

**DEPARTMENT OF BIOLOGICAL SCIENCES**

**ARKANSAS STATE UNIVERSITY**

**2006 ANNUAL PRODUCTIVITY AND  
ACCOMPLISHMENTS REPORT**



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## Executive Summary

The Department of Biological Sciences at Arkansas State University continued its growth in terms of academic productivity in 2006 when compared with previous years. The number of publications in peer-reviewed journals, plus books and book chapters, has continued to increase significantly in the last few years, from 13 in 2000 and 2001 to 81 in 2005 and 76 in 2006. In the last three years the average impact factor of the journals in which Biology faculty members published their papers increased: from 1.19 in 2004 to 1.24 in 2005 to 1.83 in 2006. The number of papers being cited and paper citations continues to be high across the board. The total number of abstracts/presentations increased to 113 in 2006, a 60% increase from 2005. The total number of non-peer-reviewed papers also increased to 38 from 28 the previous year.

In terms of grants and contracts the total number was 79 for 2006 with an all-time record amount of \$6,856,185 received. More importantly, for the first time federal grants represent the majority of the money received with 63%, followed by state funding (24%), intramural funding (7%) and private funding (6%). This is the first time that private funding appears of any significance in the total amount of money received. The Department continues to lead in outreach efforts and interdisciplinary and interdepartmental activities university-wide.

We have also made significant progress in interdisciplinary teaching and research, interdepartmental efforts, and infrastructure improvements despite significant declining funding in the form of operating budget, with more than 33% reduction in the supplies and services budget line and surprising reductions in the money we received from lab fees. Those shortcomings have partially offset with fundraising efforts among the alumni and a more streamlined administration of internal resources. New initiatives such as international collaboration with other universities should expand further the horizons for the Department in particular and the university as a whole.

## **Introduction**

The purpose of the present report is track the productivity by faculty members of the Department of Biological Sciences (hence Biology Department) at Arkansas State University. Data generated by this report is analyzed and used not only for reporting purposes but for strategic planning as well. These reports have been produced since the year 2000 and are continuously modified by expanding data analysis and introducing new parameters. They cover areas typically related to scholarly work, i.e., publications, reports, and presentations/participations in diverse public forums, as well as grant activity generated by faculty members.

## **Methods**

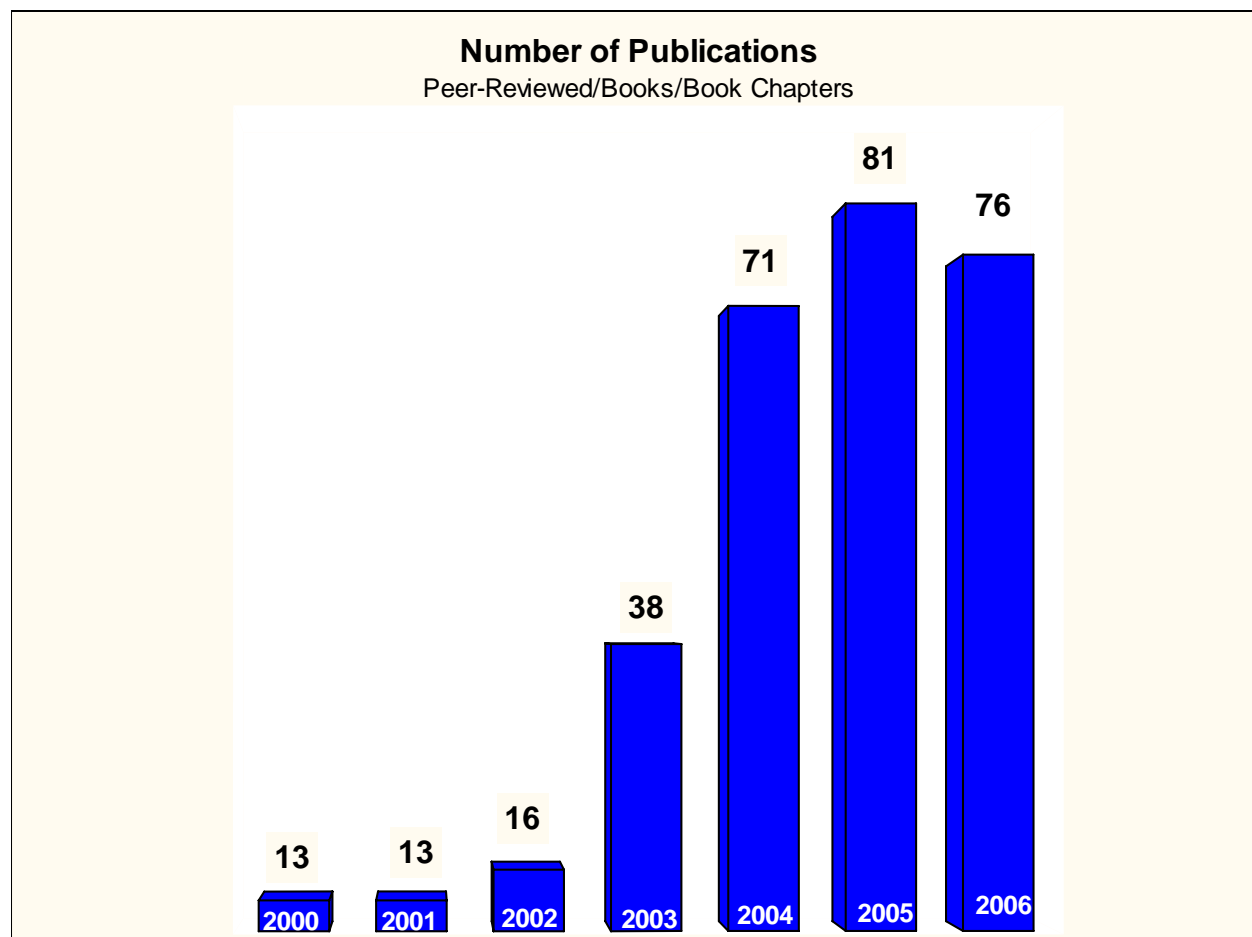
I utilized the data provided by individual productivity reports of each of our faculty (tenured, tenure-track, and full time). That data is compiled at the end of this report and ordered by category and alphabetically by author of the publication/presentation or principal investigator of grants. Data on published material is analyzed using the figures annually produced by Thompson Scientific, formerly known as Thompson ISI. Data is extracted by author and journal using the Journal Impact Factor and Citation Numbers. The Garfield (impact) Factor (GF) is one of the most frequently used scientometric indicators for citations. The main factors determining the value of the mean GF representing a set of journals are the number of articles published (articles referencing) related to those published in a previous time period (articles to be referenced) and the mean number of references in journal papers referring to the time period selected. GF corresponds to the mean chance for citedness of journal papers. Garfield Factors of journals (calculated correctly) are appropriate scientometric measures for characterizing the relative international eminence of journals within a set of journals appropriately selected. GF indexes correspond to the number of citations per paper indicators generally used, within the same set of papers (Vinkler 2004. Van Leeuwen and Moed 2005).

## **Results**

### **1. Publications**

The number of publications in peer-reviewed journals, plus books and book chapters has continued to increase significantly in the last few years, from 13 in 2000 and 2001 to 81 in 2005 and 76 in 2006. That increase has been particularly significant between 2003 and 2005 (Fig. 1). Between 2005 and 2006 was a slight decrease in the number of peer-reviewed publications (from 81 to 76). The list of publications include those actually printed or accepted for publications in those years. It is interesting to note that some of that increase comes in the form of peer-reviewed books and book chapters published by highly prestigious academic publishers, which indicates an enhancing in the reputation by faculty members.

**Fig. 1. Number of printed and/or accepted publications by Biology faculty**



These publications have been printed in a wide variety of journals (Table 1).

**Table 1.** List of journals in which Biology faculty members have published or have had articles accepted for publication during 2006.

Journal Name	Impact Factor
<i>American Journal of Health-System Pharmacy</i>	1.437
<i>American Midland Naturalist</i>	0.768
<i>Animal Behaviour</i>	2.669

<i>Annals of Pharmacotherapy</i>	1.837
<i>Annals of the New York Academy of Sciences</i>	1.971
<i>Applied Biochemistry and Biotechnology</i>	0.805
<i>Archives of Environmental Contamination and Toxicology</i>	1.408
<i>Batalleria</i>	N/A
<i>Bermuda Journal of Archaeology and Maritime History</i>	N/A
<i>Bioinformation</i>	N/A
<i>BMC Bioinformatics</i>	4.958
<i>Brain Research</i>	2.296
<i>Canadian Journal of Zoology</i>	1.175
<i>Chemosphere</i>	2.297
<i>Condor</i>	1.337
<i>Conservation Genetics</i>	1.784
<i>Comparative Parasitology</i>	0.615
<i>Ecology</i>	4.506
<i>Environmental Biology of Fishes</i>	0.907
<i>Environmental Pollution</i>	2.451
<i>Environmental Toxicology</i>	1.215
<i>Environmental Toxicology and Chemistry</i>	2.414

<i>Forum on Public Policy</i>	N/A
<i>Herpetologica</i>	0.922
<i>Herpetological Conservation and Biology</i>	N/A
<i>Herpetological Natural History</i>	N/A
<i>Herpetological Review</i>	N/A
<i>Journal of Biotechnology</i>	2.687
<i>Journal of the Arkansas Academy of Sciences</i>	N/A
<i>Journal of Raptor Research</i>	0.333
<i>Lecture Notes in Bioinformatics</i>	N/A
<i>Molecular Ecology Notes</i>	1.219
<i>Neurotoxicology and Teratology</i>	1.940
<i>Plant Biotechnology Journal</i>	4.256
<i>Smart Materials and Structures</i>	1.670
<i>Wildlife Society Bulletin</i>	0.944
<i>Wilson Bulletin</i>	0.274
<i>Wilson Journal of Ornithology</i>	N/A
<i>Zootaxa</i>	N/A
<b>Average Impact Factor</b>	<b>1.83</b>

This table shows a wide variety of journals by topic and many having a very high impact factor. N/A means that the journal, although peer-reviewed, is not covered by the Thompson Scientific database. In the area of Life Sciences ISI tends to cover professional (i.e., medical) and molecular oriented journals more so than organismal ones. I ran the names of the biology faculty members also through *Google Scholar* (<http://www.scholar.google.com/>), but in general they yielded fewer citations. For example, I (Romero) yielded 115 cited publications in Thompson Scientific while generating 80 in *Google Scholar*. However, I noticed that Google Scholar was covering a wider variety of journals, so in my opinion it will just be a matter of time before we can get a larger coverage from *Google Scholar* than from Thompson Scientific as the former pushes forward its plans of digitizing the contents of all major U.S. and European academic libraries. That will probably benefit the most organismal biology authors and those publishing in interdisciplinary journals.

In the last three years the average impact factor of the journals in which Biology faculty published their papers increased: from 1.19 in 2004 to 1.24 in 2005 to 1.83 in 2006 (Fig. 2).

**Fig. 2. Increase in the average Impact Factor of the articles published by faculty of the Department of Biological Sciences.**

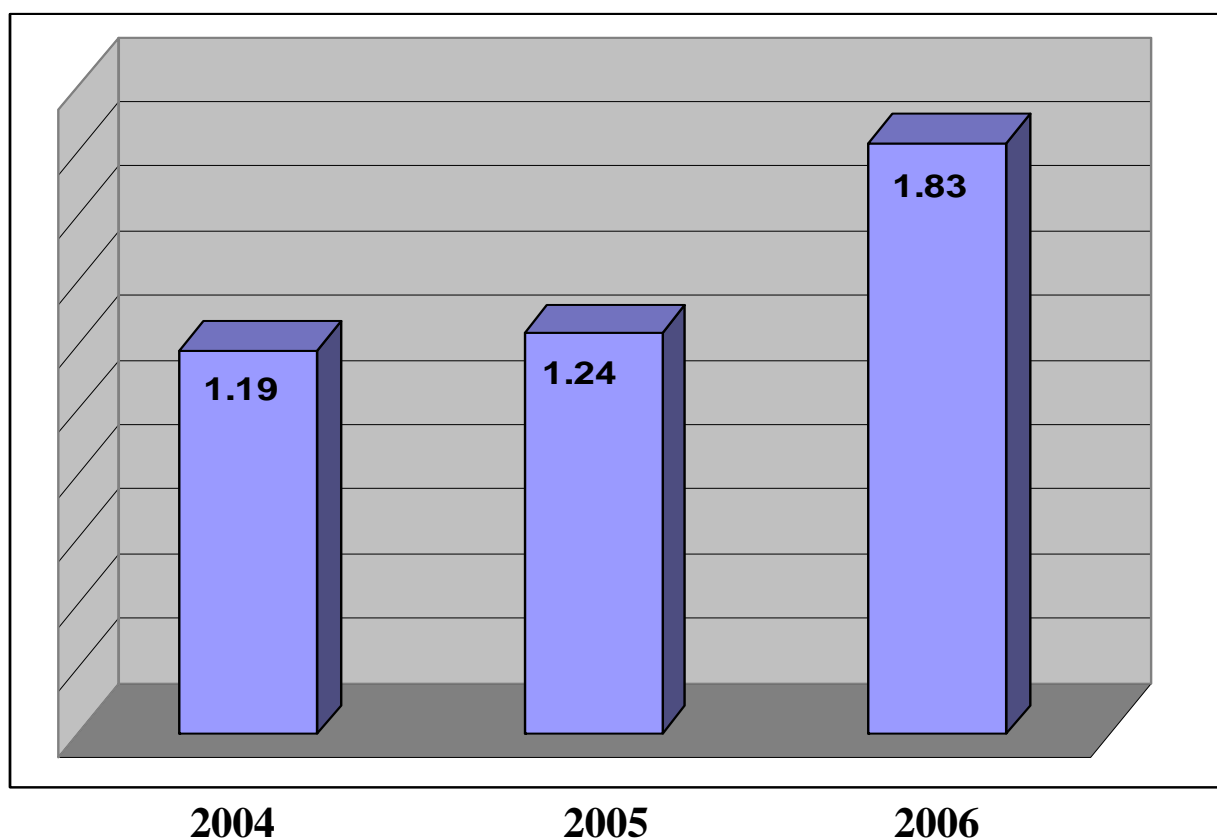
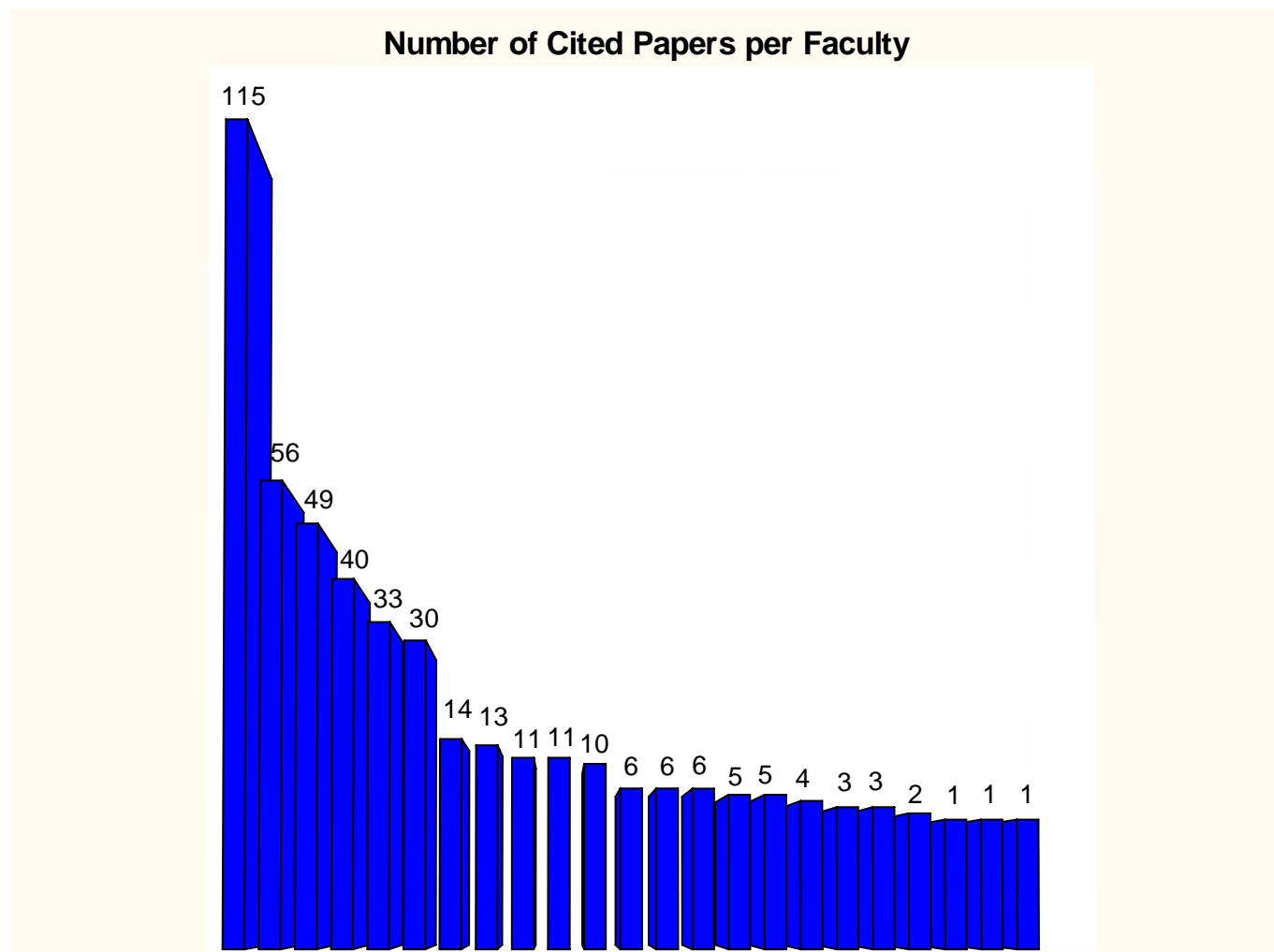


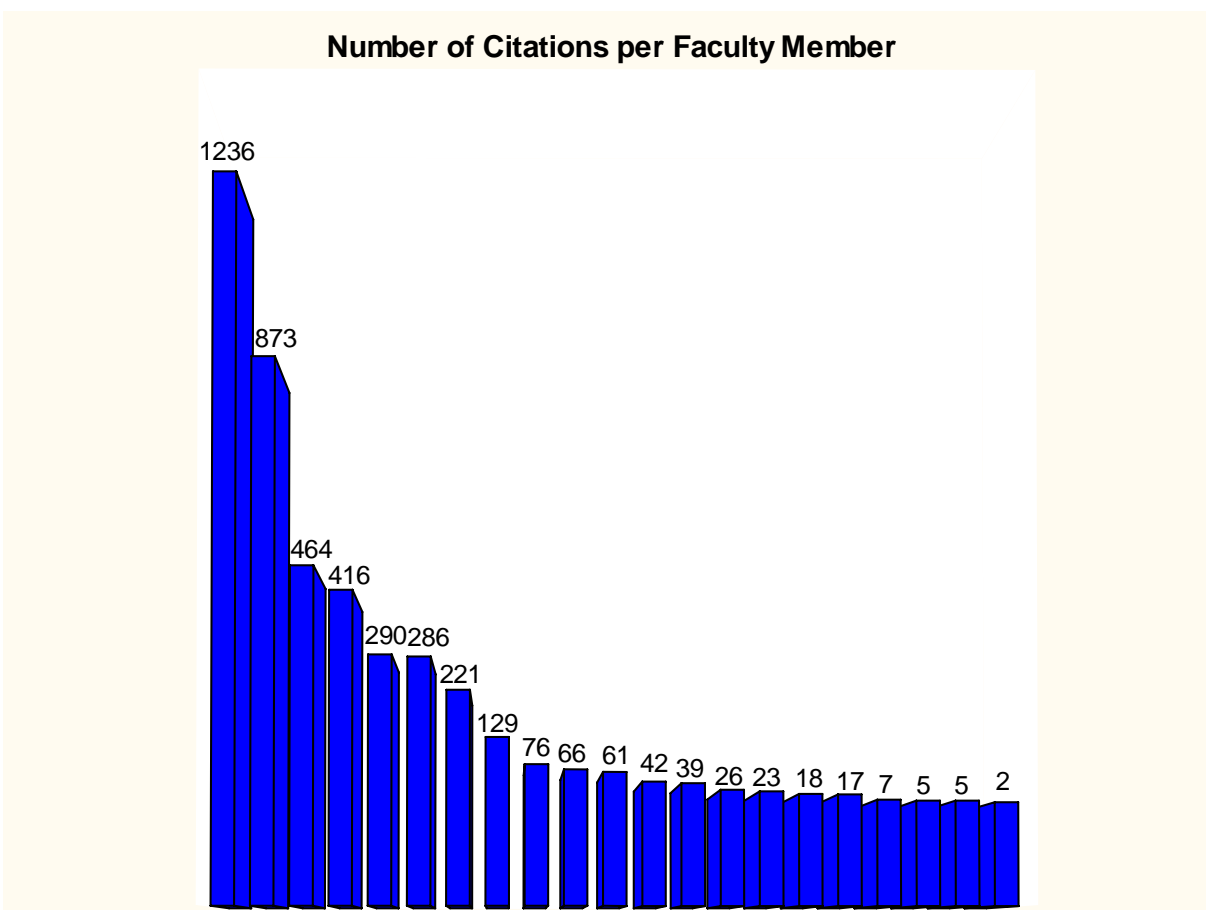
Figure 3 shows the number of publications authored by Biology faculty that has been cited one or more times in the Thomas Scientific database. The figure is drawn based on numbers, not alphabetical order by authors. The names of the Biology faculty have been kept anonymous.

**Fig. 3. This figure represents, per column, each individual Biology faculty and the number of publications contained in the Thomas Scientific database for each faculty member.**



This number is quite healthy with a cluster of six faculty members with between 115 and 30 cited publications, another cluster with between 14 and 10 and a third one with 6 or fewer. The individual and collective impact of these publications, however, has been significant and is summarized in Figure 4.

**Fig. 4. Number of times that papers have been cited for each individual faculty member at the Biology Department.**



The above numbers show that most of our faculty members have their papers highly cited in the Thomas Scientific database. Some of the lowest numbers correspond to our most junior faculty that because they just began their scientific career, have fewer papers, and not much time for those papers to have been cited.

As a consequence of more grants received (see below) the number of reports filed by Biology faculty has also increased (Fig. 5).

