

**ANNUAL REPORT**  
**DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY**  
**SUNY College of Environmental Science and Forestry**  
**(June 1, 2009 - May 31, 2010; i.e., Summer 20010, AY 2009-20010)**

**NAME:**

**I. INSTRUCTIONAL ACTIVITIES**

1. Regular Course Offerings

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>	<u>No. of Lab. Sections</u>
FALL:	ESC 325/525	Energy (with T. Volk)	3	28	
	EFB 518	Systems Ecology	4	18	1
SPRING	EFB 120	Global Environment	3	116	
	EFB 496/796	Odum Seminar	1	4	
	EFB 516	Ecosystems	3	29	
	EFB 522	Biophysical Economics	3	17	

2. Non-Scheduled Course Offerings (e.g., 496, 899, 999)

	<u>Course No.</u>	<u>Title</u>	<u>Credit Hrs.</u>	<u>No. Students</u>
	EFB 495	Undergraduate Research		6
	EFB 495	Undergraduate TAs		8
	EFB /EST	Masters Research		4
	EFB/EST 999	Doctoral Research		5

3. Continuing Education and Extension (short courses, workshops, etc.)

October 16-17 Second International Biophysical Economics workshop  
 (ESF: Syracuse NY: Was written up in NY Times)  
 Role: Chief organizer

March 31: "What I did with my middle years instead of having children" ESF AFS Meeting

4. Guest Lecture Activities

<u>Course No.</u>	<u>Title</u>	<u>No. of Lectures</u>
Max 132	The Global Community (SU) Oil: Nature's premium fuel	2
EFB 220	Urban Ecology Energetics of Cities	1
PSC 318:	Technology, Politics and Environment (SU) Oil: Nature's premium fuel	2

## II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor about 25 and unofficial advisor: countless

B. Graduate Students: (Name, degree sought, starting date, month & year; if a degree was completed, please give date and full citation for the thesis or dissertation).

### MAJOR PROFESSOR

- |                     |     |      |
|---------------------|-----|------|
| 1. Aileen Guzman    | PhD | 8/03 |
| 2. David Murphy     | PhD | 8/07 |
| 3. Anna Stewart     | PhD | 8/07 |
| 4. Lindsay Cray     | MS  | 8/07 |
| 5. Ajay Gupta       | MS  | 8/07 |
| 6. Jill McMichael   | MS  | 8/07 |
| 7. Carlos Pascualli | PhD | 8/09 |
| 8. Steve Balogh     | MS  | 8/08 |

### CO-MAJOR PROFESSOR

- |                       |                            |                                     |
|-----------------------|----------------------------|-------------------------------------|
| 1. Suzanna DelGranado | PhD (with Jack Manno)      | 8/07                                |
| 2. Karla Hyde         | MS (with Myrna Hall)       | 8/05                                |
| 3. Seth Myers         | PhD (with Myrna Hall)      | 8/05 (Myrna does most advising etc) |
| 4. Whitney Lash       | PhD (with Valerie Luzadis) | 8/06                                |

### MEMBER, STEERING COMMITTEE (other than those listed above)

A few I cannot remember

### CHAIRMAN OR READER ON THESIS EXAMS, ETC.

Two

## III. RESEARCH COMPLETED OR UNDERWAY

A. Departmental Research (unsupported, boot-legged; title - % time spent)

Lots

B. 1. Grant-supported Research (source, subject, amount - total award and current year, award period starting and ending dates; list graduate research assistants supported by each grant)

National Science Foundation Long Term Ecosystem Research in the Luquillo Forest \$ 5,000,000

(my share \$152,000) (\$25,000 per year Grant period 2006-2012  
Supported Lindsay Cray and David Murphy

National Science Foundation : Positioning Rust-Belt Cities for a Sustainable Future: A Systems Approach to Enhancing Urban Quality of Life.”

NSF Urban Long-Term Research Area Exploratory Award (ULTRA-EX), (\$300,000, my research \$37,596), David Nowak (PI), Myrna Hall, Charlie Hall, Rick Smardon, and E. Carter (co-PIs) September 2009 – December 2011.

