (b) Many-Many-Many Relationships



# Ecology and Society

A journal of integrative science for resilience and sustainability

## 2013 Best Paper Award Winner:



### **Framing sustainability in a telecoupled world.**

*Liu, J., V. Hull, M. Batistella, R. DeFries, T. Dietz, F. Fu, T. W. Hertel, R. C. Izaurralde, E. F. Lambin, S. Li, L. A. Martinelli, W. J. McConnell, E. F. Moran, R. Naylor, Z. Ouyang, K. R. Polenske, A. Reenberg, G. de Miranda Rocha, C. S. Simmons, P. H. Verburg, P. M. Vitousek, F. Zhang, and C. Zhu*

# Example Applications of the Framework

- **Ecosystem Services** (Liu et al. 2016, Frontiers in Ecology and the Environment)
- **Land Change Science** (Seto and Reenberg 2014, Rethinking Global Land Use in an Urban Era)
- **Conservation** (Gasparri and de Waroux, 2014, Conservation Letters)
- **Species Invasion** (Liu et al. 2013, Ecology and Society)
- **Water Flows** (Liu and Yang 2013, PNAS)
- **Trade of Virtual Water** (Liu et al. 2015, Science)
- **Energy Sustainability** (Fang et al. 2016, Energy)
- **Food and Forest Sustainability** (Liu, 2014, Asia and the Pacific Policy Studies)

# International Interests in Telecoupling Research

- Research priority:  
Global Land Project (Future Earth)



- Events and talks (e.g., keynote addresses, conferences, workshops)