**Fig. 5. Number of reports submitted by Biology faculty**

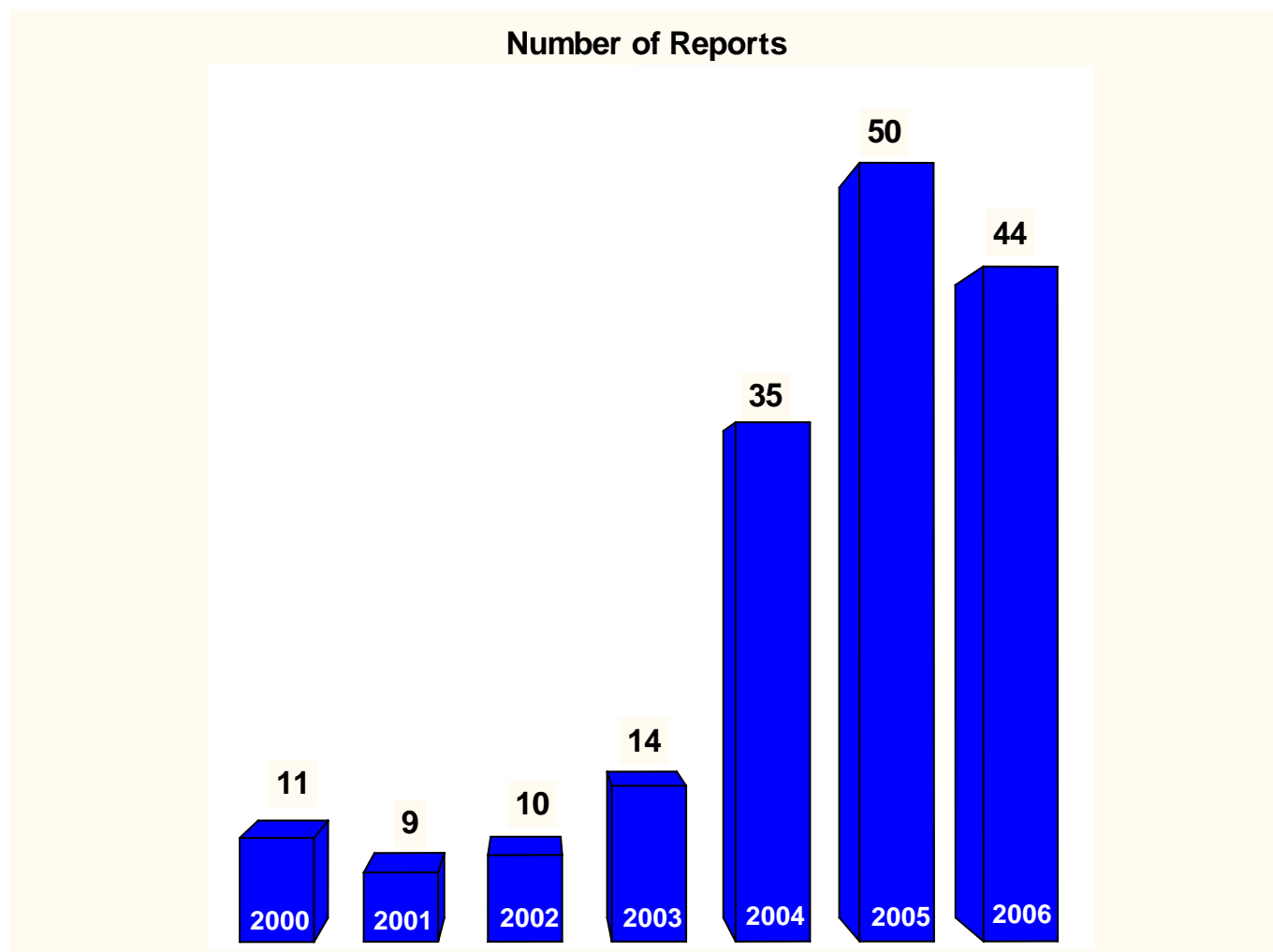
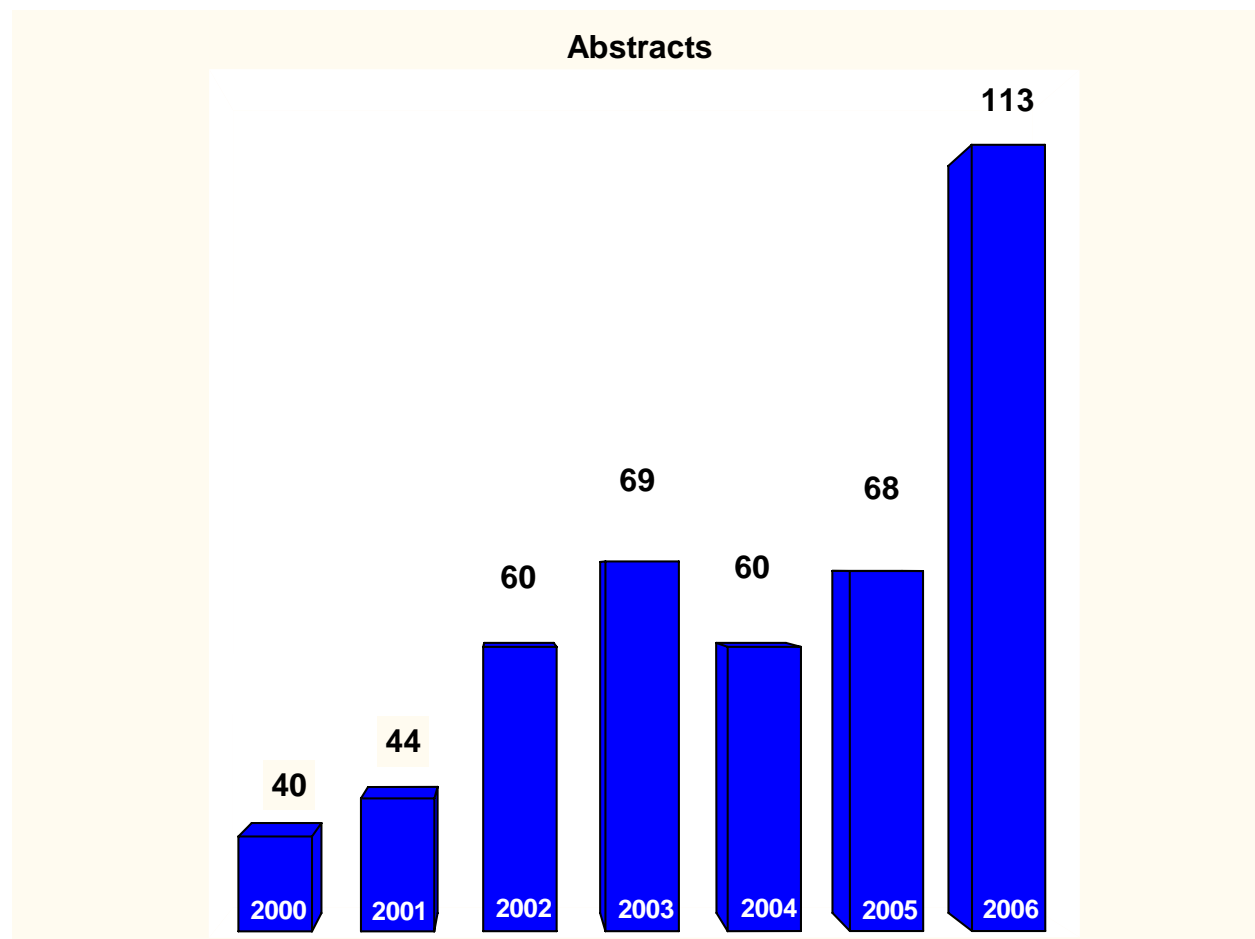


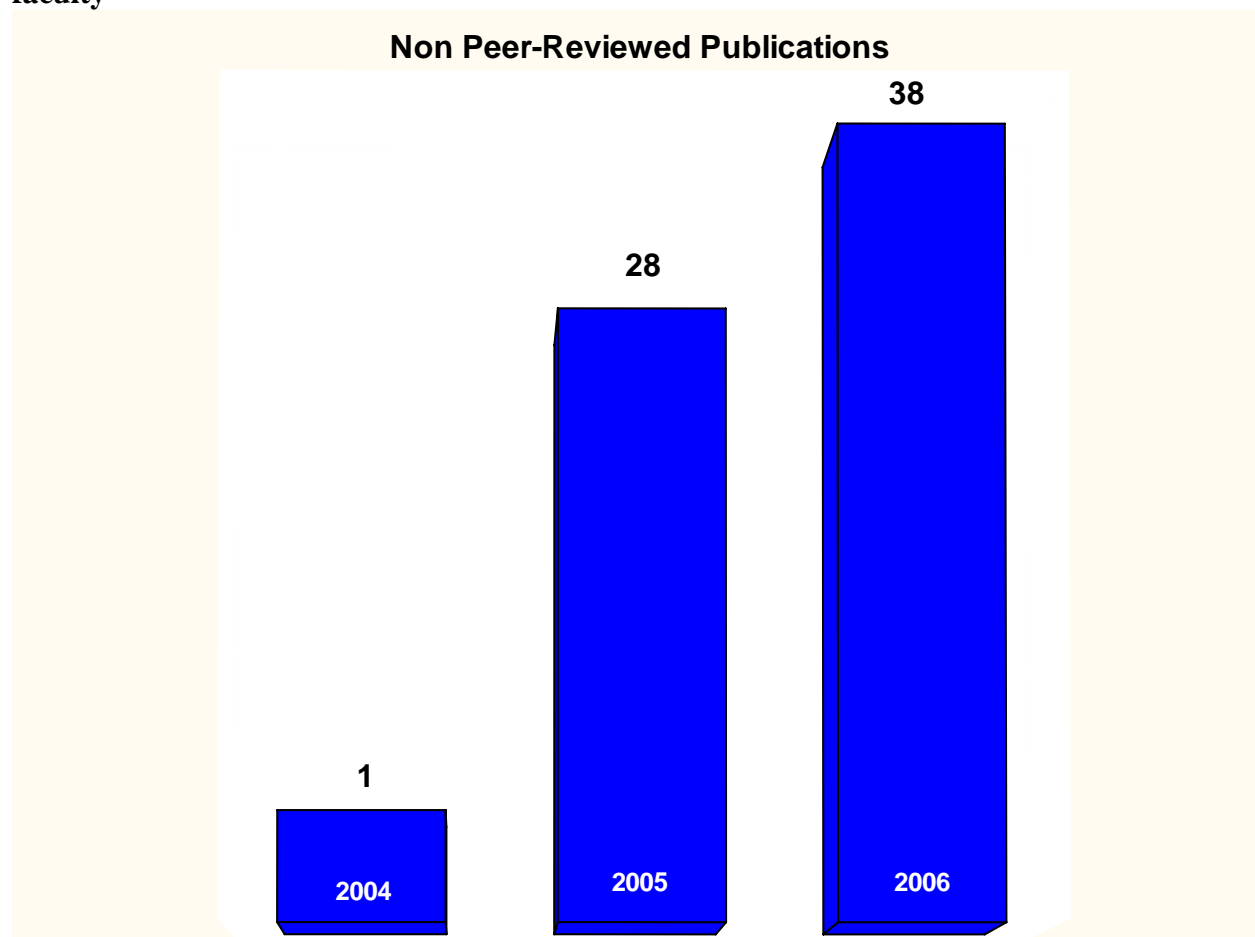
Figure 6 shows the number of abstracts/presentations by Biology faculty from 2000 until 2006. The number has been high since 2002 and the variations are usually the result of funding available for them to attend meetings.

**Fig. 6. Number of abstracts/presentations by Biology faculty**



The number of non-peer reviewed publications has also increased dramatically (Fig. 7) due primarily to the column we now have in *The Jonesboro Sun*. Thus, from being a negligible activity in the Department, this outlet has become a major source of publicity and recognition for our Department and the University as a whole.

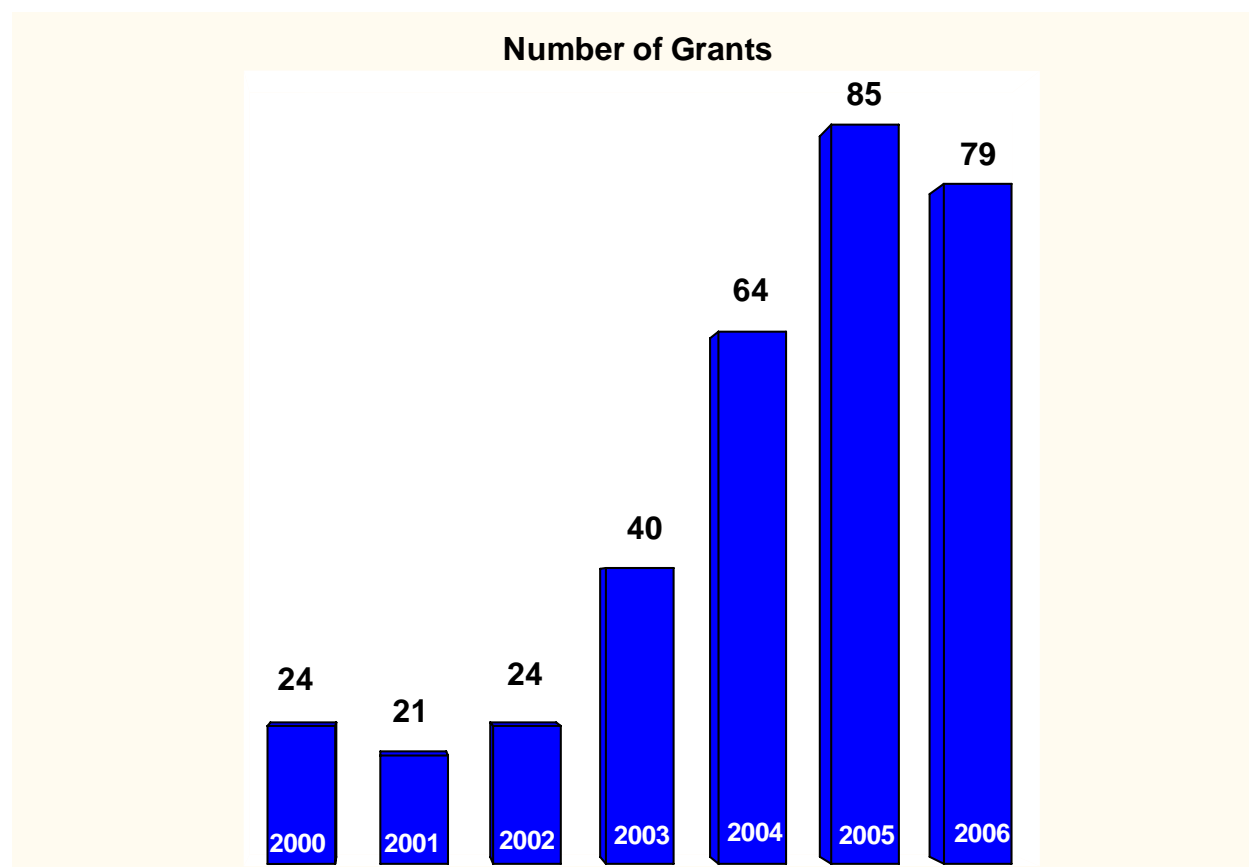
**Fig. 7. Number of non-peer reviewed publications authored by members of the biology faculty**



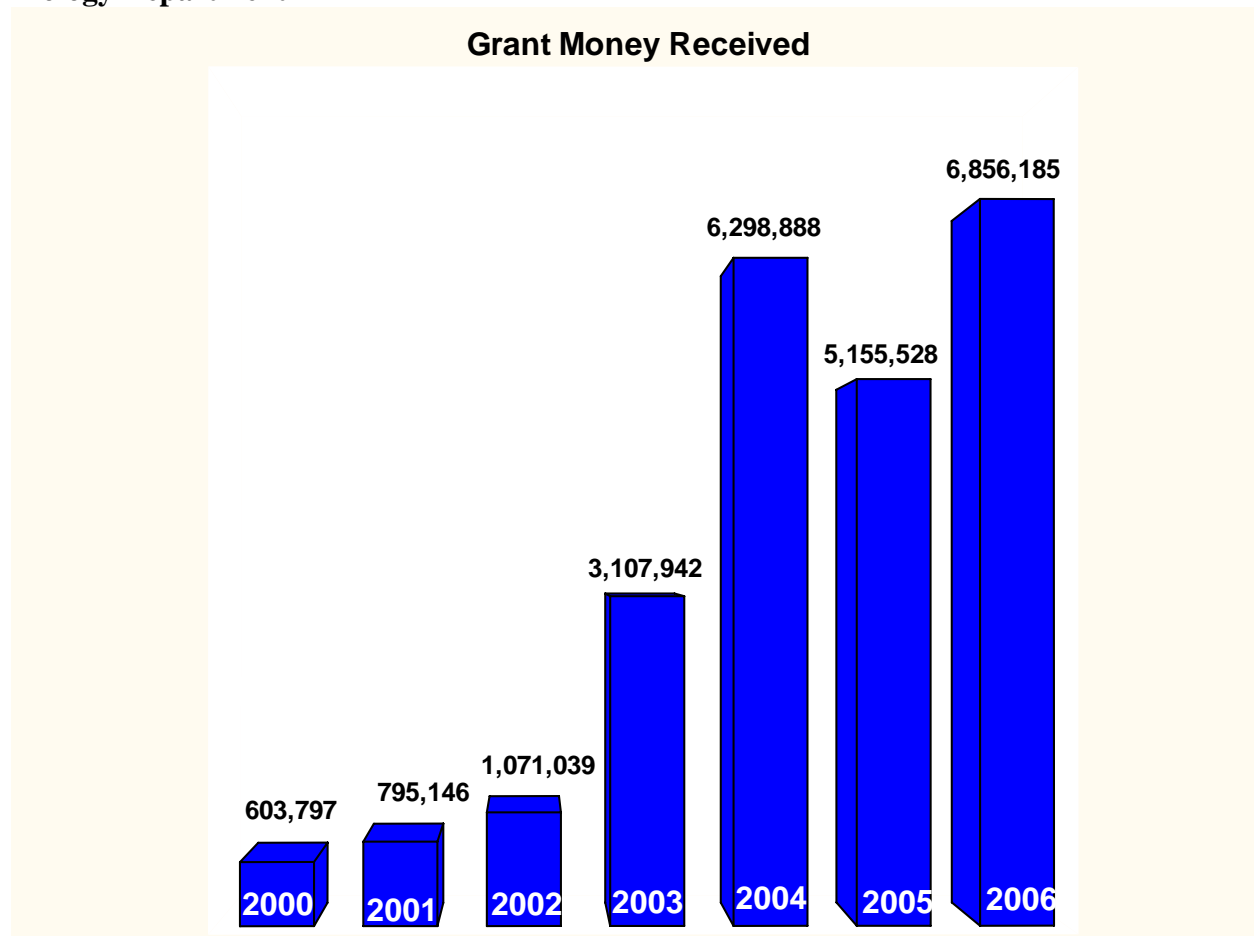
## **2. Grants and Contracts**

In the area of grants, the collective effort of the Biology Department has also been rewarded through a larger number of grants and an overall increase in the amount of money awarded (Figs. 8, 9 and 10). The number of grants has more than tripled since 2001 and the total amount of money received has remained high. Early projections that the total amount of money awarded in 2005 was going to be less than in 2004 was based in the discontinuation of grants from ABI and not taking into consideration money to be received from grants approved in 2003 or earlier but that are still active. A new source of funding has been exploited by Biology is private sources.

**Fig. 8. Number of grants and contracts received by Biology faculty**



**Fig. 9. Total amount of money awarded via grants and contracts to members of the Biology Department**



When analyzing the sources of those grants, there are some interesting results worthy of discussion. Grants come from four major sources: (1) internal (i.e., ABI), (2) state/regional (i.e., state agencies or federal agencies through their state offices), (3) national (public or private), and (4) major federal agencies with highly competitive grants at the national level (NSF, NIH, USDA, and EPA).

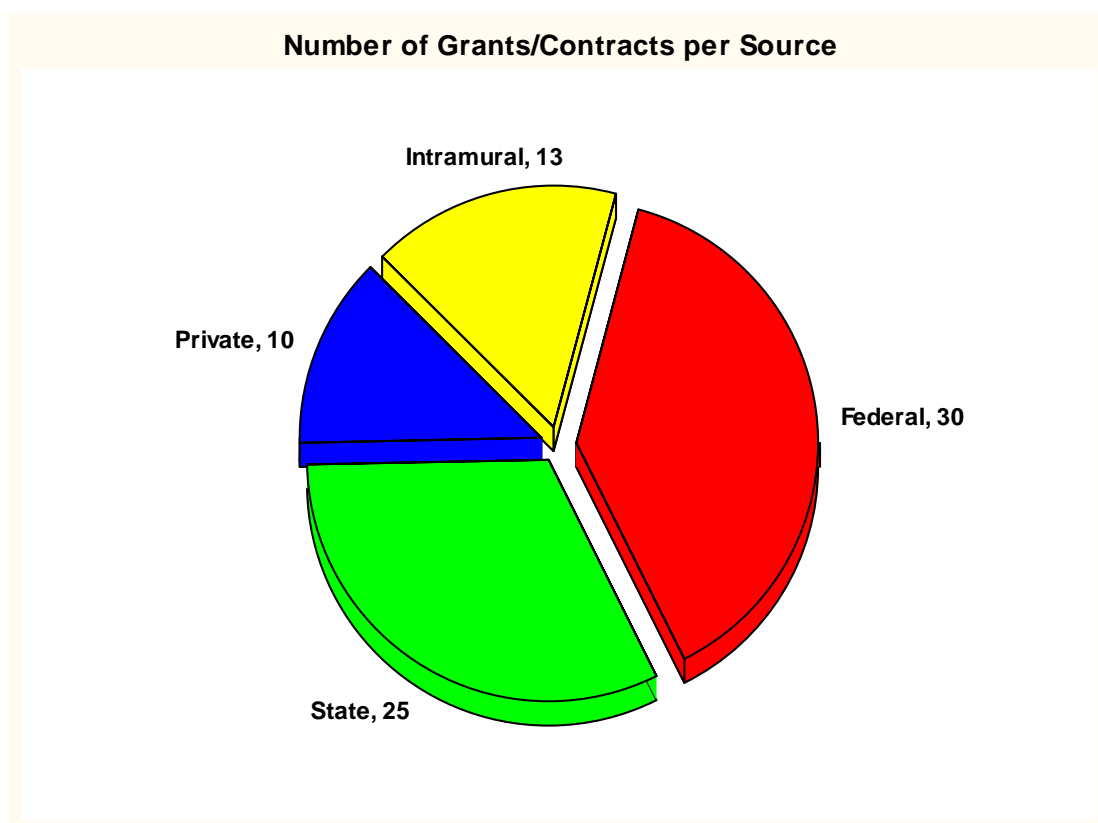
In 2004 most of the grants came from state agencies which account also for a little more than half of the total money (Table 2, Figs. 8, 9, and 10). However, in 2005 such a proportion changed having now a more evenly distributed number of grants from the four major sources. Also, the amount of money received from major federal agencies has increased significantly, which is more in line with research-oriented universities.

