

ANNUAL REPORT: June 1, 2009 – May 31, 2010
 (i.e., Summer 2009, AY 2009-2010)
 DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
 SUNY-ESF

NAME: Roy A. Norton

I. INSTRUCTIONAL ACTIVITIES

1. Regular Course Offerings

Course No.	Title	Credit Hrs.	No. Students	No. of Lab. Sections
------------	-------	----------------	-----------------	-------------------------

SUMMER:

FALL:

SPRING:	EFB 355	Invertebrate Zoology	4	41	2
---------	----------------	-----------------------------	----------	-----------	----------

NOTE: PLEASE INDICATE WHICH COURSE(S) HAD A SERVICE-LEARNING COMPONENT AND BRIEFLY EXPLAIN THE NATURE OF THIS COMPONENT.

NONE

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

Course No.	Title	Credit Hrs.	No. Students
EFB 496	Effects of Pesticide Runoff	3	1
EFB 495	Experience in College Teaching	2	1
EFB 498	Research in EFB	5	1
EFB 796	Taxonomy of Soil Arthropods	1	1

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

4. Guest Lecture Activities

Course No.	Title	No. of Lectures
EFB 132	Orientation Seminar: EFB	2
EFB 215	Interpreting Science Through Art	2

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor _28_ and unofficial advisor **_sorry ... this is too vague to put an honest number on_**)__

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

CO-MAJOR PROFESSOR

MEMBER, STEERING COMMITTEE (other than those listed above)

Jacob Wickham PhD

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

III. RESEARCH COMPLETED OR UNDERWAY

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

1. **Evolution and ecology of asexuality in oribatid mites, based on DNA sequences (with German colleagues M. Maraun, S. Scheu and students - several projects funded through the University of Goettingen). 3%**
2. **Megachthoniidae, a new genus and family of primitive mite from northern New Zealand – 2%**
3. ***Gerdia parki* – a new genus of oribatid mite from North America (with L. Miko, European Commission, Brussels) – 3%**
4. **Taxonomic distribution of alkaloid toxins in oribatid mites (with R. Saporito and M. Garrafo, NIH) – 1%**
5. **Molecular evidence for the diphyletic origin of mites (with J and M Dabert, Adam Mickiewicz University, Poznan, Poland) – 1%**
6. **Functional anatomy of ptychoid oribatid mites as revealed by synchrotron X-ray microtomography (with M. Heethoff and students, Tübingen University, Germany) – 2%**
7. **Evolutionary convergence in defensive mechanisms of oribatid mites (with M. Maraun, S. Scheu; funded through al University of Goettingen, Germany) – 2%**

8. *Paraquanothrus*, a new genus of relictual oribatid mites from ephemeral rock-pools in Utah and Georgia (with E. Franklin, Manaus, Brazil) – 1%

9. Redescription of the amber fossil oribatid mite *Scutoribates perornatus* (with E. Sidorchuk, Moscow, Russia) – 2%

10. Ultrastructural anatomy of the gnathosoma of *Archezogozetes longisetosus*, using TEM and synchrotron microtomography (with G. Alberti and M. Heethoff, Greifswald and Tuebingen, Germany, respectively) – 2%

- 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)
2. Research Proposals pending (include information as in B.1., above).
3. Research Proposals submitted, but rejected (include information as in B.1., above)

C. Other extramural funds

Approximately \$1,500 from the Universities of Darmstadt and Goettingen, Germany, to support travel and accommodation costs associated with service on PhD defense and presentation of seminar (see below)

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

Seniczak, S., Norton, R.A. and Seniczak, A. 2009. Morphology of *Hydrozetes confervae* (Schrank, 1781) and *H. parisiensis* Grandjean, 1948 (Acari: Oribatida: Hydrozetidae), and keys to European species of *Hydrozetes* Berlese, 1902. *Zoologischer Anzeiger* 248: 71-83.

