



# ANIMAL BEHAVIOR BULLETIN

Center for the Integrative Study of Animal Behavior

WINTER 2006

VOL 9 ISSUE 1

## WHAT'S INSIDE

*CISAB Yearly Report: 2005*

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*CISAB Grants and Funding*

**Invited Lecture Series**  
**FRANS B. M. DE WAAL**  
**March 3, 2006**  
**4pm Whittenberger Auditorium**



**Dr. Frans B. M. de Waal** is a Dutch-born zoologist and primatologist known for his work on the social intelligence of monkeys and apes. His first book, *Chimpanzee Politics* (1982) compared the schmoozing

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**News? Story Ideas?**  
**Let us know!**

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## ELLEN KETTERSON IS DISTINGUISHED PROFESSOR

Ellen Ketterson, co-founder of CISAB and co-director of CISAB for 12 years, was promoted to Distinguished Professor in January of this year.

Ketterson has been a member of the IU faculty for over 25 years and has received numerous awards during her career including the Lieber Memorial Teaching Award and the Margaret Morse Nice Award. She was recognized as a Distinguished Research Faculty Lecturer by RUGS in 2002. She is an Animal Behavior Society Fellow and was presented with their Exemplar Award two years ago for her long-term contributions to animal behavior, including her work on avian migratory behavior in relation to dominance status and experimental factors, and her work on reproductive hormones as mediators of life history trade-offs. In 2004, she was presented with a Guggenheim Fellowship, a distinguished achievement awarded

to devoted scientists, teachers and creators whose intellectual pursuits “dignify, ennoble and delight mankind.”

This past year she was instrumental in obtaining a one million dollar NIH grant entitled “Common Themes in Reproductive Diversity.” This grant supports four pre-doctoral and two post-doctoral recipients.

Her current research focuses on the extended phenotypic effects of testosterone on junco male's associates, including the male's mate and offspring. Her migra-



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## 2005 SUMMARY OF ACTIVITIES

### ***Current Participants:***

**Faculty** = 19 Core and 21 Adjunct faculty, representing 12 departments/programs. In 2005, we added two new adjunct faculty members.

**Students and Affiliated Scientists** = 19 postdoc and affiliated scientists, 49 graduate and 55 undergraduate students. In 2005, we added 6 graduate and 14 undergraduates.

### ***CISAB Collaborative Research & Core Facilities:***

**Animal Behavior Lab.** In 2005, the lab provided sample analyses for 10 new projects, training on an additional 15 projects, and space/access to equipment to 14 people. The lab supported efforts to gather data for at least five new research grant proposals, six research manuscripts, and one novel collaborative project. The Animal Behavior lab also helped to train undergraduate researchers in the Summer Program, and developed a new web site.

The **William J. Rowland Resource Room** was established at 402 N. Park Ave. The resource room contains a computer for internet library browsing, hard copies of over 30 journals (including *Animal Behavior* and *Memory & Cognition*), and a collection of animal behavior books donated by Bill Rowland's family, Bill Timberlake and others. The room was created in memory of Bill Rowland, beloved biology professor, mentor, teacher, colleague and friend who died unexpectedly from a heart attack in 2004 while conducting research in Sweden.

**CISAB Pilot Research awards for PhD students:** Research funds were made available to support pilot work for graduate students to explore possible dissertation research.

**Collaborative Seed Funds for Faculty:** Research funds were made available to CISAB faculty to support collaborative research efforts.

### ***Training Program:***

Spring 2005, IU was awarded a five-year, million-dollar **NIH training grant** "Common Themes in Reproductive Diversity" under the direction of CISAB faculty members Ellen Ketterson, Dale Sengelaub, Troy Smith and Greg Demas. CISAB, the Kinsey Institute for Research in Sex, Gender, and Reproduction, and the Department of Gender Studies are key units involved in the training. The grant funds 4 graduate students and 2 postdocs each year.

Eleven students participated in our NSF-supported **Summer Undergraduate Research Experience**. A renewal was submitted and we were awarded funds for four more summers (2006-2010). CISAB increased its support, developing a new 2-day session in the Animal Behavior Lab and a career opportunity at the Wonderlab (children's science museum).

Five new undergraduates and 2 new graduate animal behavior **minors and area certificates** were awarded. Six new graduates and 8 undergraduates declared their intent to pursue the minor. The graduate minor was reviewed and updated to reflect new courses.

The new **Animal Behavior Internship** program for undergraduates was established as a new course (A495) and trained its first four students at the Indianapolis Zoo and the Exotic Feline Rescue Center. Eleven students have expressed serious interest in the program, so far.

Seven PhD students became **CISAB Scholars**, receiving stipend support in 2005/06. Fifteen students received **travel awards** to present their research at major conferences.