**Table 2. Number of grants and total money awarded in 2006 per type of granting agency. The third column represents the average money per grant per type of source**

Type	Number	Amount (\$)	Average \$/grant
Federal	30	4,301,005	143,366.33
State	25	1,648,656	43,330
Intramural	13	463,465	35,651
Private	10	438,168.70	43,816.87

From the above table one can see that state/regional agencies still provide the most grants with a healthy average of money per grant. On the other hand, the cluster of federal money (NSF/NIH/USDA/EPA) provides much higher amount of money per grant on average, although they are much more competitive and prestigious.

**Fig. 10. Number of grants per type of source in 2006**



**Fig. 11. Total amount and percentage of money provided by each type of agency in 2006**

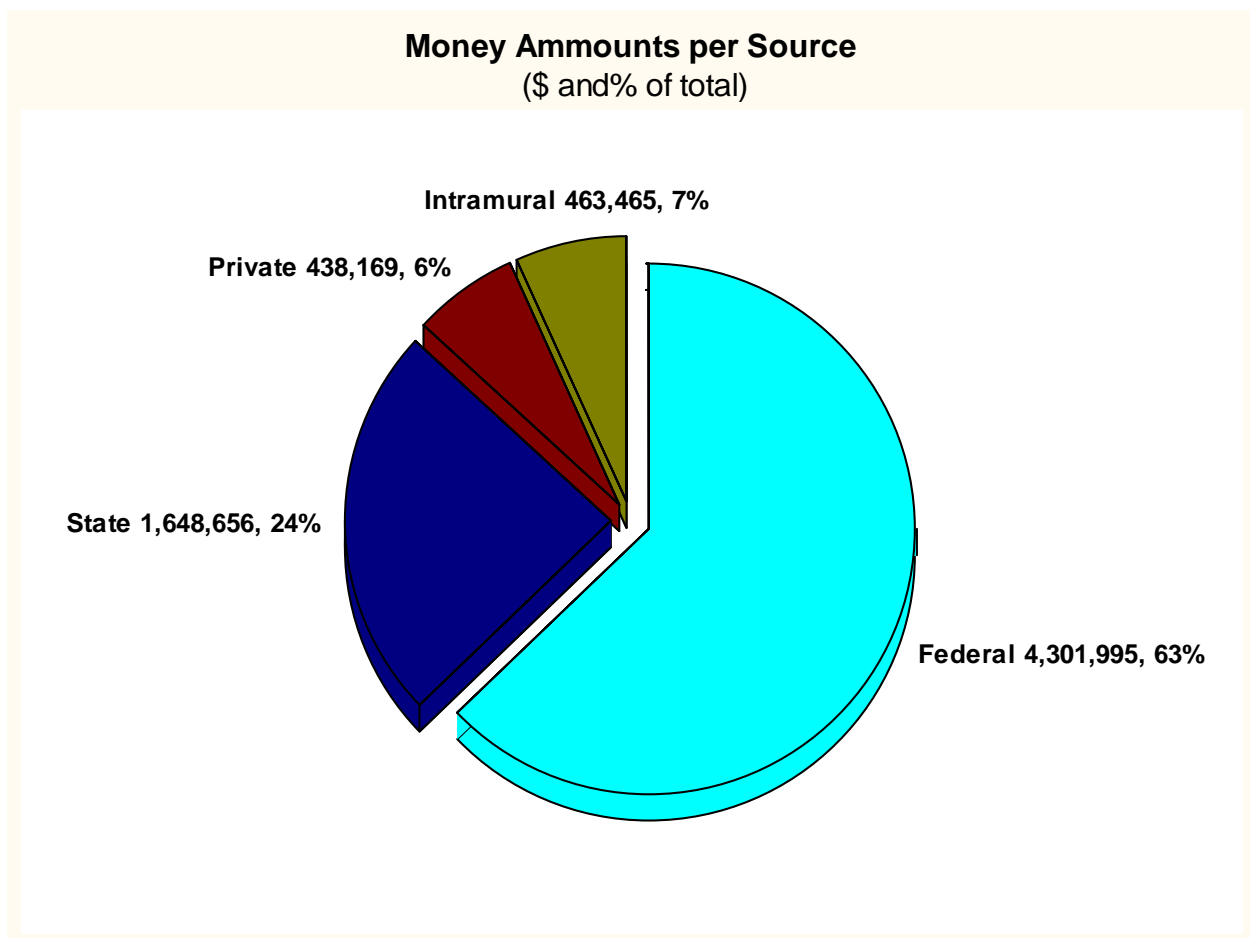
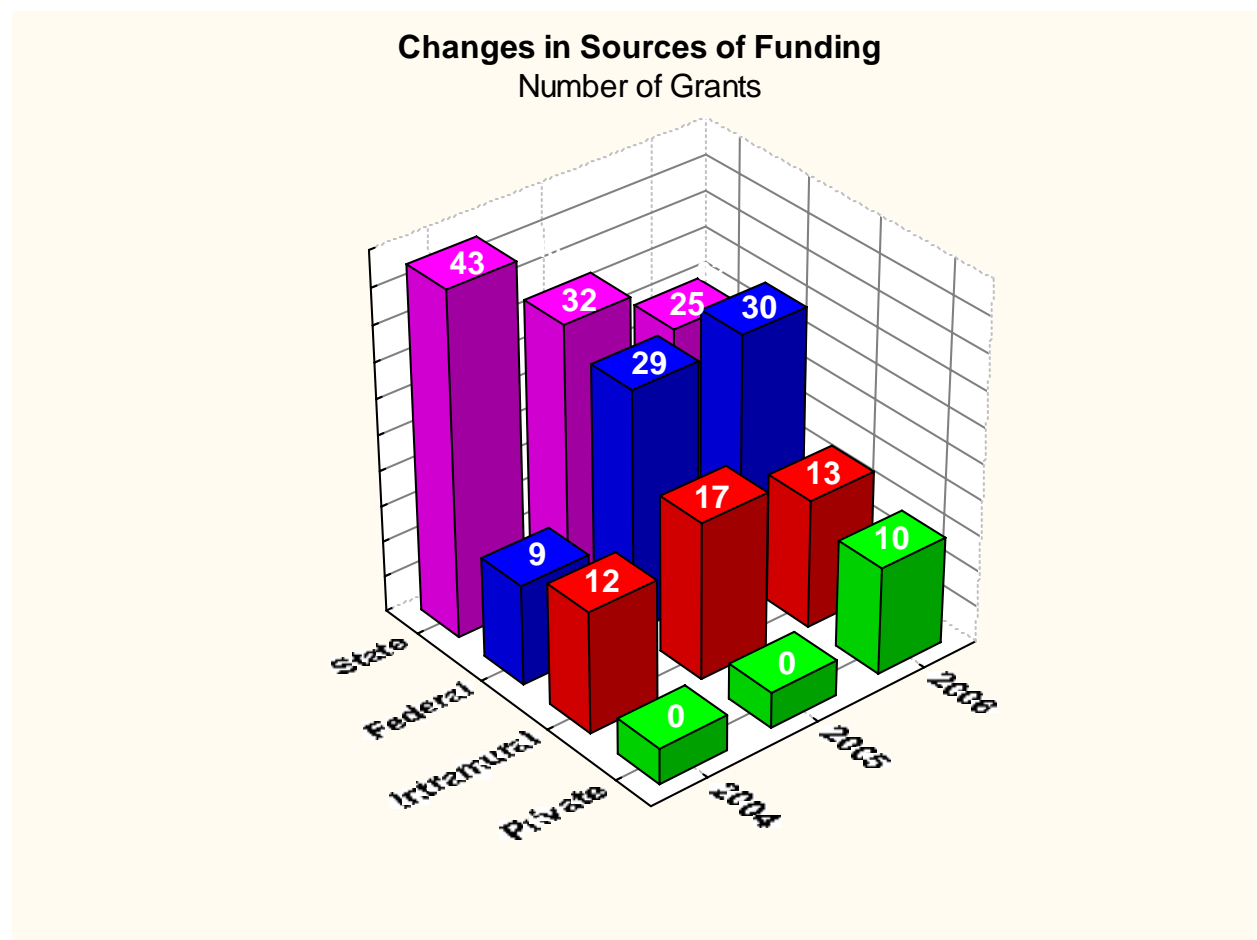


Fig. 12. Changes in the number of grants/contracts from 2004 to 2006



## Conclusions

The figures in this report demonstrate a continued dramatic increase in the scholarly productivity for the Biology faculty in the last few years. Based on anecdotal evidence and insight into the reports, this is probably due to a combination of factors: (1) the filling of empty tenure-track positions and the addition of three ABI faculty in the last two years and a new faculty member with an adjunct status (in chronological order Srivatsan, Romero, Christian, McKay, Cramer, Hood and Medina-Bolívar and Bouldin), (2) an increase in the productivity among the pre-2002 faculty, and (3) an atmosphere in which research is increasingly recognized as an indispensable component of today's academic life even among largely teaching institutions according to the Carnegie classification. Given the little likelihood of adding new tenure-track faculty lines in the new future, there is no question that new faculty added through ABI represents a great opportunity for the Department to continue to increase its breadth, depth, and productivity, and we are lucky to be able to take advantage of such opportunity.

This productivity is likely to increase further with new joint appointments with ABI, better facilities, and more competitiveness for graduate students, undergraduate research, and productivity in general. A possible hindrance for further growth is the fact that although there is a significant increase in the number of applications for graduate programs, the in-house financial support for our graduate students remains flat.

Although there was a slight decrease in the total number of peer-reviewed publications the increase in the amount of money received in the form of grants and contracts and the increase in the number of abstracts (usually a prelude for publications), we will see a surge again in the number of those publications in 2007.

It is also positive to see not only an increase in the amount of grant money received, but also an increase in federal funding (which is much more competitive). Also, obtaining funding from private organizations is also a sign of diversification of sources of support.

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# APPENDIX: PRODUCTIVITY REPORT 2006

## DEPARTMENT OF BIOLOGICAL SCIENCES

**Biology faculty is noted in bold face**

### 1. PUBLICATIONS (Published or accepted for publication in 2006)

#### 1.1. Articles in Peer-Reviewed Journals, books, and book chapters.

(Names in bold are ASU-Biology faculty members; names in *italic* are ASU students).

1. Arkansas Vascular Flora Committee, Johnnie L. Gentry, Coordinator; Active participants D. E. Culwell, R. H. Doran, L. Gatti-Clark, J. L. Gentry, J. Hardin, E. L. Hardcastle, P. E. Hyatt, G. P. Johnson, D. L. Marsh, J. E. Moore, S. C. Nunn, J. H. Peck, B. E. Serviss, E. Sundell, R. D. Thomas, G. E. Tucker, **S. S. Vanderpool**, C. T. Witsell. 2006. *Checklist of the Vascular Plants of Arkansas*. Department of Printing Services, University of Arkansas. 230 pp.
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## 1.5. Book reviews

Howard, J.A. and **E.E. Hood**. 2007. A cost efficient method for growing nonfood products in transgenic plants, METHODS FOR GROWING NONFOOD PRODUCTS IN TRANSGENIC PLANTS; **Crop Science; In press.**

Romero, A. 2006. Humboldt's Travels. *The New York Times* **140**(53684): Section 7 (Book Reviews):5. 27 August 2006.

**Romero, A.** 2007. Typological thinking strikes again. *Environmental Biology of Fishes* **78** (In press).

## 2. GRANTS

### 2.1. Received or active during 2006. Names refer to PIs. Date is for when the grant was approved.

1. **Bednarz, J.C.** Population dynamics of Swainson's Warblers in response to habitat manipulation in Arkansas. Arkansas Game and Fish Commission. Approved February 2004. Duration 1 January 2004 –31 May 2008. \$230,600.
2. **Bednarz, J.C.** Reproductive success, causes of nesting failures, and habitat use of Swallow-tailed and Mississippi kites in the White River National Wildlife Refuge, Arkansas. Arkansas Game and Fish Commission. Approved March 2004. Duration = 1 March 2004 – June 2006. \$96,500.
3. **Bednarz, J.C. and R. Grippo.** Factors influencing the loss of migratory birds by collision with communications towers in Arkansas. Arkansas Game and Fish Commission. Approved October 2004. Duration = 1 August 2004 –31 May 2008. \$156,400.
4. **Bednarz, J.C.** Response of northern Bobwhite populations and the associated avian communities to landscape management. Arkansas Game and Fish Commission. Approved January 2005. Duration = 1 January 2005 –31 January 2008. \$138,500.
5. **Bednarz, J.C.** Arthropod community and vegetation characteristics of occupied and unoccupied Swainson's Warbler (*Limnothlypis swainsonii*) sites in the White River National Wildlife Refuge. U.S. Fish and Wildlife Service. Approved March 2005. Duration 14 April 2005 –30 June 2006. \$17,700.
6. **Bednarz, J.C.** Demography, causes of nesting failures, and habitat use of Swallow-tailed and Mississippi kites in the White River National Wildlife Refuge, Arkansas. Arkansas Game and Fish Commission. Approved December 2005. Duration = 1 January 2006 – January May 2009. \$170,000.
7. **Bednarz, J.C.** *Journal of Raptor Research*. Raptor Research Foundation, Inc. Approved November 2005. Duration = 1 January 2006 – 30 June 2006. \$ 750.
8. **Bednarz, J.C. and T.J. Benson.** Population dynamics of Swainson's Warblers in different bottomland hardwood vegetative types in Arkansas. U.S. Fish and Wildlife Service. Approved May 2006. Duration =11 May 2006 –30 June 2007. \$17,700.
9. **Bednarz, J.C.** Abnormalities in passerine birds in northeastern Arkansas agricultural fields. ASU Faculty Research Grant. Approved May 2006. Duration = 1 July 2006 – 30 June 2007. \$2,000.

10. **Bednarz, J.C.** and *T.J. Benson*. Predicting the occurrence of Swainson's Warblers based on stand-level characteristics at Big Island, Arkansas. Anderson Tully Company. Approved June 2006. Duration = 1 June 2006 – 31 May 2008. \$1,500.
11. **Bednarz, J.C.** and *M.J. Huss*. Interactions between fungi and cavity nesters: applications to managing wildlife and forests in western Washington. Approved July 2006. Duration = 15 July 2006 – 28 February 2007. \$17,000.
12. **Bednarz, J.C.** and B. Noel. Sampling of shorebirds that are potential carriers of H5N1 avian influenza in Arkansas. Arkansas Game and Fish Commission. Approved August 2006. Duration = 15 August 2006 – 31 January 2007. \$19,323.
13. **Bouldin, J.L.** & S. Green. Comparison of Laboratory and Field Use of a Soil Additive to Reduce Agricultural Associated Contamination. July, 2006. \$2,000 Judd Hill Foundation.
14. **Buchanan, R.** Effects of Methamphetamine Challenge on Regional Neurotransmitter Distribution in Rat Pups Exposed to the Constituents of Cigarette Smoke *In Utero*” R Buchanan PI ASU OORTT Undergraduate Minority Research grant for Tamika Keener \$1,000.
15. **Buchanan, R.** Effects of Nicotine on Processes Mediated by the Reticular Activating System” (through 4/30/09) L Cornett, PI; R Buchanan, ASU PI NIH through the IDeA Networks of Biomedical Research (NIH-INBRE). NCR 1P20-RR022058. ASU Project total \$693,485. Annual budget \$138,697
16. **Buchanan, R.** Effects of exposure to nanocrystals containing toxic metals. R Buchanan, PI NSF RAMHSS. \$11,200.
17. **Buchanan, R.** Absorption of Cadmium Based Nanoparticles by an mammals. NSF RISE REU (Jessica Stirrat) \$8,400.
18. **Buchanan, R.** Effects of *in utero* exposure to the constituents of tobacco smoke on reticular activating system-mediated processes underlying arousal and attention in rats” \$16,200 McNair (Brandi Cooksey, Tamika Keener, Amanda Polston)
19. **Buchanan, R.** Development of Event Driven Neural Architecture: A General Purpose Event Driven Neural Simulator. \$5,800 McNair (Shannon Cook).
20. **Buchanan, R.** Fate of nanocrystals in aquatic systems. \$5,300. McNair (Regina Alexander)

21. **Christian. A.L.** U.S. Fish and Wildlife Service Flex Program - Delta Office Annual Flex Fund. 20 October 2005. ( \$33, 686.50) A Case Study of Conservation Banking and *Potamilus capax* (Green 1832) in the St. Francis River Basin of Northeastern Arkansas. .PI's: Andrew J. Peck and A.D. Christian.
22. **Christian. A.L.** Arkansas Game Fish Commission. 6 September 2005. State Wildlife Grants (\$60,055.00). Resolution of Arkansas Species and Distributions of Freshwater Mussel Genus *Lampsilis* (Bivalvia: Unionoida). PI: Alan D. Christian, J.L. Harris, and W. R. Hoeh.
23. **Christian. A.L.** Arkansas Game Fish Commission. 6 September 2005. State Wildlife Grants (\$9782.37). Diversity and Distribution of Freshwater Gastropods from the Ozark Region of Arkansas. PIs: David M. Hayes and Alan D. Christian.
24. **Christian. A.L.** Arkansas Game and Fish Commission (\$22,714.05) Preliminary Analysis for Identification, Distribution, and Conservation Status of Species of *Pleurobema* and *Fusconaia* in Arkansas PI: Alan D. Christian with Jeanne Serb, and John L. Harris
25. **Christian. A.L.** Arkansas Game and Fish Commission (\$85,000). Current Distribution and Relative Abundance of the Mussels, Crayfish, and Aquatic Salamanders of the Spring River, Arkansas PI: Stanley E. Trauth with Benjamin A. Wheeler, Waylon R. Hiler, and Alan D. Christian.
26. **Christian. A.L.** U.S. Fish and Wildlife Service-Arkansas Field Office Annual Flex Fund (\$5,000). Habitat characterization and assessment of Ozark hellbender populations in the North Fork White, Spring, and Eleven Point rivers in Arkansas and Missouri. PI: Alan D. Christian with Stanley E. Trauth, and Benjamin Wheeler.
27. **Christian. A.L.** National Parks Service. (\$78,000). Assessment and Habitat Evaluation of Native Freshwater Mussel Resources of Buffalo National River. 2004-2007. PI: A.D. Christian. Contact at Buffalo River NP is Faron. Usery (870) 741-5446 Ext 274.
28. **Christian. A.L.** Memphis District US Army Corps of Engineers. (First year ~ \$30,000 w/ ~\$90,000 over following 3 years). Effects of USACE dredging on individual mussel fitness and mussel community numerical standing crop in the White River, AR. 2004-2008. PI: A.D. Christian as and addendum to 2003 USFWS Flex Fund grant. Contact at USFWS is Joe Krystofik (870) 347-1506
29. **Christian. A.L.** Arkansas Highway and Transportation Department – Federal Highway Administration (\$170,000). Proposal for habitat restoration plan and programmatic biological assessment for *Potamilus capax* in Arkansas. PI: Alan D. Christian and Jerry L. Farris. Contact at AHTD is John L. Harris 501-569-2522.

30. **Christian, A.L.** Arkansas Game and Fish Commission (\$50,000). A proposal for life history and population biology research on the special concern Ouachita Creekshell (*Villosa arkansasensis*). PI: Alan D. Christian and Jerry L. Farris.
31. **Christian, A.L.** U.S. Fish and Wildlife Service Flex Program - Delta Office Annual Flex Fund (\$78,170). Relationship of physical and geomorphological characteristics to mussel bed quality in the Whiter River, Arkansas. PI: Alan D. Christian with John L. Harris, Mike Hanley, and Steve Hasse.
32. **Christian, A.L.** U.S. Fish and Wildlife Service Flex Program - Delta Office Annual Flex Fund (\$8,788). Correlation of changes in mussel communities to water development and land-use changes in the White River Basin, Arkansas. PI: Alan D. Christian with John L. Harris.
33. **Christian, A.L.** U.S.D.A Forest Service, Ouachita National Forest: Cost-Sharing Challenge Program (\$10,000 plus \$10,000 ASU Match). A proposal for life history and population biology research on the threatened Arkansas fatmucket (*Lampsilis powelli*) and the special concern Ouachita Creekshell (*Villosa arkansasensis*). PI: Alan D. Christian with Jerry L. Farris and John L. Harris.
34. **Christian, A.L.** U.S. Fish and Wildlife Service (\$30,000). A proposal for life history and population biology research on the threatened Arkansas fatmucket (*Lampsilis powelli*) and the special concern Ouachita Creekshell (*Villosa arkansasensis*). PI: Jerry L. Farris with Alan D. Christian and John L. Harris.
35. **Christian, A. D.** and **J.M. Loutsch.** Who's your daddy II? Paternity in freshwater mussels, the field experiment. July 2006-June 2007. Funded for \$2500.00 received. PI: Alan D. Christian and Co-PI J.M. Loutsch.
36. **Cramer, C.L.** and C. Dolan. Plant transgenics for vaccines, adjuvants and therapeutics. 7/1/06- 6/30/07, Arkansas Biosciences Institute research grant, \$200,000.
37. **Farris, J.L.** U.S. Fish and Wildlife Service (\$17,000). Identifying potential fish hosts of the western fanshell (*Cyprogenia aberti*). PI: Jerry L. Farris. (Funded for 2004-2006).
38. **Farris, J.L.** US Department of Agriculture. Farris, J.L. USDA. 1998-2007. (\$974,503). Agricultural Research Service Mid-South Area. Edge of field ecosystems for water quality improvement. PI: Jerry L. Farris.
39. **Farris, J.L.** Potesta and Associates. 2001-2006. (\$217,430). Assessment of fish community responses to a coal slurry spill in the Tugfork River in Kerma, West Virginia. PI: Jerry L. Farris.
40. **Farris, J.L.** USEPA Star Grant. 2006-2007. (\$193,400). Delta Center for Agricultural Water. Use. PI: Jerry L. Farris, CoIs, Steve Green, Jennifer Bouldin, and Greg Phillips.