Supports Steve Balogh

National Science Foundation: Social-Ecological System Change, Vulnerability, and the Future of a Tropical City” Urban Long-Term Research Area Exploratory Award (ULTRA-EX), (\$300,000, my research \$30,000), Ariel Lugo (PI), Tischa Munoz (co-PI), March 2010 to March 2012.

Supports David Murphy

An Environmental Basis for Rural Planning in the Province of Cordoba, Argentina.” Argentine National Government Award, (\$1,000,000, my research portion is for travel, per diem, and potentially tuition for an Argentine student to study some semesters at ESF), Oscar Giayetto and Juan-Jose Cantero (PIs). May 2010 to May 2013.

US Forest Service Energy and economic analysis for the Caribbean . \$20,000 Supports David Murphy

Institute for Integrated Economic Research \$10,000 Supports Steve Balogh and two undergraduates for summer)

Various private sources: Multiple Sponsors \$4000

## 2. Research Proposals pending (as in B.1., above)

NSF 0949979 OPUS: Integrating a life time of work on energy and economics Not funded

## **IV. PUBLICATIONS** (Full bibliographic citation, i.e., do not use "with Jones," or "Jones, et al."; please list only publications published, in press, or actually submitted during this reporting period --- **do not list manuscripts in preparation**).

### A. Refereed Publications

Murphy, David J., Hall, Charles A. S. 2010. Year in review—EROI or energy return on (energy) invested. Annals of the New York Academy of Sciences. 1185, Issue Ecological Economics Reviews:102-118.

Murphy, D.J.R., Hall, M., Hall, C.A.S., Heisler, G., and Stehmean, S. and Carlos Anselma-Molina. 2010. The Relation Between Land-Cover and the Urban Heat Island in Northeastern Puerto Rico. International Journal of Climatology. DOI: 10.1002/joc.2145

Quaye, A.K., Hall, C.A.S., Luzadis, V.A. 2010. Agricultural land use efficiency and food crop production in Ghana. Journal of the Environment, Development, and Sustainability. DOI: 10.1007/s10668-010-

9234-z.

Day, John W., Hall, Charles A.S., Yanez-Arancibia, Alejandro. 2009. Biophysical Economics: Issues in the Mississippi Delta Act as a Lens for Global Issues. *EARTH*, November 2009: 56-63.

Tian, Hanqin, Gauangsheng, Chen, Zhang, Chi, Melillo, Jerry M., Hall, Charles A.S. 2009. Pattern and variation of C:N:P ratios in China's soils: a synthesis of observational data. *Biochemistry*. 98: 139-151.

Lindstrom, Britt-Marie, Hall, Charles, Salthe, Stanley. 2009. Energi, alltings grund. *Miljömagasinet*. Novemeber 13, 2009. (In Swedish)

Gowdy, J., Hall, C., Klitgaard, K., and L. Krall. 2010. The End of Faith Based Economics. *The Corporate Examiner*. 37: No. 4-5: 5-11.

Hall, C.A.S., Groat, A. 2010. Energy price increases and the 2008 financial crash: a practice run for what's to come? *The Corporate Examiner*. 37: No. 4-5: 19-26.

Yáñez-Arancibia, A., Day, J.W., and Hall, C.A.S. 2010. Energía, Economía y Cambio Climático – Ecuación. *Insoluble INE-SEMARNAT, Investigación Ambiental Ciencia y Política Publica*, Vol 2 Num 1, by June 2010.

**(In Press/revision)**

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Harris N.L., C. A.S. Hall and A. E. Lugo. (in press I think) A test of the maximum power hypothesis along an elevational gradient in the Luquillo Mountains of Puerto Rico. *Oikos*

Balogh, S., C. Hall. A. Hamilton and D. Balcarce (in press). Historic food and potential food production for Onondaga County, New York. In David Pimentel (ed) *Global economic and environmental aspects of biofuels*. Taylor and Francis

Willig, M.R. Christopher P. Bloch, Alan P. Covich, Charles A. S. Hall, D. Jean Lodge, Ariel Lugo, Whendee L. Silver, Robert B. Waide, Lawrence R. Walker, and Jess K. Zimmerman. (In press) Long-term Research in the Luquillo Mountains: Synthesis and Foundations for the Future. *Chapter 8* in *LTER Research in the Luquillo Mountains*. Cambridge University Press.