- Newly funded projects



- Media coverage



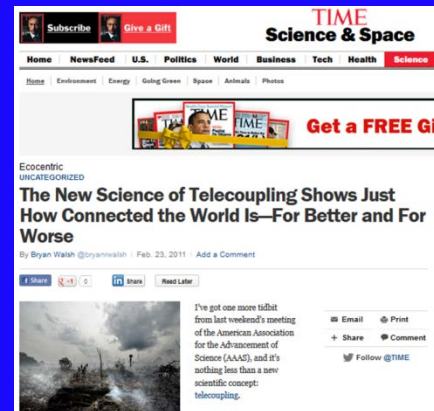
# Web Site

<http://www.telecoupling.org>

- Publications



- Events



- News

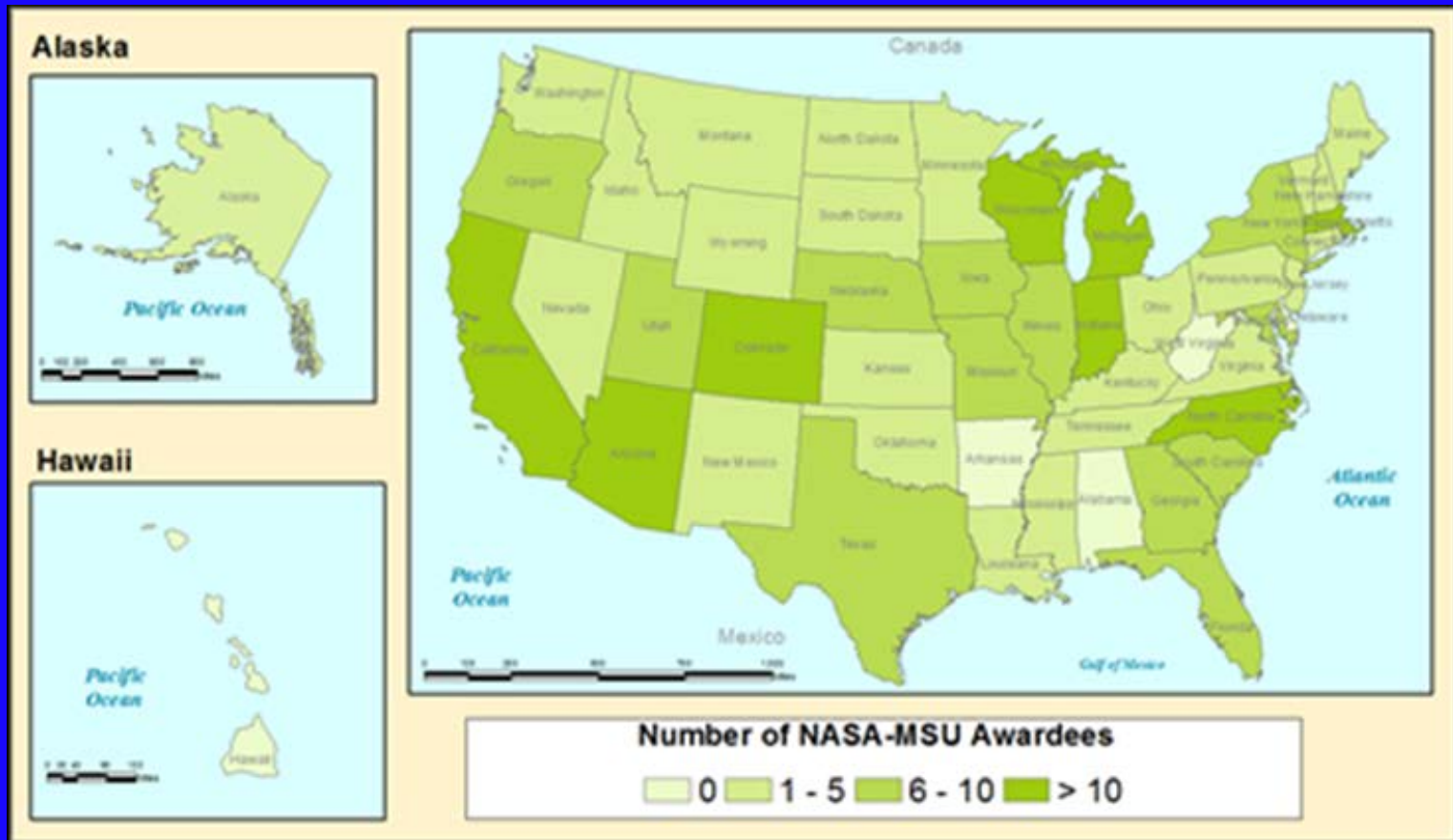
# Impacts of the NASA-MSU Program

# Awardees (1998-2016)

- Number of awardees: 382
- Number of institutions: 140
- Number of countries: 16



# Awardees in 47 States of USA



# Best Presentation Awards at IALE Meetings

- 13 out of the 17 awards were won  
by NASA-MSU Awardees since 1998

# Leadership

- Former awardees serving as Vice Presidents of IALE  
- Former awardees serving as Board Members of US-IALE (since 2002): **15**
- Student Representatives on US-IALE Board since 1999: **14 out of 18**
- Committee Chairs and Members: **Numerous**

# Annual Meeting Program Chair and Host

- 2018: Emily Minor



- 2017: Matthew Baker and Todd Lookingbill

- 2015: Robert Scheller and Anita Morzillo



- 2014: Falk Huettmann



- 2012: Jeff Hollister



# From NASA-MSU Awardees to Active Researchers and Educators

- Many former awardees are in faculty positions (e.g., Lisa Schulte)
- Second generation of awardees (e.g., Andrew Rayburn)



# From NASA-MSU Awardees to NASA Project PIs or Co-Is

- **Kirsten de Beurs**  
(University of  
Oklahoma)



- **Anna Pidgeon**  
(University of  
Wisconsin)



- **Andy Bunn**  
(Western  
Washington University)



- **Joe Sexton**  
(University of  
Maryland)



# Productive Collaboration

# Books



Ashton Drew

Editors:

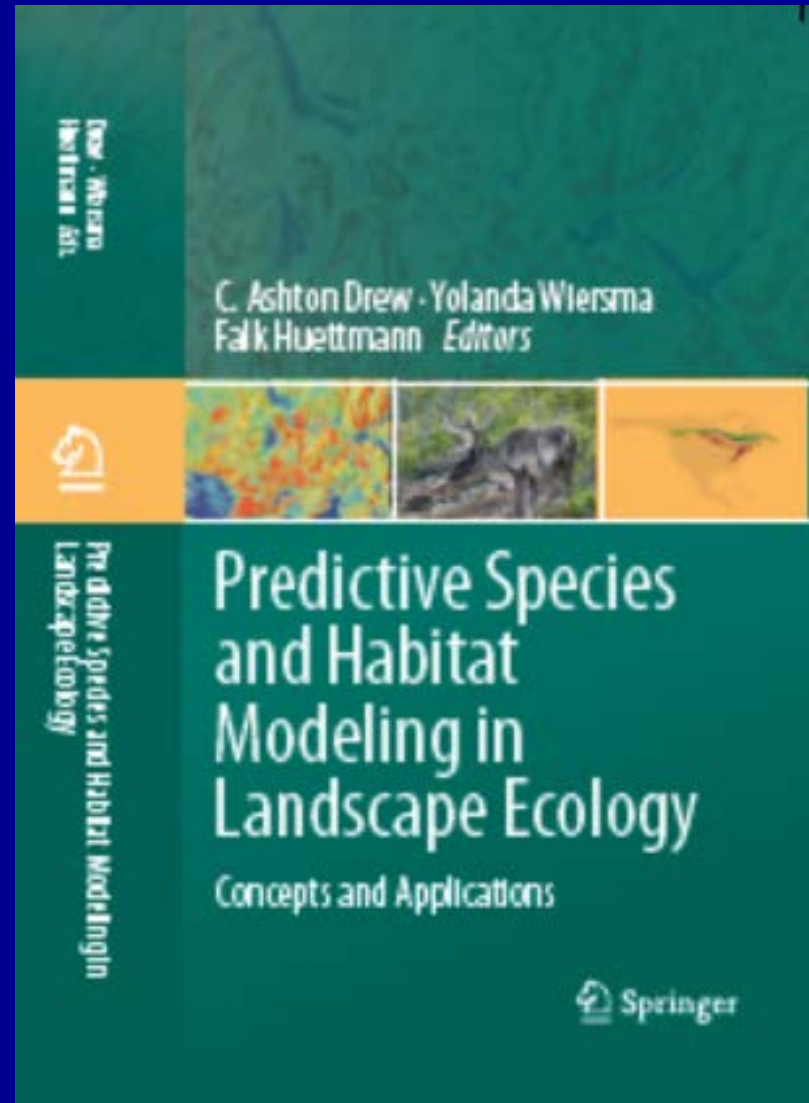
- Ashton Drew
- Yolanda Wiersma
- Falk Huettmann



Falk Huettmann



Yolanda Wiersma





# Special Issues

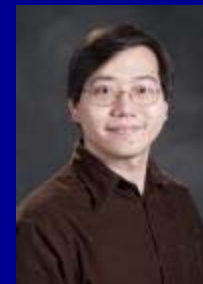


## Exploring Feedbacks in Coupled Human and Natural Systems (CHANS)



### Guest Editors:

- Vanessa Hull
- Mao-Ning Tuanmu



# Papers

Morzillo, A.T., J.W. Hollister, C.A. Drew, M. Rocca, M.E. Baker, J. Bossenbroek, and C. Mazzarella 2008. A young ecologist's guide to gainful employment: a review of experiences and successful strategies. *Ecological Society of America (ESA) Bulletin* 89:193-203

Most downloaded paper in 2008



# Working Groups on Telecoupling



# **Inspiration for Establishing Other Similar Programs**

# USDA-NIFA Professional Enhancement Awards Program



# CHANS Fellows Program



International Network of Research on  
Coupled Human and Natural Systems  
(CHANS-Net, [www.chans-net.org](http://www.chans-net.org))



# Awardees' Comments (Examples)

- “The NASA-MSU award was a huge springboard for my professional career and continued involvement with US-IALE.”
- “Motivated me to put extra work into my presentation (for which I won best student presentation award).”
- “I really enjoyed meeting peers from other universities, and also having the chance to talk to prominent ecologists. I normally wouldn't have had a chance to meet them or have enough courage to speak to the big name ecologists.”
- “I hope it continues indefinitely!”

# Acknowledgments

- NASA
  - Tony Janetos
  - Jon Ranson
  - Garik Gutman
- US-IALE
  - Officers
  - Organizers
- Leading Scientists
- MSU
  - Administrators
  - Jennifer Carducci
  - Sue Faivor
  - Betty Fancher
  - Brad Harris
  - Shuxin Li
  - Dawn Lucas
  - Anita Morzillo
  - Sue Nichols
  - Bill Taylor
  - James Vatter