41. **Gilmore, D.** Prevalence of *Staphylococcus aureus* and Methicillin-Resistant *S. aureus* among Nursing and Allied Health College Students”, SURF/SILO grant, Arkansas Dept. of Higher Education, with student Jennifer Little.
42. **Grippo, A.** Neurophysiological and Endocrinological Changes with Estrous Cycle. Grippo, Co-I (R. Buchanan, PI). NIH/AR INBRE. \$24920/year. 7/05-6/08.
43. **Grippo, R.** Silviculture Best Management Practices Effectiveness Monitoring. Funding period 12/1/2002 - 1/31/2007. Funded by US Environmental Protection Agency. Principal Investigator – Richard Grippo. Total award \$311,000.
44. **Grippo, R.** Proposal submitted for funding to invite Dr. Wayne Landis, from Western Washington University, to visit ASU, meet with faculty and students, and present a seminar entitled “Receptors to Populations as Parts of Complex Systems”. Submitted to Vice-Chancellor for Academic Affairs and Research, Dean of College of Science and Mathematics, Office of Research and Technology Transfer, Department of Biological Sciences, and Program in Environmental Sciences. Funded by all units except Academic Affairs. Funding period 10/10/2006 – 10/12/2006. Total request funded for \$2,125.
45. **Grippo, R.** Request for travel support to attend annual meeting of the Society of Environmental Toxicology and chemistry in Montreal, Canada. Received \$495 from ORTT, \$495 from CMS and \$495 from the Department of Biological Sciences.
46. **Harding, L.** April of this year, I requested funds to assist in relocating the research lab of Dr. Marty Huss and Dr. David Gilmore to Lab Science West 545. This room, recently acquired by the Biology Department, would better serve as a research lab for the two professors and provide a large “clean room” that had been requested by Dr. Huss. This move did require funds to provide gas for a sterile fume hood, hot water, and new refrigerator to replace a couple old ones that were broken. A request of \$8,000 was made to the Office of Research and Technology Transfer, which was granted by Dr. Beth Hood to make those renovations.
47. **Hood, E.E.** Preparation of a Business Plan for the Specialty Crops Regulatory Initiative—USDA. \$39,000. 8/1/2006.
48. **Hood, E.E.** Identity Solutions: Planning Grant Proposal—ASTA. \$150,000. 5/19/2006.
49. **Hood, E.E.** Zymogen enzyme production in corn for starch degradation—NSF subcontract. \$21,344. 7/1/2006

50. **Huss, M.** Interactions between fungi and cavity nesters: applications to managing wildlife and forests in western Washington. Rayonier, Washington Department of Natural Resources, Weyerhaeuser, Hancock Forest Management, and the Fruitgrowers Supply Company. Amount of funding requested for 2006 is \$17,000. With J. C. Bednarz and D. Varland.
51. **Johnson, R.L.** Gene flow and genetic structuring of yellowcheek darters (*Etheostoma moorei*) in the Little Red River watershed. Arkansas Game and Fish Commission. 3/1/06-present. \$5,665.
52. **Johnson, R.L.** and C. Cato. Introduction of Florida largemouth bass in an Arkansas population of northern largemouth bass and the performance of bass with those alleles. SURF/SILO Arkansas Department of Higher Education. Award notification 12/06. \$3,900.
53. Lorence, A., **F. Medina-Bolivar**, and K. Redeker. Collaborative Seed Grant: Mechanisms of Toxicity and Remediation of Superfund Environmental Toxicants. Arkansas Biosciences Institute/Arkansas State University. \$ 30,000; 07/01/06-06/30/07.
54. **Loutsch, J.M.** Phenotypic Signature of Osteosarcoma, June 1 – Dec 2006, Arkansas IDeA Network of Biomedical Research Excellence, funded for \$17,613.00.
55. **McKay, T.** and **D. Gilmore.** Survival of experimentally introduced bacteria in the house fly *Musca domestica* L. Faculty Research Award, Arkansas State University. July 1, 2006 – June 30, 2007. \$4,845.
56. **McKay, T.** and **A. D. Christian.** *Macroinvertebrate Biodiversity.* Arkansas Department of Higher Education, 2005-2006 No Child Left Behind Program from the U.S. Department of Education. March 1, 2006-September 30, 2007. \$27,753.
57. **Medina-Bolivar, F.** and **A. Grippo.** Effects of resveratrol-containing extracts from peanut hairy roots on human leukemia cells. Arkansas State University, Undergraduate Research Proposal. \$ 1,000; 07/01/06-12/31/06.
58. **Medina-Bolivar, F.** Development of sorghum root cultures for production of herbicides. ASU Faculty Research Fund. \$ 7,000 (submitted 2/9/06).
59. **Medina-Bolivar, F.** Metabolic engineering for the overproduction of medicinal phytochemicals. Arkansas Biosciences Institute. \$ 200,000; 7/1/05-6/30/07.
60. **Risch, T.S.,** Home Range, Dispersal, and Survival of the Ozark Pocket Gopher. Arkansas Game and Fish Commission, 2006-2009, \$59,794.

61. **Risch, T.S.**, Roosting Ecology of Male Indiana Bats. Arkansas Game and Fish Commission. 2003-2006, \$12,000.
62. **Risch, T.S.**; Ecology of Male Indiana Bats During the Swarming Period. US Forest Service, Ozark-Saint Francis National Forest. 2003-2007, \$36,500.
63. **Risch, T.S.**, Response of Wildlife Habitat to Prescribed Burning. US Forest Service, Ouachita National Forest. 2003-2007, \$24,190.
64. **Risch T.S.**, Distribution and Abundance of the Rafinesque Big Eared Bat and Southeastern Bat in the Mississippi Delta and Gulf Coastal Plain of Arkansas. Arkansas Game and Fish Commission. 2004-2007, \$50,000.
65. **Risch, T.S.**, Home Range, Dispersal, and Survival of the Ozark Pocket Gopher. Arkansas Game and Fish Commission, 2006-2009, \$59,794.
66. **Risch, T. S.**, Watchable Wildlife, AGFC/ASU Bluebird Project, Arkansas Game and Fish Commission, \$5,000.
67. **Risch, T.S.** Ecology of Male Indiana Bats During the Swarming Period. US Forest Service, Ozark-Saint Francis National Forest. \$10,000 extension.
68. **Risch, T.S.**. Arkansas State University Bluebird Project. Kays Foundation, \$9,022.
69. **Romero, A.** 2006. Status Report for the Southern cavefish *Typhlichthys subterraneus*. Amount: \$37,351. State Game and Fish Commission (Arkansas).
70. **Romero, A.** and **R. L. Johnson.** 2006. Genetic Structure of *the Southern Cavefish, Typhlichthys subterraneus*. Amount: \$528. National Speleological Society.
71. **Romero, A.** and **G. Adams.** 2006 – North American Cave Fish Conservation Website. Amount: \$938.65. North American Native Fishes Association Corcoran Education Grant.
72. **Srivatsan, M.** 2006-2008. NIH/NIDA R15. Nicotine and development of (Renewable) autonomic neurons. Direct cost, \$150,000.
73. **Srivatsan, M.** 2005-2010. NIH/NCRR INBRE. Cholinergic mechanisms in neuroregeneration. Direct cost, \$362,000.
74. **Srivatsan, M.** ASU Faculty development award. Nano material and neurotoxicity. Direct cost, \$4,500.
75. **Trauth, S.E.** Current distribution and abundance of the queen snake, *Regina septemvittata* (Serpentes: Colubridae), in Arkansas. Arkansas Game and Fish Commission. 2005-2006. \$35,000.

76. **Trauth, S.E.; J. Trauth and R. L. Johnson.** A metapopulation study of gene flow and genetic structuring of the Illinois Chorus Frog (*Pseudacris streckeri illinoensis*) in Arkansas. Arkansas Game & Fish Commission. 9/1/04-present. \$51,665.
77. **Trauth, S.E.** Current distribution and relative abundance of the mussels, crayfish, and aquatic salamanders of the Spring River, Arkansas. Arkansas Game and Fish Commission. 2005-2006. \$85,000.00 (PI - With Ben Wheeler and Waylon Hiler).
78. **Vanderpool, S.** Development and offering of a course in investigative, hands-on science courses in 4 – 12; 50%. US Dept. of Education No Child Left Behind program. \$36,842. 2005-2006. PI C. Ann Ross, College of Education.
79. Yanowitz, K.; **S. Vanderpool, T. McKay** and A. Ross. 2006. CSI: Arkansas. National Science Foundation 04-611 ITEST program, provide training to teachers and students on STEM careers and information technology. October 1, 2006-September 30, 2009. \$1,006,800

## 2.2. Grants submitted in 2006 but pending by 12/31/06

1. **Bednarz, J.C., B. Noel, and T. McKay.** The breeding and foraging ecology of Pileated Woodpeckers in the bottomland forests and swamps of eastern Arkansas with reference to the conservation of the Ivory-billed Woodpecker. Submitted to U.S. Fish and Wildlife Service. \$400,000 requested. 24 pp.
2. **Buchanan, R.** Kays Foundation Faculty Grant “Environmental Toxicity of Semiconductor Microcrystals (Qdots)”. J Bouldin, PI, R Buchanan, Co-I
3. **Buchanan, R.** NIH R-15 (AREA) Proposal: “Effects of nicotine and Maternal Exposure to Cigarette Smoke on Reticular Activating System Response” R Buchanan, PI
4. **Buchanan, R.** NIH R-21 (Experimental/Developmental Bioengineering) Proposal “New algorithms for analysis of the neuron activity rhythms in the central nervous system”. M Milanova PI, R Buchanan, Co-I
5. **Buchanan, R.** NIH STTR Proposal “Rapid detection of smoked residues in biological fluids” Hyphenated Solutions. R Hannigan and R Buchanan, PIs
6. **Buchanan, R.** SURF Proposal “Effects of Methamphetamine Challenge on Distribution of Monoamine Neurotransmitters in the Brains of Pups Born to Dams That Were Exposed to Cigarette Smoke During Pregnancy” (for Madhvi Patel)
7. **Buchanan, R.** Ford Foundation (for Taylor Ingle)

8. **Buchanan, R.** EPA STAR (for Taylor Ingle)
9. **Buchanan, R.** NIH R30 Doctoral Dissertation support (for Katherine McKeon)
10. **Buchanan, R.** Development of small rugged detection systems for presumptive and/or confirmatory identification of forensic evidence at the crime scene”. Preproposal to the US Department of Justice. R Buchanan and R Hannigan, PIs
11. **Buchanan, R.** Undergraduate Research and Mentoring in the Biological Sciences: Research at the Intersection of Biotechnology and the Environment. Preproposal to the NSF. R Buchanan and R Hannigan, PIs.
12. **Christian, A.L.** Arkansas State University 2006 Scholarly Activity Initiative Proposal. (\$10,000.00). Who’s your daddy II? Paternity determination in freshwater mussels, the field experiment. PI. Alan D. Christian with J. Loutsch.
13. **Christian, A.L.** Olsson Associates Lincoln, NE, (\$3,364.93). Mussel survey for Union Pacific Railroad Company's (UPRR) Bridge 214.76 Jonesboro subdivision near Clarendon, Arkansas.
14. **Christian, A.L.** Rollcoater, Inc. Indianapolis, Indiana Christian, A. D. (\$2,567.08). A survey of the Fat pocketbook, *Potamilus capax* (Green, 1832), and other freshwater mussels above and below a proposed railroad crossing of Ditch #49, Mississippi County, Arkansas for, Rollcoater, Inc.
15. **Christian, A.L.** Osceola Drainage District, Osceola Arkansas. (\$13,076.10). A survey of the Fat pocketbook, *Potamilus capax*, and other freshwater mussels on Ditches 15, 35, 38 and 60.
16. **Christian, A.L.** McClure, **G.**, **Cramer, C.**, and Varadan, V. (UAF, co-PI). *Arkansas ASSET Initiative*, NSF EPSCoR Research Infrastructure Improvement Program (EPS 07-01890), \$9,000,000 for 3 years (with additional state funds), pending.
17. **Cramer, C.** Use of rice fields as water quality enhancement tools for agricultural non-point source pollution, to the Rice Foundation, in Cooperation with the USDA ARS National Sedimentation Laboratory, M.T. Moore (PI), C.M. Cooper, M.A. Locke, S. Smith, Jr., and J.L. Farris (Co-Is), (\$115,500), submitted in October 2006, funding pending review.
18. Cramer, C.L. (PI, BioStrategies, LC) and Dolan, M.C. (PI, ASU subcontract), NIH STTR 1R41AI074293-01A1, IL-12 Avian Flu Vaccine Adjuvant to Reduce the Threat of Pandemic Human Influenza”, submitted by BioStrategies, LC, ASU subcontract: \$118,206; 06/01/2007- 5/31/08, pending.

19. Hood, E.E. Seed coat markers for genetically modified seed. \$200,000.
20. Hood, E.E. Expansin production for synergy with cellulases. \$250,000.
21. Hood, E.E. Plant-based production of the high-value protein – Myeloperoxidase. \$505,943.
22. Radin, D.N. and **Cramer, C.** Plant-based bioproduction of IL-12 adjuvant for Bird Flu vaccines, USDA SBIR Phase I, \$26,260 (ASU subcontract from BioStrategies LC; total \$80,000); 05/01/07-12/31/07, pending.
23. **Medina-Bolivar, F.**, S. Bennett, and M. Dolan. Production of resveratrol and resveratrol derivatives in hairy root bioreactors. USDA-SBIR (Nature West Inc./Arkansas State University-subcontract). \$ 80,000; 05/01/07-12/31/07; Submitted Sep 1, 2006.
24. **Medina-Bolivar, F.**, and M. Dolan. Bioproduction scale-up of enhanced resveratrol products. Consortium for Plant Biotechnology Research. \$ 300,000; 01/01/08-12/31/09; Pre-proposal submitted Dec 15, 2006.
25. **Srivatsan, M.** NSF EPSCoR grant proposal to develop infrastructure for Wireless, Nano, Bio, Neuro sensors. P.I. of the entire proposal is Dr. Vijay Varadan. Malathi Srivatsan will be the ASU P.I. and will be completely responsible for the neurosensor part. Direct cost of the grant, 5,000,000. Direct cost for neurosensor research \$ 680,000. Grant is in review. We will know about funding in 05/2007
26. **Srivatsan, M.** Nano technology applications in neuroscience. P.I. Dr. Vijay Varadan Direct cost, \$22,000. (subcontract from University of Arkansas at Fayetteville)
27. **Srivatsan, M.** Kay's foundation grant to study "Effect of cigarette smoke and nicotine on developing neurons of mammalian nervous system- an in vitro and in vivo comparative study." Direct cost, \$20,000.
28. **Srivatsan, M.** NSF (NSF 06-556) submitted in 07/2006 . "Understanding Biodiversity: Genetic, Species, and Ecosystem Diversity in Aquatic Ecosystems" P.I. Alan D. Christian, Direct cost \$473, 787 Not funded, favorably reviewed, will resubmit.
29. Watson, W., P. Kaufman, **T. McKay**, K. Loftin, and J. Pennington. Optimizing Dung Beetles for the Sustainable Pasture Ecosystem. United States Department of Agriculture – CSREES – Sustainable Agricultural Research & Extension. Submitted: 15 November 2006. \$328,567.
30. Weathers, P., **C. Cramer**, A. Lorence, **F. Medina-Bolivar**, and J. Shanks. PIRE-Terpene Phytochemistry. Partnerships for International Research and Education, NSF. Pre-proposal submitted Oct 30, 2006. (pending)

### 2.3. Grants submitted but not funded in 2006

1. **Bednarz, J.C.** and **T. McKay**. The breeding and foraging ecology of Pileated Woodpeckers in the bottomland forests and swamps of eastern Arkansas with reference to the conservation of the Ivory-billed Woodpecker. Submitted to Arkansas Game and Fish Commission. \$497,000 requested.
2. **Bednarz, J.C.** and *C. Roa*. Native oak forest and matrix heterogeneity effects on neotropical migrant birds in the eastern Andes of Colombia. Submitted to American Bird Conservancy. \$5,180 requested.
3. **Bouldin, J.L.;** **R. Buchanan** and R. Hannigan. Environmental Toxicity of Semiconductor Microcrystals. (EPA - STAR)
4. **Bouldin, J.L.;** **R. Buchanan** and **R. Hannigan**. Environmental Toxicity of Semiconductor Nanocrystals Containing Toxic Metals. (Kays Foundation)
5. **Buchanan, R.** SURF Proposal. Effects of Methamphetamine Challenge on Distribution of Monoamine Neurotransmitters in the Brains of Pups Born to Dams That Were Exposed to Cigarette Smoke During Pregnancy”
6. **Buchanan, R.** NIH R-O1. Prenatal cigarette smoke effect on arousal of offspring.
7. **Buchanan, R.** EPA. Environmental Toxicity of Semiconductor Nanocrystals.
8. **Christian, A.D.;** **J. M. Loutsch,** **T. McKay,** **S. Vanderpool,** K. L. Yanowitz. GK. Fellows and Understanding Biodiversity: Genetic, Species, and Ecosystem Diversity in Aquatic Ecosystems. NSF - Grad Teaching Fellows in K-12. Submitted: 19 June 2006. \$2,998,746
9. **Christian, A.D.;** **T. McKay,** **J. Loutsch,** **S. Vanderpool,** K. Yanowitz, C. Dowling, **J. Bouldin,** **D. Gilmore,** S. Green, J.M. Hall, **M. Huss,** J. T. Kennon, C. Miller, **M. Srivatsan,** and J. Trautwein. GK12 Fellows and Understanding Biodiversity: Genetic, Species, and Ecosystem Diversity in Aquatic Ecosystems. (NSF).
10. **Gilmore, D.** Prevalence of *Staphylococcus aureus* and Methicillin-Resistant *S. aureus* among Nursing and Allied Health College Students, NIOSH ERC Pilot Projects Research Training Program, Co-PI's Lisa Shefelton and William Payne.
11. **Hood, E.E.** Engineering Plants to Alter the Lignocellulose Content and Reduce the Thermochemical Pretreatment Process. \$10,000
12. **Hood, E.E.** A Cost Efficient Method for Growing Nonfood Products in Transgenic Plants. \$10,000.

13. **Hood, E.E.** Engineering process traits in biomass for lignin degradation to improve ethanol production. \$22,403.
14. **Hood, E.E.** Seed coat/ fruit markers for Genetically Modified Plants. \$497,015.
15. **Hood, E.E.** Structural proteins in maize silk - using reverse genetics to ascertain the role of P/HRGPs. \$434,778
16. **Hood, E.E.** Development of Novel, Inducible Processing Traits in Corn for Ethanol Production. ~\$20,000
17. **Johnson, R.L.** and R. Hannigan. 2006. Natal homing and population structure of walleye (*Sander vitreus*) in Greers Ferry, Arkansas. NSF. Population Biology Program. \$447,236.
18. **Johnson, R.L.** and **A. Romero.** Genetic structure of and gene flow in cavefishes of North America. The Kays Foundation. \$18,098.
19. **Johnson, R.L.** and **A. Romero.** Genetic structure of and gene flow in cavefishes of North America. The Kays Foundation. \$18,098.
20. **Johnson, R.L.;** **A. Romero** and **D. Noltie.** 2006. Gene flow, mechanisms of speciation and evolution of troglomorphic features in the family Amblyopsidae, a North American family of cavefishes. NSF. Population Biology Program. \$340,144.
21. **Loutsch, J.M.** Phenotypic Profile of Osteosarcoma, 2006 with student Brittany Burton. \$3400.
22. **Loutsch, J.M.;** **D. Gilmore** and **A. Grippo.** Antimicrobial/Antiseptic Testing of Silver Compounds Created for Tokusen, USA.
23. **Medina-Bolivar, F.,** M. Dolan. Harnessing the biosynthetic potential of plants for the production of medicinal products. Kay's Foundation. 07/01/07-06/30/08; \$ 19,936. Submitted Oct 1, 2006.
24. Radin, D.; **C. Cramer,** and **E. Hood.** ABI Delta Innovation Project; NSF Partnership for Innovation (PFI) Program; \$592,356; 05/01/07 – 04/30/10.
25. **Romero, A., A. Christian & S. Trauth.** 2006. Rehabilitation and Computerization of Fluid-Based Zoological Collections at Arkansas State University. National Science Foundation. Budget: \$306,451.
26. **Romero, A.** and **R.L. Johnson.** 2006. Genetic structure of the southern cavefish, *Typhlichthyes subterraneus*. North American Native Fishes Association. \$982.

27. **Romero, A. and R.L. Johnson.** 2006. Genetic structure of the southern cavefish, *Typhlichthyes subterraneus*. North American Native Fishes Association. \$982.
28. **Romero, A. & R. Hannigan.** 2006. Beckman Scholars Program. Beckman Foundation. Approx. \$250,000.
29. **Srivatsan, M.** Comparative in vivo and in vitro study on nicotine's effect on neuron development. Research Salary Support for a postdoctoral fellow from Phillips Morris for the Direct cost, \$40,000.
30. Tomberlin, K.; **T. McKay**, and K. M. Loftin. Identification and Management of Insecticide Resistant Darkling Beetle Populations in Poultry Facilities located in Texas and Arkansas. United States Department of Agriculture, Southern Region Integrated Pest Management Program. Submitted: 7 December, 2005. \$163,053.
31. Wilson, L.T.; F. H. Arthur, T. Siebenmorgan, Y. Yang, M. Toews, J.-F. Meullenet, G. Reagan and **T. McKay.** 2006. Integrated Post-Harvest Rice Management and Information Delivery: Optimizing Insect Control and Grain Quality. Integrated Research, Education, and Extension Competitive Grants Program – Integrated Pest Management. CAR, 112.A, United States Department of Agriculture. \$366,833.

### 3. PRESENTATIONS

#### 3.1. Presentations to Learned Forums

1. *Anfinson, J.O.* and **J.C. Bednarz**. 2006. Analysis of microbial assemblages found on skin of feathers of abnormal passerine birds (Poster). The IV North American Ornithological Conference. Veracruz, Mexico. 6 October 2006.
2. *Anfinson, J.O.* and **J.C. Bednarz**. 2006. Analysis of microbial assemblages found on skin of feathers of abnormal passerine birds (Oral). The Arkansas Chapter of the Wildlife Society. Jonesboro, AR. 12 October 2006.
3. *Anfinson, J.O., J. Conrad,* and **J.C. Bednarz**. 2006. Abnormalities in passerine birds in northeastern Arkansas agricultural fields (Poster). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 2 March 2006. **\*\*Won Best Student Presentation Award\*\***
4. *Anfinson, J.O., J. Conrad,* and **J.C. Bednarz**. 2006. Abnormalities in passerine birds in northeastern Arkansas agricultural fields (Poster). Mid-south Society of Environmental Toxicology and Chemistry Regional Meeting. Jonesboro, AR, 25 May 2006.
5. *Anich, N.M., T.J. Benson,* and **J.C. Bednarz**. 2006. Factors influencing the home-range size and habitat use by Swainson's Warblers in eastern Arkansas (Poster). The IV North American Ornithological Conference. Veracruz, Mexico. 4 October 2006.
6. *Anich, N.M., T.J. Benson,* and **J.C. Bednarz**. 2006. Factors influencing the home-range size and habitat use by Swainson's Warblers in eastern Arkansas (Poster). The IV North American Ornithological Conference. Veracruz, Mexico. 4 October 2006.
7. *Anich, N.M., T.J. Benson, J.D. Brown,* and **J.C. Bednarz**. 2006. Factors influencing the home-range size and habitat use within home ranges by Swainson's Warblers in eastern Arkansas at White River National Wildlife Refuge, Arkansas (Oral). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 3 March 2006.
8. Argelia, F., B. Woffenden, J. Martinez-Quintana, L. Nopo-Olazabal, C. Nessler, and **F. Medina-Bolivar**. ORNA: A master regulator of genes in the tobacco plant. ABI Fall Research Symposium. Little Rock, AR. October 26, 2006.
9. Badanavalu, M., S. Mishra, **M. Srivatsan,** L. Nopo-Olazabal, K. Brown, and **F. Medina-Bolivar**. Hairy root extract from *Hyoscyamus muticus* has a dose dependent effect on oxidative stress mediated cell death in PC12 cell neurons". ABI Fall Research Symposium. Little Rock, AR. October 26, 2006.