Mead, J.V., M. Connerton, C.A.S.Hall and N. Ringler. (in press) . Area compensation of primary production along a gradient of riparian forest cover for a small temperate stream. *Journal of the North American Benthic Society*.

Gowdy, J., Hall, C.A.S., Klitgaard, K., Krall, Lisi. . (in press) What Every Conservation Biologist Should Know about Economic Theory. *Conservation Biology*

Townsend, J., Hall, C.A.S., T. A. Volk, M. Serapiglia, D. Murphy, G. Ofezu, B. Powers and A. Quaye. Energy return on investment (EROI) of current and alternative liquid fuel sources and their implications for wildlife science. *Journal of Wildlife Science*. (In Press).

Murphy, D., Hall, C.A.S., Powers, B. New perspectives on the Energy Return on Investment (EROI) of Corn Ethanol. (In Revision)

B. Non-refereed Publications

C. Papers Presented at Science Meetings (give title, date, occasion, and location)

Welcome and Introduction. Second annual meeting on Biophysical Economics, Syracuse N.Y.

History, meaning and implications of EROI. AAAS special session on EROI. American Association for the Advancement of Science annual meeting, San Diego, Cal. Feb 2010.

“Peak oil, EROI and your financial future” Invited plenary talk, Green Energy Summit Milwaukee March 31.

“Peak oil, EROI and your financial future” Invited plenary talk, US Fish and Wildlife Conference, Region 7 (Alaska) Feb. 9th

“Peak oil, EROI and your financial future” Plenary talk at Trout Unlimited Keystone Coldwater Conference, Penn State, State College Pa. Feb 19.

Invited University presentations:

“Peak oil, EROI and your financial future” Ryerson College, Toronto, October 1

“Oil, Nature’s premium fuel” PSC 318 Technology, politics and the environment. Syracuse University

“Peak oil, EROI and your financial future” University of California at San Diego” February 22, 2010

“Peak oil, EROI and your financial future” University of Alaska Anchorage February 8 2010

D. Public Service Presentations (lectures, seminars, etc. to and for the public; give group or occasion, date(s), and attendance)

Public/University lecture: “Peak oil, EROI and your financial future” University of Alaska Anchorage February 2010 80 people (listed above too).

**V. PUBLIC SERVICE**

A. Funded Service (include consulting activities)

1. Government Agencies (Federal, State, Local):

none

2. Industrial and Commercial Groups, etc.

None

B. Unfunded Service to Governmental Agencies, Public Interest Groups, etc.

Many small issues

**VI. PROFESSIONAL DEVELOPMENT**

A. Professional Honors and Awards (for teaching, research, outreach, etc.)

B. 1. Activities in Professional Organizations (offices held, service as chairman, member, participant or consultant)

None

2. Professional Society Membership

AAAS (Fellow)

International society of Ecological Economics (Editorial Board)

North American Society of Ecological Economics

Very active in ASPO (Association for the study of peak oil)

3. Other Professional Activities

a. Editorial activity

Journal (s)

Responsibility

Editorial Board Ecological Economics

Managing editing for specific papers

Other (books, symposia, etc.)

Editorial Board Springer Series on Sustainability

Overview of series

Series Editor Springer Series on Energy

b. Reviewer

Journal(s)

No. of manuscripts

Ecological Economics

3

Energy

1

Energies

2

Others

2

Agency

No. of proposals

Other

c. Participation (workshops, symposia, etc.)

Name of workshop, etc.

Date

Place

C. Further Education/Re-training Undertaken, Leaves, Workshops, etc.

D. Foreign Travel (Where, When, Purpose)

None

## VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

B. College-level

President's committee on a carbon-neutral ESF

Committee to set up a renewable energy minor at ESF

Informal committee to generate a program in Ecological Economics

C. University-wide, including Research Foundation

## VIII. SUMMARY OF SIGNIFICANT ACTIVITIES AND ACCOMPLISHMENTS DURING THIS REPORTING PERIOD, ESPECIALLY THOSE MOST NOTEWORTHY AND RELATIVE TO THE COLLEGE'S AND DEPARTMENT'S MISSION. [Some of this was unchanged from last year]

**STUDENTS:** I continue teaching a very large load (6 courses) to try to bring what I think is important to our students. I am driven, perhaps foolishly, by the concept that if I do not teach e.g. Systems Ecology, Energy or Biophysical Economics it simply will not be taught. I have been greatly aided in this by graduate and undergraduate TAS for which I am appreciative and grateful. I try to maintain my perception of very serious quality within this schedule. I believe in giving serious, thinking paper assignments and tests (and I grade the "biggie" questions in all of my advanced classes and read all papers with much feedback). In addition, as I think anyone knowledgeable will tell you, there is usually a line of students waiting for personal interaction with me essentially every afternoon.