Maraun, M., Erdmann, G. Schulz, G. Norton, R., Scheu, S. and Domes, K. 2009. Multiple convergent evolution of arboreal life in oribatid mites indicates the primacy of ecology. *Proceedings of the Royal Society B* 276: 3219-3227.

Seniczak, S., Norton, R.A. and Seniczak, A. 2009. Morphology of *Eniochthonius minutissimus* (Berlese, 1904) and *Hypochthonius rufulus* C. L. Koch, 1835 (Acari: Oribatida: Hypochthonioidea). *Zoologisches Anzeiger* 59: 373-386.

Schmelzle, S., Helfen, L., Norton, R.A., and Heethoff, M. 2009. The ptychoid defensive mechanism in Euphthiracaroida (Acari: Oribatida): A comparison of muscular elements with functional considerations. *Arthropod Structure & Development* 38: 461-472.

Heethoff, M. and Norton, R.A. 2009. A new use for synchrotron X-ray microtomography (SR- μ CT): three-dimensional biomechanical modeling of chelicerate mouthparts and calculation of theoretical bite forces. *Invertebrate Biology* 128:332-339.

Norton, R.A., Franklin, E. and Crossley, D.A., Jr. 2010. *Scapheremaeus rodickae* n. sp. (Acari: Oribatida: Cymbaeremaeidae) associated with temporary rock pools in Georgia, with key to *Scapheremaeus* species in eastern USA and Canada. *Zootaxa* 2393: 1-16.

Norton, R.A. and Corpuz-Raros, L. 2010. *Nothrolomania samarensis* sp. n. (Acari: Oribatida: Hypochthoniidae) from Samar

Island, Philippines. *Systematic and Applied Acarology* 15: 39-46.

Norton, R.A. 2010. Systematic relationships of Lohmanniidae (Acari: Oribatida). Pp 9-16 *in*: Trends in Acarology – Proceedings 12th International Congress of Acarology (M.W. Sabelis and J. Bruin, eds.). Springer, The Netherlands. ([a refereed proceedings](#))

Laumann, M., Bergmann, P., Norton, R.A. and Heethoff, M. 2010. First cleavages, preblastula and blastula in the parthenogenetic mite *Archezogozetes longisetosus* (Acari, Oribatida) indicate holoblastic rather than superficial cleavage. *Arthropod Structure and Development* (pre-published online as doi:10.1016/j.asd.2010.02.003)

In press:

Illig, J., Norton, R.A., Scheu, S. and Maraun, M. 2010. Density and community structure of soil- and bark-dwelling microarthropods along an altitudinal gradient in a tropical montane rainforest. *Experimental and Applied Acarology* (Accepted Feb 25 2010)

Schaefer, I., Norton, R.A., Scheu, S. and Maraun, M. 2010. Arthropod colonization of land – linking molecules and fossils in oribatid mites (Acari, Oribatida). *Molecular Phylogeny and Ecology*. (Accepted 8 March 2010).

Laumann, M., Norton, R.A. and Heethoff, M. Acarine embryology: inconsistencies, artificial results and misinterpretations. *Soil Organisms*. (Accepted May 2010).

Schmelzle, S., Helfen, L., Norton, R.A., and Heethoff, M. The ptychoid defensive mechanism in *Phthiracarus longulus* (Acari, Oribatida, Phthiracaridae): Exoskeletal and muscular elements. *Soil Organisms*. (Accepted February 2010)

B. Non-refereed Publications

Heethoff, M., Norton, R. A., Scheu, S., Maraun, M. 2009. Parthenogenesis in oribatid mites (Acari, Oribatida). Pp. 241-257 (Chapter 12) *in*: Schön, I., Martens, K. and van Dijk, P. (eds.), *Lost Sex - The Evolutionary Biology of Parthenogenesis*. Springer.

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

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

E. Invited technical seminars

Comment [x1]: Don, I think this is a needed category

University of Goettingen, Germany: Evolution and Convergence in Predator-defense Systems of Oribatid Mites: Morphological, Behavioral and Chemical. June 22, 2009.