10. *Bader, T.J.* and **J.C. Bednarz**. Reproductive success and causes of nest failures for Mississippi Kites in the White River National Wildlife Refuge, Arkansas (Poster). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 2 March 2006.
11. *Bader, T.J.* and **J.C. Bednarz**. 2006. Home range and habitat use of Mississippi Kites in the White River National Wildlife Refuge, Arkansas (Oral). The IV North American Ornithological Conference. Veracruz, Mexico. 4 October 2006.
12. *Bader, T.J.* and **J.C. Bednarz**. 2006. Home range and habitat use of Mississippi Kites in the White River National Wildlife Refuge, Arkansas (Oral). The IV North American Ornithological Conference. Veracruz, Mexico. 4 October 2006.
13. *Bader, T.J.* and **J.C. Bednarz**. 2006. Home range and habitat use of Mississippi Kites in the White River National Wildlife Refuge, Arkansas (Oral). The Arkansas Chapter of the Wildlife Society. Jonesboro, AR. 12 October 2006.
14. **Bednarz, J.C.**, *T.J. Bader, A.M. St. Pierre,* and K. Rowe. 2006. The current status and conservation of breeding Swallow-tailed Kites in Arkansas (Oral). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 3 March 2006.
15. *Benson, T.J., J.D. Brown, N.M. Anich* and **J.C. Bednarz**. 2006. Using elevation data to improve GIS-based estimates of habitat availability: a case study with Swainson's Warblers at Whiter River National Wildlife Refuge (Poster). The Southeast Partners in Flight Annual Meeting, Tallahassee, FL. 2 March 2006.
16. *Benson, T.J., N.M. Anich, J.D. Brown,* and **J.C. Bednarz**. 2006. Nest-site selection and factors influencing reproductive success of Swainson's Warblers in eastern Arkansas (Oral). The IV North American Ornithological Conference. Veracruz, Mexico. 6 October 2006.
17. *Benson, T.J., N.M. Anich, J.D. Brown,* and **J.C. Bednarz**. 2006. Nest-site selection and factors influencing reproductive success of Swainson's Warblers in eastern Arkansas (Oral). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 3 March 2006.
18. *Benson, T.J., N.M. Anich, J.D. Brown,* and **J.C. Bednarz**. 2006. Nest-site selection and factors influencing reproductive success of Swainson's Warblers in eastern Arkansas (Oral). The Arkansas Chapter of the Wildlife Society. Jonesboro, AR. 12 October 2006.
19. *Benson, T.J., J.C. Bednarz,* and R.A. James. 2006. Climate-change impacts on the distribution of overwintering ducks in the Mississippi Flyway, U.S.A. (Oral presentation made by Bednarz). The IV North American Ornithological Conference. Veracruz, Mexico. 7 October 2006.

20. **Bouldin, J.L.** 2006. Land use changes in the Mississippi Delta, Interdisciplinary Roundtable Series – Deltas of the World, Arkansas State University, 13 October.
21. **Bouldin, J.L.** *T Ingle, L Cox, JM Stirrat, R Buchanan, RE Hannigan.* Toxicological effects of nanoparticles as measured with standard laboratory biomonitoring. Poster at the 27<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry, Montreal, Canada, 2006.
22. **Bouldin, J.L., Ingle, T.M., Cox, L.O., Stirrat, J.M., Buchanan, R.A., Hannigan, R.A.,** 2006. Toxicological Effects of Nanoparticles as Measured With Standard Laboratory Biomonitoring, 27<sup>th</sup> Annual Meeting, Society of Environmental Toxicology and Chemistry, Montreal, Canada, 5-9 November.
23. **Bouldin, J.L., Farris, J.L.,** Moore, M.T., Smith, S. Jr., Stephens, W.W., Cooper, C.M. 2006. Evaluated fate and effects of atrazine and lambda-cyhalothrin in vegetated and unvegetated microcosms, 54<sup>th</sup> Annual Meeting of North American Benthological Society, Anchorage, AK, 4-8 June.
24. **Bouldin, J.L., Farris, J.L.,** Moore, M.T., Smith, S. Jr., Stephens, W.W., Cooper, C.M. 2006. Microcosm evaluation of the fate and effects of atrazine and lambda-cyhalothrin in unvegetated and vegetated monocultures, p. 17, In: Abstracts of the MidSouth Society of Environmental Toxicology and Chemistry, Jonesboro, AR, 24-26 May.
25. *Brandebura, S. C., R. E. Jr. Medlin,* and **T. S. Risch.** New evidence for maternity colonies of the Indiana bat in the delta of Arkansas. Arkansas Academy of Science 90th Annual Meeting. April 2006, Lyon College, Batesville, Arkansas.
26. *Brandebura, S. C., R. E. Jr. Medlin,* and **T. S. Risch.** New evidence for maternity colonies of the Indiana bat in the delta of Arkansas. Arkansas Academy of Science 90th Annual Meeting. April 2006, Lyon College, Batesville, Arkansas.
27. *Brandebura, S. C.,* and **T. S. Risch.** Roost Tree use by Male Indiana Bats at a hibernacula near the Southwestern Extreme of their Range. Arkansas Chapter of the Wildlife Society, Annual Fall Meeting. March, 2006. Harrison, Arkansas.
28. *Brandebura, S. C.,* and **T. S. Risch.** Roost Tree use by Male Indiana Bats at a Hibernaculum Near the Southwestern Extreme of their Range. 16<sup>th</sup> Colloquim on Conservation of Mammals in the Southeastern United States. February, 2006. Chattanooga, Tennessee.
29. *Brandebura, S. C.,* and **T. S. Risch.** Roost Tree use by Male Indiana Bats at a hibernacula near the Southwestern Extreme of their Range. Arkansas Chapter of the Wildlife Society, Annual Fall Meeting. March, 2006. Harrison, Arkansas.

30. *Brandebura, S. C.*, and **T. S. Risch**. Roost Tree use by Male Indiana Bats at a Hibernaculum Near the Southwestern Extreme of their Range. 16<sup>th</sup> Colloquium on Conservation of Mammals in the Southeastern United States. February, 2006. Chattanooga, Tennessee.
31. Broce, A. and **T. McKay**. Oviposition behavior of *Muscidifurax zaraptor*, a pteromalid parasitoid. The 54<sup>th</sup> Annual Meeting of the Entomological Society of America. Indianapolis, IN, December 10-13, 2006.
32. *Brown, J.D., T.J. Benson*, and **J.C. Bednarz**. 2006. Vegetation characteristics and arthropod abundance associated with habitat occupancy of Swainson's Warblers at White River National Wildlife Refuge, Arkansas (Oral). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 3 March 2006.
33. *Brown, J.D., T.J. Benson*, and **J.C. Bednarz**. 2006. Vegetation characteristics and arthropod communities associated with habitat occupancy of Swainson's Warblers in eastern Arkansas (Poster). The IV North American Ornithological Conference. Veracruz, Mexico. 6 October 2006.
34. *Brown, J.D., T.J. Benson*, and **J.C. Bednarz**. 2006. Vegetation characteristics and arthropod communities associated with habitat occupancy of Swainson's Warblers in eastern Arkansas (Oral). The Arkansas Chapter of the Wildlife Society. Jonesboro, AR. 12 October 2006.
35. **Buchanan, R.**; M. Milanova, T. G Smolinski, G. Boratyn and A. A Prinz, 2006. Decomposition and Analysis of Cortical Evoked Potentials using ICA. MidSouth Computational Biology and Bioinformatics Society, Baton Rouge, LA 2006.
36. *Clarke, D.*; **R.A. Buchanan** and R Hannigan. Headspace extraction GC-MS detection of drugs in serum. Platform presentation at Pittcon on Analytical Chemistry and Applied Spectroscopy, Orlando FL, 2006.
37. **Cramer, C.L.** 2006. Plant-based production of vaccine antigens, carriers and cytokine. St. Jude Children's Research Hospital, June 16, 2006. (Invited Seminar)
38. *DeViney, S. A., R. J. Baxter*, and **T. S. Risch**. Observation of an unusual prey item delivered to an Eastern Bluebird nest. Arkansas Academy of Science 90th Annual Meeting. April 2006, Lyon College, Batesville, Arkansas.
39. *DeViney, S.*, and **T. S. Risch**. Are Structurally Produced Plumage Colors Honest Signals of Quality? Poster presentation Southeastern Partners in Flight annual meeting. March, 2006. Tallahassee, Florida.

40. *DeViney, S. A., R. J. Baxter, and T. S. Risch.* Observation of an unusual prey item delivered to an Eastern Bluebird nest. Arkansas Academy of Science 90th Annual Meeting. April 2006, Lyon College, Batesville, Arkansas.
41. *DeViney, S., and T. S. Risch.* Are Structurally Produced Plumage Colors Honest Signals of Quality? Poster presentation. Southeastern Partners in Flight annual meeting. March, 2006. Tallahassee, Florida.
42. **Farris, J.L.** Invited platform presentation, "Agricultural Runoff and Alternative Control Measures" Arkansas Crop Management Conference, Session V: Soil and Water Conservation, Little Rock, AR January 31, 2006.
43. **Farris, J.L.** Invited platform presentation, "Growing a Tech Business, Cool Tech: Environmental Monitoring" Research and Technology Transfer Workshop, Jonesboro, AR, Arkansas Biosciences Institute, January 25, 2006.
44. *Fertha, A. and T. S. Risch.* Are Feather Mites Affecting Brightness in Eastern Bluebird Chicks? Poster presentation. Texas McNair Research Conference. February 2006. University of North Texas, Denton, Texas.
45. *Fertha, A. and T. S. Risch.* Are Feather Mites Affecting Brightness in Eastern Bluebird Chicks? Poster presentation. Texas McNair Research Conference. February 2006. University of North Texas, Denton, Texas.
46. *Garcia-Rill, E. and Buchanan, R.* Smoking during pregnancy: Effects on arousal and attentional brain systems. Platform presentation at the 23<sup>rd</sup> NeuroToxicology Conference, Little Rock, AR, 2006.
47. *Gopalan, M. B., Bouldin, J.L., Farris, J.L.* 2006. Use of Biomonitoring at Farm-scale to Formulate and Assess the Impacts of Improved Cotton Farming Practices upon Reduction of Ecological Risk. Proceedings of an International Perspective on Environmental and Water Resources, New Delhi, India, 19 December.
48. *Gopalan, M.B., Farris, J.L., Bouldin, J.L.* 2006. Assessing ecological risk of improved management practices at a farm-scale using laboratory biomonitoring, 27<sup>th</sup> Annual Meeting, Society of Environmental Toxicology and Chemistry. Montreal, Canada, 5-9 November.
49. *Gopalan, M.B., Farris, J.L., Bouldin, J.L.* 2006. Use of biomonitoring at farm-scale to assess the impact of farm practices on reduction of ecological risk, pp. 18-19, In: Abstracts of the MidSouth Society of Environmental Toxicology and Chemistry, Jonesboro, AR, 24-26 May.

50. **Grippo, A.A.**; C. Brown, **S. Trauth, R.S. Grippo**, B.J. Gurley. Metabolife and Its Constituents increase Atypical Cardiac Cells, An Effect Exacerbated by Nicotine. *Annual Meeting of the Society of Toxicology*; March, 2006.
51. **Grippo, A.A.**, C. Brown, **S. Trauth, R. Grippo**, and B. Gurley. 2006. Metabolife and its constituents increase atypical cardiac cells, an effect exacerbated by nicotine. Society of Toxicology, San Diego, CA.
52. **Grippo, R.S.** Avian collisions at communication. towers during migration in Arkansas. Wings Without Borders: IV North American Ornithological Conference, Oct. 3-7, Vera Cruz, Mexico.
53. **Grippo, R.S.** 2006. Update on the National Ecological Observatory Network and ASU's Potential Selection as a NEON Node, Science Seminar Series, Department of Biological Sciences, ASU, February, 2006.
54. Gurley, B.; S.F. Gardner, K. Williams and **A. Grippo**. Hemodynamic and electrocardiographic effects of an "Ephedra-free" dietary supplement (Metabolife Ultra<sup>TM</sup>), *Annual Meeting American Society of Clinical Pharmacology & Therapeutics*; March 2006;
55. Hobbs, M., **R. Grippo, J.L. Farris**, and B.R. Griffin. 2006. Aquatic mesocosm assessment of the aquaculture therapeutic potassium permanganate – effect on ionoregulation of target animals. 27<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry, Montreal, Canada.
56. Hobbs, M.S., **R.S. Grippo, J.L. Farris**, B.R. Griffin, G.M. Ludwig, and **L.L. Harding**. 2006. Environmental fate and effects of the aquaculture therapeutic potassium permanganate: summary of Tier III and Tier IV (mesocosm) studies. Annual meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, Bismarck, AR, February 1-3.
57. Hobbs, M.S., **R.S. Grippo, J.L. Farris**, B.R. Griffin, G.M. Ludwig and **L.L. Harding**. 2006. Environmental fate and effects of the aquaculture therapeutic potassium permanganate, p. 8, In: Abstracts of the Annual meeting of the mid-South Chapter of the Society of Environmental Toxicologists and Chemists, Arkansas State University, Jonesboro, AR.
58. **Hood, E.E.** *Bioethanol as a Sustainable Energy Alternative*, for the Memphis BioWorks Development Council series luncheon at the University of Memphis, Memphis TN. July 26, 2006.
59. Ingle, T.; R Alexander, **J Bouldin** and **R Buchanan**. Absorption of semiconductor nanocrystals by the aquatic invertebrate *Ceriodaphnia dubia*. Annual Meeting of MidSouth Society of Environmental Toxicology and Chemistry. Jonesboro, AR, 2006.

60. *Ingle, T., Alexander, R., Bouldin, J., Farris, J., Buchanan, R.* 2006. Absorption of semiconductor nanocrystals by the aquatic invertebrate *Ceriodaphnia dubia*, pp. 9-10, In: Abstracts of the MidSouth Society of Environmental Toxicology and Chemistry, Jonesboro, AR, 24-26 May.
61. *Ingle, T.; J Stirrat, N Reed, K Trammell, L Cox, R Hannigan and R Buchanan.* Exposure of Mice to Semiconductor Nanocrystals and Detection Using ICP-MS". 39<sup>th</sup> Annual Meeting of the Arkansas Environmental Federation. Hot Springs, AR, 2006.
62. *Krauth, D.M.; Bouldin, J.L., Green, V.S., Baker, W.H., Wren, P.S.* 2006. Comparison of Field Use and Laboratory Simulation of Polyacrylamide to Reduce Agricultural Associated Contamination, Society for the Advancement of Chicano and Native Americans in Science, Tampa, FL, 26-28 October.
63. *Loftin, K., T. McKay, J. Pennington, D. Steelman, A. Szalanski, K. VanDevender, W. Watson, and S. Willard.* Using parasitic wasps as an IPM approach to manage filth flies in southern dairies. The 54<sup>th</sup> Annual Meeting of the Entomological Society of America. Indianapolis, IN, December 10-13, 2006.
64. *Lorence, A., B. Woffenden, L. Nopo-Olazabal, J. Martinez, C. Nessler, and F. Medina-Bolivar.* Enhanced production of specialized metabolites in tobacco over-expressing an AP2-type transcription factor. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006.
65. *Macchia, E.T., J.C. Bednarz, and R. Grippo.* Avian collisions at communication towers in Arkansas (Poster). The Southeast Partners in Flight Annual Meeting. Tallahassee, FL. 2 March 2006. **\*\*Won 2nd Best Student Presentation Award\*\***
66. *Macchia, E.T., J.C. Bednarz, and R. Grippo.* 2006. Avian collisions at communication towers in Arkansas (Poster). Mid-south Society of Environmental Toxicology and Chemistry Regional Meeting. Jonesboro, AR, 25 May 2006.
67. *Macchia, E.T., J.C. Bednarz, and R. Grippo* Avian collisions at communication towers during migration in Arkansas (Oral). The IV North American Ornithological Conference. Veracruz, Mexico. 7 October 2006.
68. *Macchia, E.T., J.C. Bednarz, and R. Grippo.* Avian collisions at communication towers during migration in Arkansas (Oral). The Arkansas Chapter of the Wildlife Society. Jonesboro, AR. 12 October 2006. . **\*\*Won Best Graduate Student Presentation Award\*\***

69. *McCord, S.B., A.D. Christian and R.S. Grippo*. 2006. Biomass dynamics of *Tipula* (Insecta: Diptera) in forested streams of the interior highlands, Arkansas, Arkansas Academy of Sciences, Lyon College, Batesville, AR 7-8 April.
70. *McCord, S.B. and R.S. Grippo*. 2006. Effectiveness of silviculture BMPs in protecting stream ecosystems in Arkansas. Annual meeting of the mid-South Chapter of the Society of Environmental Toxicologists and Chemists, Arkansas State University, Jonesboro, AR
71. *McCord, S.B. and R.S. Grippo*. 2006. Effectiveness of silviculture best management practices in protecting stream ecosystems in Arkansas, U.S.A. 54<sup>th</sup> Annual meeting of the North American Benthological Society, Anchorage, AK. June 4-8.
72. *McCord, S.B. and R.S. Grippo*. 2006. Evaluating the effectiveness of forestry management practices: benthic macroinvertebrate bioassessment of adjacent streams. 27<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry, Montreal, Canada.
73. *McCord, S. and R.S. Grippo*. 2006. The effectiveness of silviculture best management practices logging on protecting stream ecosystems in Arkansas Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, Bismarck, AR, February 1-3.
74. **T. McKay** and C. B. Dowling. The effects of metal-rich poultry litter on the metal body burden of ground-dwelling arthropods: with notes on abundance. Society of Environmental Toxicology and Chemistry (SETAC), MidSouth Regional Chapter Annual Meeting. Jonesboro, AR, May 25-26, 2006.
75. **McKay, T.** and C. B. Dowling. The effects of metal-rich poultry litter on ground beetles. 14<sup>th</sup> Annual Meeting of the Arkansas Entomological Society. Fayetteville, AR, October 13, 2006.
76. **McKay, T.** and C.B. Dowling. The effects of metal-rich poultry litter on ground beetles. 80<sup>th</sup> Annual Meeting of the Southeastern Branch Entomological Society of America, Wilmington, NC, March 5-8, 2006.
77. *McKeon, K.A.;* B Robinson, SF Ali, **R.A. Buchanan**. Changes in regional brain concentrations of dopamine, serotonin and their main metabolites associated with maternal exposure to cigarette smoke in rats. Platform presentation at Neuroscience 2006, Atlanta, GA, 2006.
78. *McKeon, K.A.;* B Robinson, SF Ali, **R.A. Buchanan**. Effects of cigarette smoke on RAS-mediated evoked potentials in rats.” Annual Meeting of the AR Chapter of the Society for Neuroscience. Little Rock, AR, 2006.

79. *M.D. McLane, KA McKeon, M Hausman, RD Skinner, E. Garcia-Rill and R.A. Buchanan.* Effects of *in utero* exposure to the constituents of cigarette smoke on sensory gating during puberty. Platform presentation at the 12<sup>th</sup> Annual Meeting of the Society for Nicotine and Tobacco Research, Orlando, FL, 2006.
79. **Medina-Bolivar, F.** Hairy roots: novel applications for plant biotechnology. First International Workshop on Hairy Roots, Jonesboro, AR, July 13, 2006.
80. **Medina-Bolivar, F.** Hairy roots: harnessing the biosynthetic potential of plant roots for agriculture and medicine. Symposium on Medicinal Plants. American Society of Horticultural Sciences Annual Meeting, New Orleans, LA, July 25, 2006.
81. **Medina-Bolivar, F., J. Condori, A. Rimando, J. Hubstenberger, K. Shelton, S. O'Keefe, and S. Bennett.** Production of resveratrol in hairy roots of peanut. ABI Fall Research Symposium. Little Rock, AR. October 26, 2006.
82. **Medina-Bolivar, F., J. Hubstenberger, J. Condori, S. O'Keefe, S. Bennett, M. Dolan.** Resveratrol production in hairy roots of peanut. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006.
83. **Medina-Bolivar, F., and L. Nopo-Olazabal.** Production of secondary metabolites and recombinant proteins in hairy roots cultured in the Liquid Lab<sup>TM</sup> bioreactor, In Vitro Biology Meeting, Minneapolis, MN, Jun 3-7, 2006.
84. **Medina-Bolivar, F., L. Nopo-Olazabal, S. Simeon, K. Shelton, J. Condori, R. Hannigan, and A. Lorence.** HPTLC as a tool to rapidly assess the elicitor responsiveness of hairy roots cultured in the Liquid Lab<sup>TM</sup> reactor. International Symposium for High Performance Thin-Layer Chromatography. Berlin, Germany. October 9-11, 2006.
85. *Medlin, R. E. Jr., and T. S. Risch.* Habitat and Population Analysis of Rafinesque's Big-eared Bat and the Southeastern Myotis in the Bottomlands of Arkansas. 16<sup>th</sup> Colloquim on Conservation of Mammals in the Southeastern United States. February, 2006. Chattanooga, Tennessee.
86. *Medlin, R. E. Jr., and T. S. Risch.* Habitat and Population Analysis of Rafinesque's Big-eared Bat and the Southeastern Myotis in the Bottomlands of Arkansas. Arkansas Chapter of the Wildlife Society, Annual Fall Meeting. October, 2006. Jonesboro, Arkansas.
87. *Medlin, R. E. Jr., and T. S. Risch.* Distribution of Arkansas's bottomland bats. Arkansas Academy of Science 90th Annual Meeting. April 2006, Lyon College, Batesville, Arkansas.