My graduate students are doing very well and I was pleased to see that three of five teaching fellows went to my students. Anna Stewart continues to receive about every possible prize including a Fulbright for her PhD research. My

former graduate students continue to receive what I consider premium job offers. I listed half a dozen last year who received positions at premium Universities and Institutes while forgetting that Mary Killilea started as tenure track assistant professor at NYU. Ye Qi of Tsinghua University (“China’s MIT”) was chosen to appear on Chinese Television with Secretary of State Clinton, Hanquin Tian is distinguished Professor at Auburn and on and on.

DEPARTMENT/COLLEGE: I believe that I bring our programs and students at ESF to the world very effectively in a series of high quality and high profile papers in, for example, Earth, BioScience and American Scientist, as well as many disciplinary journals in energy, modeling, ecology and increasingly economics. I will be featured on the Discovery Channel special four part series on “Energy” this summer (I have been filmed for many hours at two locations, including with my former PhD student Nancy Harris). Our Biophysical Economics approach garnered some very large fruits this year with coverage of our Syracuse meeting in the New York Times and the publication of our papers in “The Corporate Examiner”. We have predicted all of the financial (and environmental) chaos of recent years for decades and believe that we understand them better than most.

Peak oil for the world, predicted by Hubbert in 1968 and in my own papers since 1975, occurred unequivocally in July of 2008. Energy has come to the forefront in our society, again, and my guess is to stay. I find that both my earlier and my most recent work is gaining a great deal of attention, although in a very uneven way. I remain very much in demand as a speaker on energy and its relation to environment. For example I was an invited and very effective plenary speaker at three national meetings, AAAS had a special session on my most important contribution (EROI) and I was also an invited speaker at 4 colleges and universities. I am editing a new series on Energy at Springer, a series designed to back up my main project now, the book “Energy and the Wealth of Nations”. I was invited to join the scientific advisory board of the Institute for Integrative Economics, invited to appear in Congressional and other testimony by economist J.K. Galbraith (Son of...) and so on. High level resource and financial people call or email me several times a week (today from South Africa).

I run an energy list serve with about 500 members where I distill and send out at weekly intervals what I believe to be the most important energy and energy/economic information.

I have also been interviewed for local TV number of times and, as mentioned, will be featured on the Discovery Channel.

My assessment of my year:

**SELF:** I am now 67 and am aware every day of the long shadow of aging. I have to think about how long I can play this game and at what level. It is very hard for me to contemplate retiring because I do not know who I am if I am not Professor Hall. I fish, read and travel all I wish and have few other things I wish to do. Nevertheless I believe that my abilities and productivity as a teacher and scientist show little if any indication of decline. I taught 6 serious and very well regarded classes (5 and a seminar) with frequently very positive student responses (“life changing” and “best class I ever took” were not rare comments verbally or in writing). Additionally I take pride in the very unique nature of what I teach: I think I add an important and different perspective to our program with my emphasis on systems, ecosystems and energy approaches to natural systems and systems of humans and nature studied as ecosystems. I thank EFB and my other Departments for continuing to support me with the most incredibly responsible and gifted TAs I could ever wish for. Certainly they deserve much credit for the success of my courses. While there is always room for improvement (always in organization) my evaluations, remarks of students years later and my own evaluation is that I continue to contribute a great deal to three Departments. In addition I published nine papers this year, and about fifteen if we count newly accepted papers (some overlap), often in excellent places (Last year two in BioScience and one in American Scientist, this year one in Earth (perhaps the Earth scientist’s equivalent of BioScience) and two in a very different venue: The Corporate Examiner. Meanwhile I continue to publish in appropriate good disciplinary Journals, this year International Journal of Climatology and (assuming the acceptance of revisions) Oikos. I am very excited about that paper (Nancy Harris’ PhD work) which tests at an ecosystem level Howard Odum’s Maximum Power Principle. Finally I am starting on a new venture: Urban Ecology, with two new NSF grants from Ultra and one paper already accepted.