The **A501 graduate course** was offered in Spring and Fall 2005. Topics were: *Integration and Differentiation in Behavioral Development* (Spring 2005) organized by Jeffrey Alberts (Psychology) and *Neural mechanisms of Behavior* (Fall 2005/met with course P548) organized by Rod Suthers (Medical Sciences) and Troy Smith (Biology).

### ***Seminars and other Events:***

Our annual **Animal Behavior Conference** (April 2005) was organized by graduate students Hanna Kolodziejcki, Britt Heidinger, Sue Anne Zollinger, and Rebecca Dagley. The full-day conference was well-attended and included sixteen presentations. Two representatives each from the **Keck Center for Behavioral Biology** (North Carolina State University) and the **Center for Behavioral Neuroscience** (Atlanta, Georgia) participated.

The first **William J. Rowland Mentoring Award** was presented to Richard M. Granquist and Teresa L. Dzieweczynski. This new award honors doctoral students who follow the example of Bill Rowland, in being exemplary mentors to undergraduate researchers.

CISAB contributed to the hosting of 15 distinguished guest speakers as part of our 2005 **Behavior Colloquium Series**: Mike Moore (Arizona State); Timothy Johnston (UNC-Greensboro); Scott Robinson (U Iowa); Mark Blumberg (U Iowa); Sergio Pellis (U Lethbridge); Roy Ritzmann (Case Western); Eugenie Scott (National Center for Science Education); Ari Berkowitz (U Oklahoma); Thom Cleland (Cornell); Ron Hoy (Cornell); Jeanne Altmann (Princeton); Terry Takahashi (U Oregon); Sue Margulis (Lincoln Park Zoo & U Chicago); Scott MacDougall-Shackleton (U W Ontario); Barney Schlinger (UCLA)

### ***Outreach:***

CISAB published four issues of the **Animal Behavior Bulletin**, summarizing local research and training efforts. The **CISAB web site** was updated with a new look and several new pages. It continues to receive an average of 20,000 hits from unique computers each month.

CISAB sent out approximately 900 **brochures** to help recruit graduate students, and joined in a Biology/ Graduate School presence at **SACNAS**, **ABCRMS**, and **AISES** meetings. We met also with several prospective undergraduates, and participated in the **IU Freshman Expo**.

A new student-exchange program was created with the **Center for Behavioral Neuroscience** (Atlanta), based on our existing alliance with the Keck Center for Behavioral Biology (NC State). Heather Bleakley (Biology) and Jill Villarreal (Psychology) presented their research in the Keck Center's symposium, and Shawn Hurst (Anthropology) presented his research at the Center for Behavioral Neuroscience symposium. Two CBN students and two Keck Center students presented at our 12<sup>th</sup> Annual IU Animal Behavior Conference.

CISAB sponsored our first **Animal Behavior Careers Workshop** entitled: *Integrative Animal Behavior Careers Workshop: Breaking Through Disciplinary Boundaries*, organized by Jill Villarreal. Five faculty panelists discussed problems they faced in their careers and addressed student and postdoctoral fellow questions on how to break through disciplinary boundaries within the field of animal behavior. Panelists include: Dr. Colin Allen (History and Philosophy of Science); Dr. Gregory Demas (Biology); Dr. Laura Hurley (Biology); Dr. Christine Quirk (Biology); and Dr. George Rebec (Psychology).

For more information, please see our web site

<http://www.indiana.edu/~animal/>

or contact us directly at

[cisab@indiana.edu](mailto:cisab@indiana.edu)

812- 855-9663.

## CISAB MEMBERS ATTEND KECK CENTER SYMPOSIUM

On January 28, 2006, Rebecca Dagley and Kevin Ball participated in the 7th annual W.M. Keck Center Symposium, an informal mini-conference for graduate students and post-docs in behavioral biology at North Carolina State University. Each year, the Keck Center invites a few students from other integrative departments to present their research and promote networking among several universities. This year, Rebecca presented her research entitled: Unilateral Song Production in Northern Cardinals: Effects of Chronic Denervation. Kevin discussed his work: Enduring structural plasticity in nucleus accumbens following MDMA (ecstasy) administration: a neural correlate of MDMA-induced behavioral plasticity.



In addition to our CISAB representatives, Seth Ament and Norman Atkins from University of Illinois, Urbana-Champaign were in attendance to discuss their work on honey bee social behavior and light-shifted circadian rhythm, respectively.

The presentations at the symposium included a diverse selection of topics grouped into five very general themes: 1) Social Communication, 2) Behavioral Genetics 3) Behavioral Neuroscience 4) Behavioral Ecology 5) Evolution of Behavior.