88. Milanova, M.; T.G. Smolinski, **R.A. Buchanan**, G.M. Boratyn, and A.A. Prinz, 2006.  
Using classificatory decomposition to determine the influence of *in utero* exposure to nicotine on auditory evoked potentials recorded from the rat cerebral cortex. Poster at Neuroscience 2006, Atlanta, GA, 2006.
89. *Milanovich, J. R. and S. E. Trauth.* 2006. Effects of prescribed burning on reproduction of the western slimy salamander (*Plethodon albagula*) in Arkansas. Annual meeting of the Arkansas Academy of Science. Lyon College. Batesville, AR. 7-8 April.
90. Milanovich, J. R., **S. E. Trauth**, and D. A. Saugey. 2006. Effects of prescribed burning on the western slimy salamander (*Plethodon albagula*) in the Ouachita National Forest, Arkansas. Fall meeting of the Georgia Chapter of the Wildlife Society. University of Georgia, Athens, GA. 31 August – 1 September.
91. Moore, M.T. and **J.L. Farris**. Invited platform presentation, “Biological Indicators,” Arkansas Water: Preparing Local Leaders for Water Challenges, Ferndale, Arkansas. Organized by the University of Arkansas Center for Public Policy. 2006.
92. Moser, W. E., D. J. Klemm, D. J. Richardson, B. A. Wheeler, **S. E. Trauth**, and B. A. Daniels. 2006. Investigations on the leeches of Arkansas. Annual meeting of the Arkansas Academy of Science. Lyon College. Batesville, AR. 7-8 April.
93. Nopo-Olazabal, L., S. Simeon, R. Hannigan, A. Lorence, and **F. Medina-Bolivar**.. Elicitation and secretion of sesquiterpenes in hairy roots cultured in the Liquid Lab™ bioreactor. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006.
94. *Patel, M.; M.D. McLane, K.A. McKeon, M. Hausman, R.D. Skinner, E. Garcia-Rill and R.A. Buchanan.* Effects of *in utero* exposure to the constituents of cigarette smoke on the rat N40 and P13 evoked potentials during puberty. Poster at Neuroscience 2006, Atlanta, GA, 2006.
95. *Patel, M.; M.D. McLane, K.A. McKeon, M. Hausman, R.D. Skinner, E. Garcia-Rill and R.A. Buchanan.* Effects of cigarette smoke on RAS-mediated evoked potentials in rats. Annual Meeting of the AR Chapter of the Society for Neuroscience. Little Rock, AR, 2006.
96. **Risch T. S.** An Experimental Study of the Significance of Litter Size and Costs of Reproduction in Southern Flying Squirrels. *Invited Plenary Address*. Fourth International Tree Squirrel Colloquium and First International Flying Squirrel Colloquium. March, 2006. Periyar Tiger Reserve, India.

97. **Risch T. S.** and *H. B. Fokidis*. Constraints of Reproduction on Nocturnal Foraging Activity in Southern Flying Squirrels. Poster presentation. Fourth International Tree Squirrel Colloquium and First International Flying Squirrels Colloquium. March, 2006. Periyar Tiger Reserve, India.
98. **Risch T. S.**, *H. B. Fokidis*, and T. C. Glenn. Age, Territoriality and the Mating System in a Mammalian Glider with Female-Biased Sexual Size Dimorphism. Poster presentation. Fourth International Tree Squirrel Colloquium and First International Flying Squirrels Colloquium. March, 2006. Periyar Tiger Reserve, India.
99. **Risch T. S.** and *E. C. Medlin*. The Snake, the Flycatcher, and the Flying Squirrel: the Chronicles of the Cavity. Poster presentation. Fourth International Tree Squirrel Colloquium and First International Flying Squirrel Colloquium. March, 2006. Periyar Tiger Reserve, India.
100. **Romero, A.** 2006. The real big issue between science and religion: purpose vs. uncertainty. 2006 Oxford Round Table: Science and Faith: The Great Matter. Oxford, England: 23-28 July 2006.
101. **Romero, A.** 2006. Yankee Whaling in the Caribbean and its Impact in Local Culture: The Logbooks Speak. XXXI Annual Whaling History Symposium. New Bedford Whaling Museum. 14-15 October 2006
102. **Romero, A.** & *P. Silveri*. 2006. Not All Are Created Equal: An Analysis of the Environmental Programs/Departments in U.S. Academic Institutions From 1900 Until May 2005. 1<sup>st</sup>. Environmental Studies Summit at the University of California, Santa Barbara, California.
103. **Romero, A., T. McKay, T. Risch & S. Trauth.** 2006. Biodiversity Center Project at Arkansas State University. The 21<sup>st</sup>. Annual Meeting of the Society for the Preservation of Natural History Collections and the Natural Science Collections Alliance 2006 Annual Meeting. Albuquerque, New Mexico. 23-27 May 2006.
104. Sawyer, J. A. and **S. E. Trauth.** 2006. Notes on an urban population of the western lesser siren (*Siren intermedia nettingi*), with respect to size, activity periods, and ecological associates. Annual meeting of the Arkansas Academy of Science. Lyon College. Batesville, AR. 7-8 April.
105. **Stanley, J. W.** and S. E. Trauth. 2006. Current distribution of the Queen Snake, *Regina septemvittata*, in Arkansas. Annual Meeting of the Tennessee Herpetological Society. University of Tennessee at Martin, Martin, TN. 29 September.
106. *Tomic, L.A.*, C. B. Dowling, and **T. McKay.** 2006. The effects of metals within poultry litter as an organic fertilizer on soils and Bermuda grass (*Cynodon dactylon*). Research Internships in Science of the Environment Poster Presentations, Arkansas State University, 4 August.

107. **Trauth, S. E.**, *M. L. McCallum*, and *J. R. Milanovich*. 2006. Sperm morphology and morphometrics in the ringed salamander, *Ambystoma annulatum* (Caudata: Ambystomatidae), using scanning electron microscopy. Annual meeting of the Arkansas Academy of Science. Lyon College. Batesville, AR. 7-8 April.
108. **Vanderpool, S.** 2006. Invited Presentation to the Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, February 1-3, 2006. Presented an invited presentation on Aquatic Plants of Arkansas. This was a 4 hour workshop attended by approximately 40 people.
109. *Young, H.*, C. B. Dowling, and **T. McKay**. 2006. The effects of poultry litter application on the metal body burden of ground-dwelling arthropods. Research Internships in Science of the Environment Poster Presentations, Arkansas State University, 4 August.
110. *Young, H. L.*, C. Dowling, and **T. McKay**. 2006. The effects of poultry litter application on the metal body burden of ground-dwelling arthropods. American Chemical Society 41<sup>st</sup> Midwest Regional Meeting, Quincy, IL, 26 October.
111. **Vanderpool, S.** 2006. Arkansas Science Teachers Association meeting in Little Rock, Arkansas, November 2 – 3, 2006. Presented, with Dr. Ann Ross and 4 students, a one hour talk based on work funded by the No Child Left Behind grant. Our presentation resulted in receiving an Arkansas Conference on Teaching Presenter Recognition Award for our presentation: HOTS: Higher Order Thinking in Science for the 21<sup>st</sup> Century Classroom.
112. **Vanderpool, S.** Invited Presentation to the Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, February 1-3, 2006. Presented an invited presentation on Aquatic Plants of Arkansas. This was a 4 hour workshop attended by approximately 40 people.
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### 3.2. Presentations to Public Forums

1. **Bednarz, J.** Current quail research” at the Arkansas Game and Fish Media Outing at Mammoth Springs, AR. 23-24 May 2006.
2. **Bednarz, J.** Provided Presentation entitled “Current quail research” at the Fulton County Private Lands Conservation Meeting at Cherokee Village, AR. 26 August 2006.
3. Brown, K., L. Nopo-Olazabal, J. Condori, and **F. Medina-Bolivar, Fabricio.** Analysis of inducible metabolites in potato hairy roots. Research Internships of Science of the Environment (RISE)- Summer Research Poster Session. Aug 11, 2006. (Poster)
4. **Cramer, C.** ABI Research, Outreach and Economic Development. Jonesboro Kiwanis Club, Jan. 18, 2006.
5. **Cramer, C.** ABI Research, Outreach and Economic Development. Jonesboro Lions’ Club, Feb. 6, 2006.
6. **Cramer, C.** ABI Research, Outreach and Economic Development. Jonesboro Exchange Club, April 21, 2006.
7. Freeburg, E., L. Nopo-Olazabal, R. Hannigan, S. Bennett, M. Dolan, and **F. Medina-Bolivar.** Phytochemical analysis of black cohosh (*Actaea racemosa*), sheng ma (*A. cimicifuga*) and commercial products by HPTLC and GC-MS. Research Internships of Science of the Environment (RISE)- Summer Research Poster Session. Aug 11, 2006. (Poster)
8. **Grippio, R.** Environmental Implications of Recycling. Invited talk presented to the Comprehensive Recycling and Incentive Group (C.R.A.I.G.) January 11, 2006
9. **Grippio, R.** Department of Biological Sciences, Arkansas State University” recruitment poster at the 27<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry, Montreal, Canada. Nov. 4-9, 2006.
10. **Medina-Bolivar, F.** Production of resveratrol in hairy roots. Universidad Peruana Cayetano Heredia. Lima, Peru. December 22, 2006. (Invited talk)
11. **Medina-Bolivar, F.** and M. Dolan. Production and secretion of resveratrol and resveratrol analogues in hairy roots of peanut. University of Arkansas for Medical Sciences. Little Rock, AR. November 16, 2006. (Invited talk).
12. **Romero, A.** 2006. The Arkansas State University Biodiversity Center: Preserving Arkansas Natural Heritage. Kiwinis Club, Jonesboro, Arkansas. 1 February 2006.

13. Spulecki, S., J. Condori, K. Shelton, L. Nopo-Olazabal, **A. Grippo**, and **F. Medina-Bolivar**. Effect of resveratrol and resveratrol derivatives produced from peanut hairy roots on HL60 human leukemia cells. Research Internships of Science of the Environment (RISE)- Summer Research Poster Session. Aug 11, 2006. (Poster)
14. **Srivatsan, M.** Presentation on “Coma, Brain Death and Health” at Craighead Public Library for Brain Awareness Day on 04/01/2006
15. **Vanderpool, S.** 2006. Co-sponsored, organized, and hosted, with Co-PIs, the CSI: Creating Student Co-sponsored, organized, and hosted, with Co-PIs, the CSI: Creating Student (and Teacher) Investigators Advisory Board Conference on November 6, 2006. Invited guests included external advisors, external evaluators, and regional stakeholders who participated in a day-long conference designed to develop, and inform people about the CSI: Arkansas project, funded through the ITEST program of NSF.  
(and Teacher) Investigators Advisory Board Conference on November 6, 2006. Invited guests included external advisors, external evaluators, and regional stakeholders who participated in a day-long conference designed to develop, and inform people about the CSI: Arkansas project, funded through the ITEST program of NSF.

### **3.3. Participation in Meetings and Conferences.**

1. **Bednarz, J.** Attended and advised ASU wildlife students at the Southeastern Wildlife Conclave held at Tennessee Tech, near Nashville, TN on 9-11 March 2006. 18 students participated.
2. **Bednarz, J.** Co-organizer of the Fall Meeting of the Arkansas Chapter of the Wildlife Society on 12 and 13 October in Jonesboro, AR. Was moderator for half of the presentation session on 12 October 2006.
3. **Bednarz, J.** Co-organizer of the Fall Meeting of the Arkansas Chapter of the Audubon Society on 27-29 October in Jonesboro, AR.
4. **Grippo, R.** MidSouth Society of Environmental Toxicology and Chemistry, Jonesboro, AR, 24-26 May. Meeting planner and coordinator for MidSouth SETAC, Jonesboro, AR, 24-26 May.
5. **Grippo, R.** North American Benthological Society, Anchorage, AK, 4-8 June.
6. **Grippo, R.** Society of Environmental Toxicology and Chemistry, Montreal, Canada, 5-9 November.

7. **Bouldin, J.L.**, Ingle, T.M., Cox, L.O., Stirrat, J.M., **Buchanan, R.A.**, Hannigan, R.A., 2006. Toxicological Effects of Nanoparticles as Measured With Standard Laboratory Biomonitoring, 27<sup>th</sup> Annual Meeting, Society of Environmental Toxicology and Chemistry, Montreal, Canada, 5-9 November.
8. **Bouldin, J.L.**, **Farris, J.L.**, Moore, M.T., Smith, S. Jr., Stephens, W.W., Cooper, C.M. 2006. Evaluated fate and effects of atrazine and lambda-cyhalothrin in vegetated and unvegetated microcosms, 54<sup>th</sup> Annual Meeting of North American Benthological Society, Anchorage, AK, 4-8 June.
9. **Bouldin, J.L.**, **Farris, J.L.**, Moore, M.T., Smith, S. Jr., Stephens, W.W., Cooper, C.M. 2006. Microcosm evaluation of the fate and effects of atrazine and lambda-cyhalothrin in unvegetated and vegetated monocultures, MidSouth Society of Environmental Toxicology and Chemistry, Jonesboro, AR, 24-26 May.
10. **Buchanan, R.** Platform presentation at the 23<sup>rd</sup> NeuroToxicology Conference, Little Rock, AR, 2006.
11. **Buchanan, R.** Platform presentation at Neuroscience 2006, Atlanta, GA, 2006.
12. **Buchanan, R.** Platform presentation at the 12<sup>th</sup> Annual Meeting of the Society for Nicotine and Tobacco Research, Orlando, FL, 2006.
13. **Buchanan, R.** Platform presentation at Pittcon on Analytical Chemistry and Applied Spectroscopy, Orlando FL, 2006.
14. **Buchanan, R.** 5. 2 poster presentations at Neuroscience 2006, Atlanta, GA, 2006.
15. **Buchanan, R.** Poster presentation at MidSouth Computational Biology and Bioinformatics Society, Baton Rouge, LA 2006.
16. **Buchanan, R.** 2 posters at the AR Chapter of the Society for Neuroscience. Little Rock, AR, 2006.
17. **Buchanan, R.** Poster presentation at 39<sup>th</sup> Annual Meeting of the Arkansas Environmental Federation. Hot Springs, AR, 2006.
18. **Christian, A.D.** 2006 Annual Meeting of the Ecological Society of America, Memphis Tennessee
19. **Christian, A.D.** Attended 2006 Hellbender Population and Habitat Viability Analysis Workshop, August 6 – 10, St. Louis, Missouri. Hosted by the St. Louis Zoo at the Renaissance Grand Hotel

20. **Christian, A.D.** Attended and Presented at 2006 Annual Meeting of the North American Benthological Society, Anchorage, Alaska.
21. **Christian, A.D.** Attended, Moderated, and students presented at 2006 ASU Undergraduate Scholars Day, Jonesboro, Arkansas.
22. **Christian, A.D.** Attended 2006 Workshop of the Freshwater Mollusk Conservation Society: Propagation and captive care of freshwater molluscs. 5-7 March, 2006, Columbus Zoo and Aquarium, Powell, Ohio.
23. **Christian, A.D.** Attended and students presented at 2006 Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake, AR.
24. **Cramer, C.,** Hood, E., Dolan, M., and Lorence, A. 2006. Seeding success...from people to products. ABI 2006 Fall Symposium, October 25, 2006, Little Rock, AR. (Poster).
25. Dolan, M.C., Liu, J., Reidy, M.J., Ayala, J., Medrano, G., and **Cramer, C.L.** Integrative adjuvant and carrier technologies empowering plant-based vaccines. Internat. Assoc. Biologicals Conference on News Cells for New Vaccines, Sept 28-29, Coral Gables, FL. (Poster).
26. Reidy, M., J. Liu, M.C. Dolan, and **C.L. Cramer.** 2006. Development of the RTB lectin as a carrier platform for proteins and antigens, PEGS: The Protein Engineering Summit, Cambridge Healthtech Institute, Boston, MA. Specific conferences were: "2nd Annual Difficult to Express Proteins", April 24-25, 2006 and the inaugural "Engineering Proteins for Delivery", April 26-27, 2006. (Poster)
27. Liu, J., A. McMickle, M.C. Dolan and **C.L. Cramer.** Plant-derived Murine IL-12 Mediates a Th1-favored Immune Response, Keystone Symposium on Viral Immunity: From Basic Mechanisms to Vaccines, Steamboat Springs, CO, March 28 – April 2, 2006.
28. Hobbs, M.S., **R.S. Grippo, J.L. Farris,** B.R. Griffin, G.M. Ludwig, and **L.L. Harding.** 2006. Environmental fate and effects of the aquaculture therapeutant potassium permanganate: summary of Tier III and Tier IV (mesocosm) studies. Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, Bismarck, AR, February 1-3. poster
29. **Gilmore, D.** "Exopolysaccharide-Producing Bacteria from Two Arkansas Streams.", Gilmore, D., Bradley, S., and Christian, A., South Central Branch American Society for Microbiology, Lafayette, LA, March 4, 2006. oral presentation.
30. **Grippo, A.;** C Brown, S Trauth, **RS Grippo,** BJ Gurley, "Metabolite and Its Constituents Increase Atypical Cardiac Cells, An Effect Exacerbated by Nicotine." *Annual Meeting of the Society of Toxicology* (poster presentation) March, 2006,

31. **Grippio, R.S.** Annual Meeting of the Arkansas Chapter of the American Fisheries Society, DeGray Lake Resort State Park, Bismarck, AR, February 1-3.
32. **Grippio, R.S.** Organizing committee member Arkansas Soil and Water Education Conference, ASU Convocation Center, January 12, 2006. I helped set meeting agenda, including meeting theme, specific topics, date and pricing.
33. **Grippio, R.S.** International meeting of SETAC, Montreal. Canada. Presented three posters.
34. **Grippio, R.S.** Organizing committee member for annual meeting of the mid-South Chapter of SETAC held at ASU, May 2006.
35. **Harding, L.** 2006 National Speleological Society National Convention. August 2006. Bellingham, WA.
36. **Hood, E.E.** Memphis BioWorks Development Council speaker series luncheon at the University of Memphis.
37. **Johnson, R.** Radiation Safety Training Conference. Englehardt and Associates. April 9-12. Ft. Lauderdale, FL.
38. **Loutsch, J.M., Bedrosian, B.E.,** and Craighead, D.: Revealing Accuracy of Using Morphometrics to Determine Gender of Common Ravens Through Molecular Techniques. 2006 North American Ornithological Conference, Veracruz, Mexico. October 3-7, 2006. Poster presentation.
39. **McKay, T.** The 54<sup>th</sup> Annual Meeting of the Entomological Society of America. Indianapolis, IN, December 10-13, 2006. Organized a symposium, judged the MS student poster competition and was co-author on two invited papers that were presented at the meeting.
40. **McKay, T.** 14<sup>th</sup> Annual Meeting of the Arkansas Entomological Society. Fayetteville, AR, October 13, 2006.
41. **McKay, T.** Society of Environmental Toxicology and Chemistry (SETAC), MidSouth Regional Chapter Annual Meeting, May 25-26, 2006 Jonesboro, Arkansas.
42. **McKay, T.** Annual Meeting of the South Eastern branch of the Entomological Society of America, March 5-8, 2006, Wilmington, North Carolina. Judged the MS student poster competition and presented a paper entitled: The effects of metal-rich poultry litter on ground beetles.
43. **Medina-Bolivar, F., J. Condori, A. Rimando, J. Hubstenberger, K. Shelton, S. O'Keefe, and S. Bennett.** Production of resveratrol in hairy roots of peanut. ABI Fall Research Symposium. Little Rock, AR. October 26, 2006. (Poster)

44. Argelia, F., B. Woffenden, J. Martinez-Quintana, L. Nopo-Olazabal, C. Nessler, and **F. Medina-Bolivar**. ORNA: A master regulator of genes in the tobacco plant. ABI Fall Research Symposium. Little Rock, AR. October 26, 2006. (Poster)
45. Badanavalu, M., S. Mishra, M. Srivatsan, L. Nopo-Olazabal, K. Brown, and **F. Medina-Bolivar**. Hairy root extract from *Hyoscyamus muticus* has a dose dependent effect on oxidative stress mediated cell death in PC12 cell neurons". ABI Fall Research Symposium. Little Rock, AR. October 26, 2006. (Poster)
46. **Medina-Bolivar, F.**, L. Nopo-Olazabal, S. Simeon, K. Shelton, J. Condori, R. Hannigan, and A. Lorence.. HPTLC as a tool to rapidly assess the elicitor responsiveness of hairy roots cultured in the Liquid Lab™ reactor. International Symposium for High Performance Thin-Layer Chromatography. Berlin, Germany. October 9-11, 2006. (Poster)
47. **Medina-Bolivar, F.** Hairy roots: harnessing the biosynthetic potential of plant roots for agriculture and medicine. Symposium on Medicinal Plants. American Society of Horticultural Sciences Annual Meeting, New Orleans, LA, July 25, 2006. (Invited talk)
48. **Medina-Bolivar, F.** Hairy roots: novel applications for plant biotechnology. First International Workshop on Hairy Roots, Jonesboro, AR, July 13, 2006. (Invited talk)
49. Lorence, A., B. Woffenden, L. Nopo-Olazabal, J. Martinez, C. Nessler, and **F. Medina-Bolivar**. Enhanced production of specialized metabolites in tobacco over-expressing an AP2-type transcription factor. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006. (Invited talk)
50. **Medina-Bolivar, F.**, J. Hubstenberger, J. Condori, S. O'Keefe, S. Bennett, M. Dolan. Resveratrol production in hairy roots of peanut. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006. (Invited talk-Neish Awardee)
51. Nopo-Olazabal, L., S. Simeon, R. Hannigan, A. Lorence, and **F. Medina-Bolivar**.. Elicitation and secretion of sesquiterpenes in hairy roots cultured in the Liquid Lab™ bioreactor. 2006 Phytochemical Society of North America Annual Meeting, Oxford, MS, July 8-12, 2006. (Poster)
52. **Medina-Bolivar, F.**, and L. Nopo-Olazabal. Production of secondary metabolites and recombinant proteins in hairy roots cultured in the Liquid Lab™ bioreactor, In Vitro Biology Meeting, Minneapolis, MN, Jun 3-7, 2006. (Poster)
53. **Risch, T.** Arkansas Chapter of the Wildlife Society, Annual Fall Meeting 12-13 October 2006. Jonesboro, Arkansas.
54. **Romero, A.** 1<sup>st</sup>. Environmental Studies Summit at the University of California, Santa Barbara, California. 23-25 February 2006 (speaker).

55. **Romero, A.** The 21<sup>st</sup>. Annual Meeting of the Society for the Preservation of Natural History Collections and the Natural Science Collections Alliance 23-27 May 2006 (speaker).
56. **Romero, A.** 2006 Oxford Round Table: Science and Faith: The Great Matter. Oxford, England: 23-28 July 2006.
57. **Romero, A.** 2006. XXXI Annual Whaling History Symposium. New Bedford Whaling Museum. 14-15 October 2006 (speaker).
58. **Srivatsan, M.** ABI annual symposium. Little Rock, AR, Poster.
59. **Srivatsan, M.** Society of Neurosciences Meeting, Atlanta, GA
60. **Srivatsan, M.** NIH / NCRR IDeA Symposium. Washington D.C. Poster.
61. **Srivatsan, M.** Arkansas Academy of Sciences meeting, Lyon College, Batesville, AR.
62. **Trauth, S. E.**, Annual meeting of the Arkansas Academy of Science. Lyon College. Batesville, AR. 7-8 April.
63. **Trauth, S.E.** Fall meeting of the Georgia Chapter of the Wildlife Society. University of Georgia, Athens, GA. 31 August – 1 September.
64. **Trauth, S.E.** Annual Meeting of the Tennessee Herpetological Society. University of Tennessee at Martin, Martin, TN. 29 September.
65. **Vanderpool, S.** ASU ABI Undergraduate Research Conference for summer research projects.