I also believe, as so nicely put by Karin Limburg last January at the Hardy L. Shirley Faculty Mentoring Colloquium, that after many years “in the wilderness” that my work is beginning to be taken much more seriously, or perhaps to be taken seriously by a considerably larger number of people. This is true to the effect that I have told a number of friends that I have become a “micro-celebrity”, having recently been filmed for PBS, extensively for the Discovery Channel four part series on Energy, written up in the New York Times (our Biophysical Economics conference last October), interviewed for Forbes yesterday and so on. The annual meeting of the American Institute for the Advancement of Science had a special session, organized by Cary King of the University of Texas, where 6 US energy analysts, including myself as an invitee, discussed the current state of EROI, energy return on investment, the main product of my life’s work. Additionally I am sought more and more by members of the financial community as it becomes increasingly clear that our energy supplies can no longer grow and this translates into severe limitations on economic growth. The recent behavior of the entire economy, the fact that 40 odd of our 50 states, including our own, are in severe economic distress, the erratic and downward behavior of the stock market are all quite explicable by our analysis and indeed were predicted by our earlier publications. We are attempting to investigate possible adaptations to these new circumstances through our two new urban ecology programs.

I have to consider what might remain at ESF after I am gone from here or from the Earth. I take great satisfaction that Systems Ecology and Ecosystems, what I was brought here to develop, are strong and healthy, that we have a functional new energy minor and it will soon be a major and that we have a formal course in Biophysical Economics. Our Environmental Sciences program is more formalized and perhaps strengthened, although with less punch than I envisioned. I have begun working with about 5 other faculty members to create unified undergraduate programs (minor etc) in Ecological Economics of which my newly named Biophysical Economics course will be key.

To my and many others’ astonishment there does not exist at NSF or even DOE programs to fund the kind of research I consider most important. Nevertheless I do have in operation at this time three NSF grants of which I am co-PI, one from the Forest Service and the promise of about \$100,000 in private money. Additionally our group in Cordoba Argentina has received a \$1 million grant for integrated land and energy planning for the Argentine Pampas. I remain the original loaves and fishes guy and have 11 graduate students all of whom were supported in some way this year.

As to what I have done professionally all I can say is that I continue, as always, to integrate the physical sciences with biology and social sciences using what I believe to be rigorous science as I try to prepare students at all levels at this University and the world for what I perceive to be a very different energy/economic future for which there is very little understanding or preparation. But I am not a policy person: I am interested in science, in how ecosystems work, including the human-dominated ecosystems that constitutes the majority of the terrestrial surface of the Earth. I seek to understand these systems and promulgate that understanding to an energy-illiterate world and scientific establishment.

**IX. A. FUTURE PLANS, AMBITIONS, AND POTENTIAL CONTRIBUTIONS FOR YOUR OWN PROFESSIONAL DEVELOPMENT AND THE ENHANCEMENT OF THE PROGRAM IN ENVIRONMENTAL AND FOREST BIOLOGY (brief summary)**

**B. PROJECTED ACTIVITIES FOR NEXT YEAR**

1. Summer 20010

- a. Course(s) to be offered  
none

b. Proposed research activity

- 1) Continue energy work
- 2) Finish "Energy and the wealth of Nations"
- 3) try to finish up some earlier Estuarine biology papers

c. University, professional society, and public service  
I continue to work on Campus energy committee

2. Fall Semester 2008

a. Course(s) to be offered

:	EST 325/525	Energy (with T. Volk)	3	
	EFB 518	Systems Ecology	4	1

b. Proposed research activity

More of the same, mostly on energy and its relation to the economy

c. University, Professional society, and public service

Will teach Systems Ecology (with Myrna Hall) at National Universidad de Rio Cuarto, Argentina

3. Spring Semester 2009

Sabbatical to consolidate energy and general teaching material to be able to hand off courses to others and to undertake funded research in Argentina.