In the Behavioral Ecology session, Elsa Younsteadt, a graduate student in Dr. Coby Shal's lab, presented her research on the chemical cues that elicit seed collecting in ant-garden (AG) ants. Seed dispersal/collecting is a well-known form of mutu-

alism that brings benefits to plants, in the form of offspring dispersal, and to animals that carry the seeds, in the form of seed-born nutritional rewards. However, Elsa explained that AG ants represent a unique system of obligate seed-hoarding that is independent of nutritional needs. In this system, AG ants collect seeds and cultivate them in hanging arboreal gardens. The AG ants collect seeds of only nine species of plants, the identification of which is mediated by chemical cues. However, the origin, identity and evolution of the chemicals are unknown. Elsa's research focuses on characterizing the chemicals that elicit seed retrieval in AG ants. She extracted chemicals from three of the nine species of seed and fractionated each extract with chromatography to isolate the constituents. She painted each fraction on seeds that are normally ignored by these ants to measure the behavioral responses to each component of the chemicals. She found that for each species examined, the chemical fraction eliciting the largest degree of retrieval by the ants varied widely in chemical polarity, suggesting that the chemical cue used by AG ants is not conserved among plant species cultivated in the gardens. Elsa concluded that while each seed species shares a common interaction with AG ants, this behavior is likely mediated by a different class of chemical in each species.

In the Behavioral Neuroscience session, Erica Marsh, a graduate student in Dr. John Godwin's lab, presented her talk titled "Sexy slides: neural aromatase immunoreactivity in the bluehead wrasse, *Thalassoma bifasciatum*." Erica explained that the bluehead wrasse displays socially mediated sex change, a striking example of rapid alteration of sexual and aggressive behavior in response to environmental cues. Erica's research is aimed at elucidating the mechanisms that allow for neuroendocrine transduction of environmental cues in these fish. She has focused on the enzyme aromatase (AROM), arginine vasotocin/vasopressin (AVT/AVP), and dopamine (DA), all of which have been implicated in the regulation of sexual and aggressive behaviors in many species. Erica described her ongoing research using immunocytochemistry to characterize and confirm localization of AROM-immunoreactive (ir), AVT-ir, and tyrosine hydroxylase-ir (an enzyme involved in DA synthesis) neurons. She also examined estrogen



## APPLIED INTERNSHIP STUDENT PROJECTS



During the summer of 2005, CISAB began offering applied animal behavior internships to undergraduate students at sites in and near Bloomington. These include the WonderLab, Bloomington Animal Shelter, Indianapolis Zoo and Exotic Feline Rescue Center.

Four students have conducted behavioral studies at two of our internship sites since that time. Karen Imboden studied parental care and breeding in penguins at the zoo to determine if low hatching success was due to harassment or lack of parental care. Robert Calderon examined differences in grooming behavior between ring-tailed lemurs on display and those not on display at the Indianapolis Zoo. Gina Pellouchoud measured adult and infant interactions in Guinea Baboons at the Indianapolis Zoo. Mandy Woods studied tiger behavior at the Exotic Feline Rescue Center.

responsiveness after hormone manipulations in three sexual phenotypes of the bluehead wrasse. Erica hopes that her research will provide clues to the neural and endocrine substrates of animal behavior and sexuality.

Rebecca and Kevin were given the royal treatment while in North Carolina. Upon arrival in Raleigh, they enjoyed a tour of the campus that included visits to several animal behavior laboratories, exotic animal quarters, and recently completed teaching facilities. The tour allowed for plenty of informal interactions with N.C. State graduate students, post-docs, and faculty members. Following the tour, Rebecca and Kevin were treated to a wonderful Italian dinner at a popular Raleigh restaurant. On Saturday evening, symposium attendees were invited to a dinner party hosted by N.C. State faculty member Bob Grossfeld. The party featured spectacular Italian cuisine and wine, the latter of which helped to facilitate lively discussions about the research presented earlier in the day.

By Rebecca Dagley and Kevin Ball

Recently, CISAB has added two new internship sites to our list of locations: The Black Pine Animal Park and WildCare, Inc. The Black Pine Animal Park in Albion, Indiana provides permanent refuge to exotic animals. WildCare Inc. was formed in the spring of 2001 to provide professional care to sick, injured, and orphaned wildlife. They are the only nonprofit in south central Indiana to take all wildlife except adult deer and adult raccoons.