# Additional Documents on Achievements and Challenges

## Appendix 1

### Minutes of the Biology Strategic Planning Retreat August 15, 2006

#### PART 1: Review of current plan:

#### Major Areas:

##### 1. Emphasis on interdisciplinary instruction

**Overall goal: within 5-7 years at least 50 % of the courses offered in the department will be interdisciplinary in nature.**

#### **Interdepartmental efforts: Chemistry, Physics, Psychology and Agriculture**

We reached out to chemistry; they will accept our courses. For example, Pharmacology is cross listed with Chemistry but taught by Biology faculty; new this past Spring. However, Chemistry was not interested in team teaching. This may change now that they have a new chair. We/they may bring in an environmental chemist and have them team teach part of limnology, etc. MBS courses will be cross listed in biology. We will have a course in forensic entomology taught in 2007 as part of the forensic science program. Dr. Huss and others taught a blend of biology and physical science course to teachers this summer as part of the *No Child Left Behind Program*.

GIS course- Dr. Christian met with Dean Phillips about team teaching GIS, working toward integration of Ag and Biology courses. We will teach this course next fall, but it will not be cross listed until Ag participation has been defined. It could be taught yearly and opened up to upper level undergraduate wildlife students as well as grad students. Tina Teague may be interested in this. There is a course taught in Geography, but it is not teaching what our students need and there is no hands-on work. We are working on who gets credit for it (this is not a problem in Biology department since we get full credit for team taught courses.) Also talking about a bioinformatics minor at the graduate level, but we have not had good feed-back from Computer Sciences.

Our current course level is about 5 % interdisciplinary. However, we have not evaluated our current courses for their interdisciplinary elements. These can be interdepartmental or intradepartmental. Either two subjects are combined into one course or one subject is seen from two perspectives.

How about interaction with the Health Professions groups? Many students would benefit by better bridges with these faculty.

The majority of students who take the course People and the Environment are engineering students. (The non-engineering students tend to do less well in the course.)

So we can:

1. Establish new courses
2. Look at our current courses for cross listing (taking into consideration possible loss of perceived productivity.)

An example of cross listing with another college: Dr. Romero and Dean Gibson are developing a minor in history and philosophy of science. HSS offers several history and philosophy of science courses and we offer a history of science course. A team-taught introductory course is needed. Dr. Romero is developing one.

Get the curriculum and assessment committees together to look at our courses for interdisciplinary content.

There is also a possibility for wildlife enforcement courses (with Criminology).

Dr. Srivatsan is interested in neuroscience and psychology courses.

### **Intradepartmental Efforts**

#### **1. A first-year level laboratory course that integrates existing Biology of the Cell, Animals and Plants labs.**

This may be a 4 credit lecture/ 1 credit lab course lasting either 2 or 3 semesters. We need to put things in writing. Jeannette will do the paperwork to make this a 2000 instead of a 1000 level course.

We need a different gen ed requirement. Students in Biol. of Cell are coming in with insufficient chemistry backgrounds. Complication: other programs outside Biology (e.g. Computer Sciences) have to/ought to take the same Gen Ed Biology as our majors.

We agreed to solve one problem at a time and not worry about Computer Sciences. Curriculum Committee should get on this.

#### **2. Evolution**

Dr. Rich Grippo said that evolution is not being taught in 90 % of the high schools. Both candidates for governor of Arkansas are proposing the teaching of "intelligent design." The evolution course taught at ASU has a typical enrollment of 10 -15 students, usually science education and wildlife majors. The speciation class addresses evolution. It is the opinion of many in the department that undergraduates are not exposed enough to evolution. Our majors are short-changed, but the general education courses are doing a good job of addressing it. Should we make the evolution course mandatory? Cover more? Make an integrated course?

There is trouble with the concept of evolution in the general biology labs when the lectures are not coordinated with the lab.

Natural selection is the problem with evolution. Southerners get touchy when they realize the first humans were black. Students are shortchanged on the *process* of evolution, but we must consider the political fall out. Interdisciplinary courses with religion and philosophy may be an option. (Our students get a lot of other points of view at church.) May have micro and macroevolution courses. It was pointed out that preprofessional students don't need any more courses. There is no evolution or ecology on the MCAT. Dr. Huss pointed out that names of courses do make a difference. Teachers were "turned off" by courses that had evolution in the titles. They use the "Science as a Way of Knowing" book. Interdisciplinary course came up again, maybe as a good topic for an honors seminar. It may eventually get into the curriculum.

There is resistance to learning evolution in the ecology courses.

So we need to:

- a. Emphasize this topic more in our own courses, especially the idea of Natural Selection.
- b. Offer an honors class on what science is - students need to be exposed to the different views of various religious leaders (many of whom do not oppose the idea of evolution). Course may trickle down into general curriculum after starting in Honors.

Speciation course should be required for graduate level students.

### **3. Principles of Ecology**

Pre-med students want to skip the lab and take other courses. We could drop the separate lab and incorporate lab exercises into lecture time (e.g. every other Thursday.) Recommended for UAMS. Make it a 3 hour class and alternate lecture and lab activities.

### **4. Human Structure and Function**

Dr. Buchanan has asked for a lot of feed back on the course from his students and reports that the feedback has been good. It was proposed that it could be made a team taught class. We need more clickers.

### **5. Conservation Biology**

Not much different has been done. Used integrated teaching approaches with lecture, book reviews, problems, etc. Excellent feedback from students.

### **6. History of Biological Ideas**

Mostly graduate students taking this course, but also some local teachers. Enrollment should increase once part of the proposed minor.

### **7. Natural History of Vertebrates**

This course is team taught, with each person giving 4 lectures. Field experience.

### **8. Streamlining of the prefix system for naming courses**

We now have BIO, BOT, ZOOL, wildlife and Environment. Need to meet with Tracy Finch to be sure that the numbers match up. We need to be sure that we are not trying to do something we can't BEFORE we put a lot of effort into this. A subcommittee of Dr. D.F. Gilmore, Dr. Huss, and Dr. Bennett will look into this.

## **2. Interfacing of Teaching and Research**

Objective: to integrate research more closely to our teaching activities, particularly with undergraduates.

Specifics:

1. More emphasis on the use of original sources in courses. Dr. Srivatsan, Dr. Buchanan, Dr. R. Grippo, others gave examples of what they were doing. More education about plagiarism is needed.
2. Integrating research projects into graduate courses through data collecting, analysis, interpreting data and submission of results by students in a scientific format. Examples: aquatic biology, Case Studies (Dr. R. Grippo). We have a site license for graph pad stats software, a way to get more use of statistics in class. Both undergrads and graduates students need more writing opportunities.

Grad students don't know how to write, or are afraid of it. Teaching writing - format? Logical progression and word usage.

Ways to promote undergraduate research: Undergraduate symposium? Honors College does this in the Spring, but not very public. Suggestion that perhaps we could put up research posters in the library for better visibility? Dean Grant will display our students' posters in the library. Dr. McKay and Dr. Loutsch will talk to Dean Grant.

3. Increase problem-based learning experience in the labs.
 

In some courses, like Biology of Plants. Varies with the student. It is hard. Dr. Buchanan feels this is best done in a research lab. Fund undergraduate research, or call it a practicum.

  1. Funding
  2. Time to devote to students (hire more teachers?)

Honors department gives money for projects.  
 External funding? Has been difficult to obtain to support undergraduates (Beckman and Howard Hughes Foundations).  
 Dr. Huss, Dr. A. Grippo, and Dr. Romero will explore this. It would have to be paid as a scholarship or a stipend.
4. Expand opportunities for public presentation of research projects by undergraduate students.
 

Funding could come from Beckman or the Howard Hughes Institute.

  1. Faculty don't have a track record for publishing with undergrads
  2. ASU is not considered a university that supports undergraduate research.

Get money from ASU for special problems? Some of the tuition money perhaps. Lab fees? Money from ORTT - student research money.
5. Expose students to research seminars and learning experiences through the Access Grid
 

Classroom.  
 Dr. Srivatsan - get our access person in touch with theirs.  
 Small room, holds about 30 people. Located on the main floor of the library in the back under the CLT. There is some use of this.
6. Develop a web-based journal where undergraduate students can publish the results of their research.
 

Committee met - if publishable, why not go to a more conventional journal?  
 Could post in class projects, or a summary of work in progress. What is the impact of posting on this site on future publication? Is this double-dipping? Who would manage the site? The amount of time it would take is tremendous. Got feedback from the faculty and discussed. Concerned about logistics. This is where it stopped. Seemed like a good idea at the time. Technical issues and human resources. Faculty response was "luke-warm." Put this idea on ice.  
 We could have a web-based news letter, or link to the ASU newsletter.
7. Establish awards for undergraduate students that will support travel to state or regional meetings where they would present their research.

Committee on this has not met. We can get money for this.

### 3. Integrated Research

1. Place a high priority on recruiting people who have training and experience in integrative research.

Slim chance of hiring new tenure track faculty due to hiring freeze.

Dr. Srivatsan: NSF grant may support hiring of inter departmental faculty. Neuro engineering faculty. Indirectly through ABI.

### 2. Encourage and support groups of faculty from different disciplines (within and without the department) to work together to submit grant proposals.

CSI Arkansas - education grant - how to do science with CSI activities. Received a one million dollar grant, program aimed at kids 7-12.

ORTT round table discussions, Delta, one each week at lunch time. Ideas to propose research.

Dr. Christian - Understanding Biodiversity.

Dr. R. Grippo submitted a proposal with some Ag faculty.

3. Establish more formal opportunities for exchange of ideas and opportunities such as the Delta round table.

4. Strengthen and further develop relationships with the Environmental Sciences Program and develop similar relationships with Arkansas Biosciences Institute.

People in ABI are willing to guest lecture and collaborate with others.

5. Host scientists from other institutions, industry, and /or governmental agencies to facilitate grant writing sessions.

Ask Dr. Cramer to keep us posted. Dr. Pam Weathers is the new director of MBS, will continue ties with Worcester Poly Tech.

6. Acquisition of research funds that will foster collaborative integrative research programs.

Dr. Loutsch - with UAMS

2 EPSCOR proposals, also Dr. McKay, others.

7. Work with the Administration in order to establish a "reassignment time from teaching" policy that favors participation in collaborative integrative and interdisciplinary research projects.

8. Provide significant release time in the second or third year for pre-tenure faculty so as to enhance their research productivity midway through their pre-tenure appointment.

We are short of faculty. - We received \$1650 to cover courses for Dr.

Vanderpool.

Reassignment and new classes exacerbate the problem.

More courses for same number of students. Dr. Johnson: addresses what we offer and when so we can do our best. (Hire more instructors or offer faculty the opportunity after tenure to switch to more of a teaching or research emphasis. But those we opt for teaching will be stuck at the Associate Professor level.)

9. Link available research space to research productivity taking into consideration the actual need to house actual research activities.

10. Aggressively seek funds to maintain facilities in optimum conditions for both research and teaching.

Foundation money and lab fees have been used to remodel and improve LSE 404, 403 and 303 for teaching labs.

In October - ceremony in lab for contributions of money for lab (in honor of Prof. Byrd). Discussion of Naming rooms after emeriti faculty. Need BIG contributions.

#### 4. Other Specific Actions

4.1. Invite an external committee of peers to review the Department, and particularly, our plans for the future.

4.2. To explore fund-raising opportunities to create an endowed professorship/chair for the Department.

3. To explore changing the name of the Department into one that better reflects the new directions we are embarking in as well as making of that more a marketing tool to attract more and better graduate students.

4. To continue working on the Biodiversity Center, an initiative that has been approved by the ASU president. First try for NSF funds not successful, but 2<sup>nd</sup> try looks more promising. Only for collections in alcohol. Person to be hired with grant; salary to be eventually picked up by ASU. Person will be in charge of all the collections.

5. To develop a project for the implementation of a field station.

Indemnity clause with the forest service? Dr. Grippo talked about new roofs, signs saying property of U.S. Government. We may have already lost the facilities.

#### Breakout groups for Strategic Initiatives: Overview of Comments

##### 1. Development of a Study-Abroad program

increase students to study abroad by use of field courses and exchange programs.

Relationships with sister institutes, Pakistan, Oman, Peru, Argentina, Mexico, etc.

Develop courses abroad, endow scholarships. Opportunities for exchange with sister institutes. Some of our faculty should apply for Fulbright grants.

Time line - 1 year - develop proposal for funds, establish relationships

2<sup>nd</sup> year develop one field course

3<sup>rd</sup> year have 2 field courses running

Primary funding is from students - honor courses and open to other students.

Access to data base? Money available? Find out what we have - post on web page.

##### 2. Increase access to electronic data bases and full text articles

Web pages up to date as far as research

3. Recruiting and marketing - special preview days, attend all college nights, mailing to Jr/Sr. AP faculty at high schools, brochure, letter, developing email mentoring program by students -blind copy, FAQ's page. Send info to ABI



## **Appendix 2**

### **Follow-Up Report to the 2006 Biology Strategic Meeting**

Aldemaro Romero, September 9 2006

1. Al Christian and I met with Dean Phillips regarding the GIS course and rumors about the immediate dismissal of his counterpart at Agriculture were dispelled. We have developed a cohesive plan regarding continuing teaching GIS jointly with Agri.
2. Ron and I met with Dean Phillips and discussed the idea of developing bridges with Nursing and Health Professions. Dean Phillips recommended to start establishing contacts at the faculty level.
3. Malathi and I met with Dan Phillips and he is intervening in order to develop the Bioinformatics minor that she has proposed.
4. I met with Dean Gloria Gibson and the chairs in that college related to the new minor in history and philosophy of science in a joined meeting. I told her about our interest in furthering the idea and, specifically, a course introducing the concept of what is and what is not science. They asked me to come up with a course proposal which I did with the advice of Dave Gilmore. The course proposal has been sent to her for discussions in her college.
5. I also met with Gil Fowler, Associate Dean of the Honors College, about our idea of making this course and honors course for students campus wide. He liked the idea and invited me to present it to their students in their next meeting.
6. As you know, funding (\$5000) was secured to fund 5 research projects with undergraduates. The first projects have been selected and some of them include undergraduates from ethnic groups traditionally underrepresented in the natural sciences.
7. I have been in touch with some fundraisers in Washington DC in order to secure further funding for the Biodiversity Center. I have zeroed in on a estate of a wealthy person recently deceased.
8. I am working on developing a study abroad program with Galen University in Belize with the help of the International Students Office. I secured funding from ORTT, the Dean's Office and EVS to travel to Belize the week before Thanksgiving in order to check the place and the institution. Tanja took the initiative to contact Acadia University to develop something similar in Nova Scotia. That would provide diversity in offerings to both students and faculty for exchange and local research opportunities.

9. I met with Rick McDaniel to inform him about our decision to name the Department's Library after him and he was very appreciative. I put one of our new graduate students, Maria Isabel Ferrand, in charge to organize the holdings of the library and set up the information in a data base. The shelves are being renewed and with the help of the Dean Ellis Library librarians we are looking at the most appropriate software to handle the collection.

### **Appendix 3**

#### **Report on Physical Infrastructure Changes During 2006**

**Lora Harding**

Over the course of the spring, I built/rebuilt five computers out of parts and old computers that had been out of use for some time. These, in addition to another five I requested from ITS have helped insure that all of our graduate students and laboratories have computers that they need.

In May, I installed an ultrapure water purification system in Lab Science East 302 for use by several researchers in both Lab Sciences East and West. The system required a significant amount of wall space, electricity and drain. This required rearranging some cabinets to better utilize floor space.

This summer I coordinated the renovation of LSE 404 with monies donated to the foundation in the name of Dr. William Byrd. This involved relocating the limnology and herpetology teaching collection to another area so that the room could be painted and the old wooden specimen cabinets could be replaced with new steel cabinets. A new tile drop ceiling was installed with new lighting, and specimens were all organized and placed back in the new cabinets in a very short window of time between summer and fall semesters. New blinds and a new larger projection screen was installed in the room for the new projector that was purchased as well. The projector and mount will be installed soon. A plaque was purchased and hung in the room recognizing Dr. Byrd

I have worked this last year to provide the cabinet, refrigerator, and shelf space needed in each of the prep rooms for classrooms that laboratories are taught in. This meant doing away with much outdated equipment, broken desks and shelves, and old supplies. Some instructors and teaching assistants have taken advantage of this providing a clean and neat space to work in. This is ongoing project I feel I will constantly have to work at to maintain up to date laboratory workspace.

Over the summer, the department's collection of aquatic specimens was relocated to what will serve as our museum in LSW 437. A small office in the basement of Lab Science East holding the fish collection was cleared of specimens, books, and old lab equipment. This past fall, the shelves in the office were sanded and repainted to make suitable for holding old books,

journals and pamphlets as this room is to serve as the department Library. Several books and Journals have been donated to the department by emeriti faculty and have been placed back on the newly refinished shelves for cataloging and organizing in the coming year. A desk and computer have been placed in the room to aid in this endeavor.

Along with much of the cleaning and rearranging I facilitated in the department this past year, we gained some workspace. The greenhouse was cleared of excess equipment and lumber and cleaned to provide a nice large area for working in. This was very convenient for sanding and painting the shelves mentioned previously.

Part of the animal facility was emptied to make way for office and research space. A couple rooms were cleared of field gear being stored and desks were added to give graduate students offices. The surgery room was cleared of old outdated equipment, cabinets were hung on the walls, and racks were moved in to hold aquaria that would serve as cages for snakes. This provided the ideal workspace for a graduate student with an office next door that will be operating on the snakes, recuperating them, and returning them to the field

With the relocation of Dr. Huss's and Dr. Gilmore's research lab to LSW 545, LSE 303 become vacant and seemed best suited to serve as another teaching lab. With the teaching load on LSE 404 and 403 being so heavy, it was decided to make LSE 303 our new Mammal Laboratory. After a very thorough cleaning and a new coat of paint, a set of five hardwood display cabinets were gathered up from several places in the department and placed in 303 to display the mammal specimens in the teaching collection. Though these cabinets need some refinishing, they are a very nice asset to the department and served well the purpose for which they were chosen. I mounted a whale skeleton on the wall for display and teaching as well as several posters serving the same purposes. A projection screen was mounted and a projector mount and cables will be installed soon.

Along with the responsibilities and tasks I listed above, I spent much time last year doing all kinds of small duties. These included but were not limited to: assisting people with their computers, software, hooking up projectors, repairing laboratory equipment, cleaning microscopes, framing and hanging posters and bulletin boards, ordering lab supplies and equipment, ordering computers and projectors, getting construction estimates, and attending software demonstrations for the department.

## **Appendix 4**

### **Summary of the Results of the Departmental Self-Study for 2006 Aldemaro Romero**

Attached please find the results of the survey ("Departmental Thermometer") based on your responses. The number of participants this year was 14 in contrast to 11 the year before, so it was a larger sample size.

76 items were analyzed and compared with the survey of 1s months ago. You can find the results in the attached document. All results regarding “Do we have it?” that score between 3 and 3.99 are considered within the range of general satisfaction. Below 3 (highlighted in red) means that the faculty members feel that we are seriously deficient in that area. There were seven of such items. In order of deficiency they are:

- 10. is rich!!!
- 31. has good placement testing of students
- 75. has social interactions outside of the department
- 7. has sufficient resources (budget, facilities, people, equipment)
- 29. has large enrollment of sharp, motivated majors
- 60. has frequent assemblies to share work with colleagues
- 67. is secure and has an entrepreneurial spirit

There were 5 items that because of their scores (>4) the faculty felt we are doing very well.

In the last column I used two colors to point out areas on which the faculty felt that we had changed significantly: The ones in blue (22 items) means that we improved statistically significantly (t-test,  $p > 0.05$ ). The ones in yellow means that the faculty felt that the situation has worsened (even if the numbers remain in the 3-3.99 range); there are five of such items:

- 10. is rich!!!
- 60. has frequent assemblies to share work with colleagues
- 67. is secure and has an entrepreneurial spirit
- 20. is one where all faculty realize they exist because of the students
- 23. has a student-friendly environment

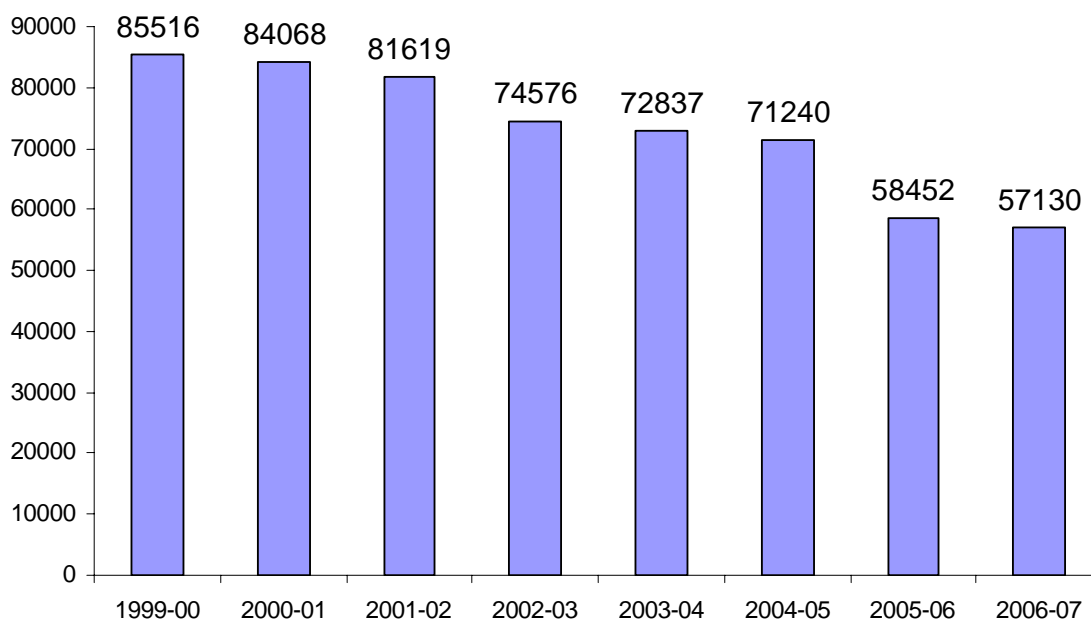
Although there is general improvement in the conditions of the department, we need to address our deficiencies head on.

Therefore, I am calling for a faculty meeting on Thursday, September 14 at 3:30 PM in LSW 437 to discuss the corrective actions we need to take.

In addition to this I wanted to inform you about a related issue (actually at the top of your disconformities) which is the departmental financial resources.

Below please find a chart I have prepared regarding the Department’s budget for supplies and services (from which we draw the day-to-day resources for running the department including travel). I used the allocated budget but adjusted it for inflation since 1999.

### Biology Budget (after inflation)



As you can see the results are quite glooming. We have lost 33.19% of our budget since the fiscal year 1999-2000. To that we need to add the facts that the copiers runs in encumbrances of \$7,792.55 every year straight from the departmental account. Also the research productivity that the University wants this department to produce affects the department supplies, travel and services budget. Also, since 1999 our number of graduate students has grown from 7 to 60. That means an almost 9-fold increase in the demand for space, computer and photocopying expenses and support for travel and publication, among other things.

## Appendix 5

### Results of Outreach Efforts for 2006

Outreach: 53 articles published in *The Jonesboro Sun* (one every week) and 54 radio shows in KASU by 34 faculty members and 5 students from 9 different academic units throughout campus.

#### 1. Articles Published in *The Jonesboro Sun*

Number	Date	Title	Author
28	14-Jan-06	<a href="#">Researchers looking for ways to convert agricultural waste into motor fuel</a>	E. E. Hood
29	22-Jan-06	Fish bones giving researchers invaluable information about habitat ( <a href="#">Page 1</a> )	R. Hannigan
30	29-Jan-06	Whales and dolphins can have stomach ulcers, too ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Romero & D. Gilmore
31	05-Feb-06	"Jiggling" molecule's structure uncovered by researchers ( <a href="#">Page 1</a> )	M. Panigot
32	12-Feb-06	<a href="#">Do funny guys get more girls?</a>	A. R. Pearce
33	19-Feb-06	Planet hunters on the lookout for nre objects in the solar system ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	J. Tillman Kennon
34	26-Feb-06	New vaccines effective against rotavirus ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Romero & J. Loutsch
35	05-Mar-06	<a href="#">Africans may have been in America earlier than believed</a>	Juliet E. Morrow
36	13-Mar-06	Researchers discover fossil of beaver-like animal in China ( <a href="#">Page 1</a> )	A. Romero & S. Kannada
37	20-Mar-06	Scientists worried about ocean acidity ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	C. Dowling
38	26-Mar-06	Morel mushroom is spring treasure for mycologists ( <a href="#">Page 1</a> )	M. Huss & J. Justice
39	01-Apr-06	<a href="#">Scientists find bad experiences may cause 'scars' in brain tissue</a>	M. Srivatsan
40	09-Apr-06	Snakes play vital role in farming communities ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	M. Solis
41	16-Apr-06	World's smallest fish discovered on Indonesian Island ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Romero & A. Christian
42	23-Apr-06	ASU preps students for medical studies ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	R. Johnson
43	30-Apr-06	ASU team seek keys to aging process ( <a href="#">Page 1</a> )	A. Lorence
44	07-May-06	ASU wildlife programs respected ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	J. Bednarz
45	13-May-06	<a href="#">Positive psychology: The importance of happiness</a>	I. Khramtsova
46	20-May-06	<a href="#">Asteroids, comets play pinball with Earth</a>	R. Lloyd & J. Tillman Kennon

47	27-May-06	ASU students play dolphin name game ( <a href="#">Page 1</a> )	A. Romero
48	05-Jun-06	ASU class studies music research ( <a href="#">Page 1</a> )	J. Bonner
49	11-Jun-06	ASU graduate student captures endangered migratory bat ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	T. Risch
50	21-Jun-06	ASU researchers seek solutions aimed at 'green power' ( <a href="#">Page 1</a> )	C. Edrington
51	25-Jun-06	Italians discover biology of romance, recipe for love ( <a href="#">Page 1</a> )	A. Pearce
52	02-Jul-06	New scientific research questions extinction theory of large American animals ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	J. Morrow
53	9-Jul-06	ASU students, staff find botanical, zoological treasures in Costa Rica ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	J. Trauth
54	15-Jul-06	ASU's best kept secret: Half million plant and animal specimens ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Romero
55	23-Jul-06	Ants said to use 'odometers' ( <a href="#">Page 1</a> )	A. Romero & T. McKay
56	30-Jul-06	ASU's teaching biology lab incorporates sophisticated technologies, approaches ( <a href="#">Page 1</a> )	A. Romero
57	06-Aug-06	Numerous herpes viruses infect humans and animals ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Prislowsky & J. Loutsch
58	13-Aug-06	Group hosting roundtables to discuss changing deltas ( <a href="#">Page 1</a> )	A. Romero
59	20-Aug-06	Researchers develop techniques to ID food ( <a href="#">Page 1</a> )	M.C. Dolan
60	27-Aug-06	BBC films research site of ASU biology professor ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	J. Trauth
61	03-Sep-06	ASU researchers describe role of ditches ( <a href="#">Page 1</a> )	J. Bouldin
62	10-Sep-06	A-State launches electronic journal of biology articles ( <a href="#">Page 1</a> )	A. Romero
63	17-Sep-06	Professor ponders on nature of Pluto ( <a href="#">Page 1</a> )	T. Kennon
64	24-Sep-06	Ants can jump farther, faster than others ( <a href="#">Page 1</a> )	A. Romero & T. McKay
65	01-Oct-06	A-State faculty using 'clickers' ( <a href="#">Page 1</a> )	A. Romero & A. Christian
66	08-Oct-06	Researchers find wet wipes purify hands, soul ( <a href="#">Page 1</a> )	A. Romero & A. Christian
67	15-Oct-06	Delta's growing Hindu communities are subject for research ( <a href="#">Page 1</a> )	A. Romero & A. Christian
68	22-Oct-06	History of Caribbean whaling is being written in Arkansas ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	A. Romero
69	29-Oct-06	Researchers keep eye on 'superbugs' ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	D. Gimore & L. Shefelton
70	05-Nov-06	A-State students garner honors for research efforts ( <a href="#">Page 1</a> )	J. Bednarz
71	13-Nov-06	Manatee found in Mississippi river, then lost, remains mystery to experts ( <a href="#">Page 1</a> )	A. Romero
72	20-Nov-06	Arsenic poisons ground water in areas of Bangladesh ( <a href="#">Page 1</a> )	C. Dowling

73	27-Nov-06	New World writing older than thought ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	C. Dowling
74	04-Dec-06	Belize offers opportunities for A-State faculty, students ( <a href="#">Page 1</a> )	A. Romero & C. Young
75	11-Dec-06	ASU historian studies mangrove swamps, ecology of East Africa ( <a href="#">Page 1</a> , <a href="#">Page 2</a> )	E. Gilbert
76	18-Dec-06	Mississippi Delta once covered with forests ( <a href="#">Page 1</a> )	J. Bouldin
77	24-Dec-06	ASU faculty studying pollution in China ( <a href="#">Page 1</a> )	R. Hannigan
78	31-Dec-06	2006 proves to be year of achievements for A-State ( <a href="#">Page 1</a> )	A. Romero

## 2. Radio Shows

Number      Date                      Title                                      Interviewee

54	25-Dec-06	<a href="#">Switched Reluctance</a>	C. Edrington
53	18-Dec-06	<a href="#">Dolphin Whistles</a>	A. Romero
52	11-Dec-06	<a href="#">Costa Rica</a>	J. Trauth
51	04-Dec-06	<a href="#">Asteroids and Comets</a>	T. Kennon
50	27-Nov-06	<a href="#">Smallest Fish</a>	A. Christian
49	20-Nov-06	<a href="#">Preprofessional Program</a>	R. Johnson
48	13-Nov-06	<a href="#">Timber Rattlesnakes</a>	M. Solis
37	06-Nov-06	<a href="#">Vitamin C</a>	A. Lorence
36	30-Oct-06	<a href="#">Wildlife Program</a>	J. Bednarz
35	30-Oct-06	<a href="#">Water in planets</a>	D. Gilmore
34	16-Oct-06	<a href="#">Planet hunters</a>	T. Kennon
33	16-Oct-06	<a href="#">Otoliths</a>	R. Hannigan
32	09-Oct-06	<a href="#">The Swallow-tailed Kite</a>	T. Bader
31	02-Oct-06	<a href="#">Humor</a>	A. Pearce
30	25-Sep-06	<a href="#">Species conservation</a>	R. Johnson
29	18-Sep-06	<a href="#">Ulcers in whales and dolphins</a>	D. Gilmore
28	11-Sep-06	<a href="#">Ephedra</a>	A. Grippo
27	21-Aug-06	<a href="#">Black man and white fish</a>	A. Romero
26	14-Aug-06	<a href="#">Jiggling Molecules</a>	M. Panigot
25	07-Aug-06	Bioblitz	G. Harp
24	31-Jul-06	Rotavirus	J. Loutsch
23	24-Jul-06	Scorpions	T. McKay

22	17-Jul-06	Nicotine in Brain	R. Buchanan
21	10-Jul-06	Biofuels	E. Hood
20	03-Jul-06	Dolphins learn by playing	S. Kannada
19	26-Jun-06	Copernicus and DNA	A. Sustich
18	19-Jun-06	<a href="#">Root biotechnology</a>	F. Medina-Bolivar
17	12-Jun-06	<a href="#">Tiger beetles</a>	T. McKay
16	05-Jun-06	<a href="#">Venomous snakes in Arkansas</a>	J. Trauth
15	29-May-06	<a href="#">Goldenrods</a>	S. Vanderpool
14	22-May-06	<a href="#">Fat pocketbook mussels</a>	A. Christian
13	15-May-06	<a href="#">Lasers</a>	S. Allen
12	01-May-06	<a href="#">Ozark hellbender</a>	B. Wheeler
11	24-Apr-06	<a href="#">Flying squirrels</a>	T. Risch
10	17-Apr-06	<a href="#">Puffballs</a>	M. Huss
9	10-Apr-06	<a href="#">Bats</a>	R. Grippo
8	03-Apr-06	<a href="#">Nerve regeneration</a>	M. Srivatsan
7	27-Mar-06	<a href="#">Alligator Snapping turtle</a>	S. Trauth
6	20-Mar-06	<a href="#">Nobel Prize Physics: precision measurements</a>	S. Allen
5	13-Mar-06	<a href="#">Nobel Prize Chemistry: Metathesis</a>	M. Panigot
4	06-Mar-06	<a href="#">Nobel Prize Medicine: ulcers</a>	D. Gilmore
3	27-Feb-06	<a href="#">Blind cave fishes</a>	A. Romero
2	20-Feb-06	<a href="#">Ivory-billed Woodpecker</a>	J. Bednarz
1	13-Feb-06	<a href="#">Bird flu</a>	J. Loutsch

### 3. TV Shows

No.	Date	Topic	Interviewee
3	TBA	Ivory-billed Woodpecker ( <a href="#">Low</a> , <a href="#">Medium</a> , <a href="#">High</a> )	J. Bednarz
2	TBA	Nerve Regeneration ( <a href="#">Low</a> , <a href="#">Medium</a> , <a href="#">High</a> )	M. Srivatsan
1	TBA	Alligator Snapping Turtle ( <a href="#">Low</a> , <a href="#">Medium</a> , <a href="#">High</a> )	S. Trauth

## Appendix 6

### Interdisciplinary Scholarly Initiatives

Development of the *Interdisciplinary Roundtables* with the participation of 10 faculty members from 8 different academic units from the natural sciences, social sciences, and the humanities.

The topic discussed was “Deltas of the World” and it was examined from the humanities, natural and social sciences perspectives.

The ASU faculty members who took part in this roundtable represented a wide spectrum of backgrounds and expertise: Dr. Jennifer L. Bouldin, Assistant Research Professor and Director of ASU Ecotoxicology Research Facility, Dr. Richard Allen Burns, Associate Professor of English and Folklore, Dr. Carolyn Dowling, Assistant Professor of Chemistry, Dr. Erik Gilbert is Associate Professor of History, Dr. Steven Green, Assistant Professor of Soil and Water Conservation, Dr. Robyn Hannigan, Director of the Graduate Program in Environmental Sciences and Associate Professor of Geochemistry, Dr. Gregory Hansen, Assistant Professor of Folklore and English, Dr. Juliet E. Morrow, Survey Archeologist with the Arkansas Archeological Survey, Dr. Nathan Young, Assistant Professor of Engineering, and the author of this article.

This group of scholars met weekly and discussed diverse topics related to deltas including landscape changes in the Mississippi Delta, arsenic in groundwater in the Bengal Basin, mangrove swamps in East Africa, environmental effects of traditional delta farming practices, historical chemical threats within global delta systems, relationships between the folklife of Bangladesh and its Delta, climate change in the Central Mississippi Valley and its impact on human settlement and subsistence, environmental history and conservation of aquatic mammals in delta regions, and the interaction of physical and biological processes in river deltas and the effects of river engineering.

Below are the results of the survey conducted among the participants.

Evaluation Statements	Strongly disagree	Disagree	Somewhat agree	Agree	Strongly agree
The roundtable was well organized and implemented				1	6
This was a stimulating intellectual experience				3	4
The presenters did a good job in selecting and presenting the topics under their responsibility				1	6
This experience may lead to a collaborative scholarly project with a colleague in the foreseeable future			2	1	4
This experience may lead to a collaborative teaching project with a colleague in the foreseeable future			1	2	4
This experience may lead me to organize a roundtable in the foreseeable future			1	3	3
I would like to repeat this experience but with another topic					7

#### Possible topics of interest to organize and/or participate

Indian Ocean, or some other ocean. I was struck by how many people were working on the areas around

the ocean's edge.

I am keen to see more of these happen and certainly would be interested in organizing one on the topics of environmental sustainability, entrepreneurial science...

Mississippi River, Earthquakes and their effects on the Mississippi Delta. Hurricane Katrina. The effects of 9/11 on Science and culture. The effects of disasters (natural or man-made) on science and culture.

Natura; disasters in Mississippi Delta. Flood of 1927 or 1937. Trip to Helena Museum

Interdisciplinary approach to sustainability. There is already a group discussion I participated in, but would love to see it expand.

Ecotones

Relationships between academic research + public policy, especially in relation to environmental + cultural issues

Same overall topic (the Delta) but different presentation

**Please add any additional comments**

The seminar prompted me to start thinking about a new project, one that will have a wait a couple of years before I can even start working on it, but I now think that my next book after the one I am working on now will be an environmental history of the western Indian Ocean.

More broadly, the seminar reminded me that there is actually some interesting work being done here and that there are some intellectually curious people on campus, something that one can easily forget in the daily grind of teaching.

I THOROUGHLY enjoyed the experience. I am disappointed that my travel schedule precluded me from participating as much as I would have liked. I gained a much deeper appreciation for my colleagues in the humanities and the insight their disciplines can bring to scientific inquiry. I am also glad to admit that I am no longer a science snob, those folks over there work VERY hard and have a great deal of scholarly work going on and deserve far more credit than I think many of us in the sciences give them.

Also I really enjoyed the fact that so many junior faculty were involved as I think this sort of activity represents a "sea change" in the way that academics approach research.

I enjoyed its format greatly - interdisciplinary discussion became so rich in the topic discussion. Thank you for including me in this group!

Was an excellent experience

Dr. Romero did an excellent job in developing + coordinating this project

I have been here since 1993, and this is by far the most stimulating and rewarding forum to provide faculty interaction that I have ever attended at Arkansas State University. Dr. Romero's choice of participants and his organization of the roundtable discussion is to be commended. I doubt anybody could do a better job.

## Appendix 7

### **Report of the trip to Belize to develop a collaborative agreement between ASU and Galen University**

Aldemaro Romero

Hopkins, Belize  
November 21, 2006

#### **1. About Belize**

1.1. History: Belize was the site of several Mayan city states until their decline at the end of the first millennium A.D. The British and Spanish disputed the region in the 17th and 18th centuries; it formally became the colony of British Honduras in 1854. Territorial disputes between the UK and Guatemala delayed the independence of Belize until 1981. Guatemala refused to recognize the new nation until 1992.

1.2. Geographic location (see map): Belize borders Mexico's Yucatan Peninsula to the north, Guatemala to the west and south, and the Caribbean Sea to the east.



1.3. Geography and climate: The country is about the size of Massachusetts and is dominated by flat, swampy coastal plain and low mountains in the south. The highest point is Victoria Peak (1,160 m). Along the 300 miles of Caribbean coastline lies the longest barrier reef in the Western Hemisphere. Belize is a country of many cayes (small islands), inland tropical forests, pristine rivers, and ancient Maya temples and sacred caves. Agricultural areas comprise about 3.4% of the country and unexploited areas (mostly covered by tropical rain forests) represent more than 90% of this nation. The climate is tropical, very hot and humid with a rainy season (May to November) and a dry season (February to May). Some hurricanes may land between June and November which may produce coastal floodings, particularly in the south.

1.4. Environmental issues: Deforestation, water pollution (from sewage, industrial effluents, and agricultural runoff); solid and sewage waste disposal. Belize is a signatory of the following international conventions: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Wetlands.

1.5. Human profile: The total population is 287,730 (July 2006 est.). Belize City, the largest populated area, has about 70,000 inhabitants. It has the lowest population density of the Western Hemisphere, yet the annual population growth is high: 2.31% (2006 est.). This is a multicultural society composed as follows: mestizo (mixed of Native American and Spaniards) 48.7%, Creole (largely blacks) 24.9%, Maya 10.6%, Garifuna (mixture of Caribbean natives and African blacks) 6.1%, others 9.7% (3-4% whites plus Chinese, Hindus, Thais and Vietnamese). The professed religions are as follow: Roman Catholic 49.6%, Protestant 27% (Pentecostal 7.4%, Anglican 5.3%, Seventh-Day Adventist 5.2%, Mennonite 4.1%, Methodist 3.5%, Jehovah's Witnesses 1.5%), other 14%, none 9.4%.



1.6. Language(s): The official language is English which is taught in all schools. Belize is the only English speaking country in Central America. The learning of Spanish is mandatory (and about 50% of the population speaks it at their home). They also speak Mayan, Garifuna (Carib + Western Africa), and Creole (spoken by all natives). Thus, most Belizeans are trilinguals if not tetralinguals.

1.7. Politics: Belize is an independent country with a stable parliamentary democracy and is a member of the British Commonwealth.

1.8. Economy: It is largely based on tourism, followed by fishing, citrus, cane sugar, bananas, and garments. The local currency is the Belizean dollar which has a fixed exchange rate with the U.S. dollar of 2:1.

1.9. Time difference: The same time with Arkansas during winter. They have no saving light time period.

## **2. About Galen University**

Galen University (named after the famous physician) is a private, non-for profit university, created in 2003 that offers undergraduate, graduate, and professional degrees in business, arts and sciences, and education. Because there is no accreditation system in Belize, Galen developed an agreement with the University of Indianapolis by which they are technically a satellite campus of that university and all their programs are accredited as the ones of the U of I. In fact, upon completion of a Galen degree the student automatically earns a degree from the University of Indianapolis.

What makes this university unique is that all the degrees it offers integrate the concept of sustainable development. Most courses are very much field oriented so field courses and trips are common place and include semester abroad programs in the U.S. and Europe as well as opportunities to be engaged in research and community service projects.

For more information about Galen University please visit: <http://www.galen.edu.bz/>

## **3. Opportunities for collaboration between Galen and ASU**

There are three major areas where I can see immediate possibilities for joint ventures between these two institutions:

3.1. Biology and ABI: More than 90% of the country is still pristine and the fact that the number one industry is tourism (essentially ecotourism) there is a great deal of interest of maintaining nature as the major attraction for visitors.

Belize has an enormous biodiversity most of it yet to be catalogued. They have 450 species of birds alone. They have a monitoring program of migratory birds between the U.S. and Belize.

Belize has developed a system of protected natural areas some of which have excellent accommodations for researchers interested in long-term studies or simply for conducting field courses. Many major international organizations have operations in Belize; they include (but are not limited to) The Audubon Society, Conservation International, The Nature Conservancy, World Conservation Society, and World Wildlife Fund. There is also a field station operated by The Smithsonian Institution. The Belize Zoo has also research, conservation and outreach programs and maintains about 140 native species not only of vertebrates but also invertebrates. Other facilities include the Cockscomb Basin Wildlife Sanctuary, the Community Baboon Sanctuary, the Crooked Tree Wildlife Sanctuary, the Belize Botanical Gardens, the Janus Foundation Medicine and Herb Trail, the Godoy's Orchid Garden, the Tropical Wings Butterfly House, the Chaa Creek Blue Morpho Butterfly Breeding Centre and an extensive cave system both inland and marine.

During my visit I was asked several times if we could send our faculty and/or graduate students to carry out studies in areas for which they have a great deficit of knowledge such as fauna and flora inventories, conservation programs and the like. The Director of the Environmental Studies Program at Galen, Dr. Colin Young (plant ecology, Ph.D. 2005 University of Connecticut), is particularly interested in developing a relationship with people at ABI since his major area of research is medicinal plants and he would like to partner with ABI researches for the identification and production of active compounds of pharmacological potential.



Dr. Young would like to develop a 2-week field course on the natural history of Belize which could take place in a rotating partnership with our faculty and this (as well as other) courses could be cross-listed between Galen and ASU. They are also very interested in sending their graduates to ASU to become our graduate students and then for those students to do their field research in Belize. They also want to spark interest among both ASU faculty and students to develop research programs in Belize.

3.2. Environmental Sciences Program: Because the rapid growth of the country, Belize faces a number of environmental problems that require the expertise of researchers like the ones we have at ASU. For example, they are extremely interested in the expertise that Dr. Jennifer Bouldin has and the infrastructure we have at ecotoxicology facility given the serious water pollution problems they are having. They also want the expertise that we can provide from our non-natural sciences faculty in areas such as environmental policy and economics.

Because of their emphasis on sustainable development, they can offer a number of case studies in that area for both our faculty and students. I can see how the students of my “Environmental Issues in Latin America and the Caribbean” course can have a field experience in that country. As our EVS program develops an undergraduate degree, they can take advantage of the experiences of Galen’s undergraduate degree and opportunities as well. By the way, Galen signed the Talloires Declaration about at the same time that we did.

3.3. Agriculture: Next to Galen’s campus there is an agricultural research station owned by the University of Belize (UB). Galen has a cooperative agreement with them and they do extensive research on plant and animal breeding. Thus, there is another potential there.

3.4. Archaeology: Because of the Mayan ruins, Belize has an extensive network of sites and their archaeology faculty happens to be the national director of archaeology.

3.5. Languages: Because their large Spanish-speaking population they are very interested in offering opportunities for our students who want to practice Spanish.

3.6. Folklore: Because the complex ethnic and cultural composition of Belize, this country has a great potential in cultural studies, particularly in the area of folklore.

4. Next steps: An umbrella agreement has been reached between Galen and ASU and now only the actual signatures are pending. Dr. Young will be visiting ASU in the Spring semester. He will give two presentations: one about his research on ethnobotany and the other about Belize and the possibilities for work in there. In addition to that he will be meeting with a wide range of ASU faculty in Biology, Environmental Sciences, Agriculture, and others in order to point out possibilities for cooperation. By the way, many of the environmental programs in Belize are funded by either the government and/or international organizations.