Photo: From the Exotic Feline Rescue Center

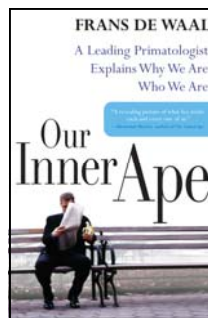
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and scheming of chimpanzees engaged in power struggles with that of human politicians. Ever since, de Waal has drawn parallels between primate and human behavior, from peacemaking and morality to culture. His scientific work has been published in hundreds of technical articles in journals such as *Science*, *Nature*, *Scientific American*, and outlets specialized in animal behavior and primatology. De Waal is also editor or co-editor on nine scientific volumes. His six popular books - translated into more than a dozen languages - have made him one of the world's most visible primatologists.

De Waal is C. H. Candler Professor of Psychology and Director of the Living Links Center at Emory University, in Atlanta. He has been elected to the (US) National Academy of Sciences and the Royal Dutch Academy of Sciences.

Dr. de Waal will be speaking  
March 3 at 4pm  
at the Whittenberger Auditorium.  
The title of his presentation is:

***Our Inner Ape: What Primate Behavior Teaches Us About Human Nature***



Books will be available for sale at the lecture.

(Continued from page 1)

tion studies focus on factors that promote site fidelity, the role of experience in regulating onset and termination of migration and the relative importance of selective factors in shaping the distance an individual migrates.

Ketterson currently mentors one post-doc and 7 doctoral candidates. Working with long-time collaborator and CISAB member, Val Nolan, she has trained nearly forty students. Current and former graduate students have studied the effect of male removal on female reproductive success in juncos, winter fattening in temperate zone passerines; social and situational determinants of dominance in juncos; hormonal correlates of reproductive and parental behavior in red-winged blackbirds; differ-

ential allocation of parental care according to offspring sex in mountain bluebirds; female choice and male vocal behavior in juncos; testosterone, sperm counts, and EPFs in juncos; maternal steroids and early development in red-winged blackbirds, European starlings, and juncos; seasonal profiles of testosterone and prolactin in red-eyed vireos and blue-headed vireos; influence of testosterone on pre-basic molt in juncos; genetic differentiation of prairie warblers; hybridization at a species boundary in orioles; transmission of passive immunity in Japanese quail and blue tits, quantitative genetics of offspring care in common terns, and mate choice in a monomorphic brightly colored species, the blue jay.

## 2006 ANIMAL BEHAVIOR CONFERENCE

The 2006 IU Animal Behavior Conference will be held on Monday, April 17<sup>th</sup> from 8:30-5pm in the Frangipani Room, IMU. Breakfast will be offered at 8:30. A poster session will be held from 12:00-2:00pm. Everyone must register on line whether presenting or not. A web page will be posted on the main CISAB page soon.

Committee members include:

Melissa Scotti  
Heather Bleakley  
Devin Zysling  
Rebecca Dagley  
Julienne Rutherford  
Sarah Pickens  
Idelle Cooper  
Sayuri Kojima  
Mayte Ruiz  
Hanna Kolodziejski  
Eddie Fernandez



Guests at 2005 Conference



## CISAB GRANTS AND FUNDING

**CISAB offers many opportunities for funding**

**CISAB Graduate Scholars** (for PhD students who have advanced to candidacy) Apply for up to 12 months of stipend support. Applications are due by Feb. 17, 2006.

**CISAB Pilot Research awards** (for PhD students who have NOT advanced to candidacy) Apply for research funds to support pilot work to explore possible dissertation research. Apply for up to \$500.

**Student/Postdoc Travel Awards** To apply for up to \$500 to present your research at national or international meetings.

**Distinguished Guest Speakers** To apply for funds to help bring a distinguished guest speaker to our campus.

**Summer Research Experience for Undergraduates**  
To apply to participate in a 10 week summer program at Indiana University in which you partner with a mentor research laboratory to conduct animal behavior research. Application deadline: Feb 14, 2006

**For more information and applications see our web page:**

<http://www.indiana.edu/~animal/forms/Funds.html>

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## SUPPORT ANIMAL BEHAVIOR RESEARCH

Private contributions are an important way in which we can expand our efforts. Even a small amount can go a long way. For example, \$500 can send a student to a major scientific meeting to present their research, \$200 can buy supplies for a museum exhibit, \$25 can purchase chemicals to do DNA fingerprinting or other genetic tests, \$10 can cover the cost of distributing our Kid's Page to an elementary school class.

Charitable gifts are tax-deductible and can be mailed to: CISAB, 402 N. Park Ave, Bloomington, IN 47405  
(payable to IU Foundation).

**Yes, I would like to support Animal Behavior Research at Indiana University. I  
have included a contribution of \_\_\_\_\_**

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City: \_\_\_\_\_ Zip: \_\_\_\_\_

Those contributing over \$25 are entitled to receive paper copies of the Animal Behavior Bulletin for one year (also available as PDF copy on our web page). If you wish to receive the Bulletin please check here. \_\_\_\_\_