V. **PUBLIC SERVICE**

A. Funded Service (include consulting activities)

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

2. Industrial and Commercial Groups, etc.

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

1. 24-hr consulting specialist on venomous arthropods for Syracuse Poison Information Center.

2. Extension: regular fielding of calls and inquiries from general public and businesses regarding mites, spiders, ticks, and other pest arthropods.

3. Collaborating specialist, USDA Insect Identification Service: mite identifications and dispensing of biological information.

4. Collaborating specialist, USDA-APHIS: identification of mite specimens taken during routine quarantine inspections of plants.

5. Complementary mite identifications and/or extended consultations relating to the following ecological/evolutionary/taxonomic studies of mites: (researcher, institution, project)

a. D. Sandmann – University of Goettingen, Germany: Identification of mites from Ecuador rainforests.

b. S. Seniczak and A. Seniczak - Univ. of Techn. & Life Sciences, Poznan, Poland: European species of the family Gymnodamaeidae and Damaeidae (2 projects).

c. Z. Lindo – McGill University: Systematic and ecological studies of arboreal oribatid mites

d. S. Ermilov – Nizhniy Novgorod Medical Academy, Russia: 1) Ontogenetic studies of the mite family Gymnodamaeidae; 2) Ontogenetic studies of Russian Damaeidae; 3) New species of oribatid mites from Vietnam.

e. D. Walter – The Royal Alberta Museum, Edmonton: Survey of Gymnodamaeidae of Canada.

f. L. Hugo – National Museum of South Africa, Bloemfontein: Monograph of Gymnodamaeidae of South Africa

g. J. Mourek – Dept of Zoology, Charles University (Prague): Revision of the oribatid mite genus *Metabelba* in Europe.

h. K. Ghandi – University of Georgia: Effects of earthworm invasion on soil mite communities

i. V. Behan-Pelletier – Agriculture Canada, Ottawa: 1) Review of oribatid mite genus

Unduloribates in North America; 2) Monograph of mite genus *Oribatella* in North America.

j. P. Monet – University of Toulouse, France; Identity of Iron Age fossil mite from archeological site.

k. A. Gibelo – Complutense University, Madrid, Spain: Parasitic mites on fishes.

VI. PROFESSIONAL DEVELOPMENT

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

[Not sure where to put these:]

-Lifetime honorary member of Hungarian Academy of Sciences (elected May 2000)

-Research Associate (adjunct position) in the Department of Zoology of the Field Museum (Chicago).

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

2. Professional Society Membership

Acarological Society of America (charter and life member)

Entomological Society of Mexico

European Association of Acarologists

Systematic and Applied Acarology Society (China)

3. Other Professional Activities

a. Editorial activity

<u>Journal (s)</u>	<u>Responsibility</u>
International Journal of Acarology	Editorial Board
Folia Entomologica Mexicana	Editorial Board
Folia Entomologica Hungarica	Editorial Board
Experimental & Applied Acarology	Editorial Board
Acarologia (Paris)	Editorial Board
Acta Zoologica Hungarica	Editorial Board
Systematic & Applied Acarology (China)	Editorial Board
Acarina (Moscow)	Advisory Board

Other (books, symposia, etc.)

b. Reviewer

<u>Journal(s)</u>	<u>No. of manuscripts (28 total)</u>
Acarina (Moscow)	3
Acta Zoologica (Budapest)	1
Annales Zoologici (Warsaw)	1
Experimental & Applied Acarology	1
Forest Ecology & Management	2
International Journal of Acarology	13
Journal of Natural History	1
Journal of Medical Entomology	1
North-Western Journal of Zoology	2
Zookeys	2
Zootaxa	1

<u>Agency</u>	<u>No. of proposals</u>
FWF Austrian Science Fund	1

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)

GERMANY. June 17-23, 2009.

a. Service as external examiner of PhD defense (I. Schaefer) at Darmstadt Technical University

b. Presentation of invited seminar and planning collaborative research at the University of Goettingen

VII. ADMINISTRATIVE AND SERVICE RESPONSIBILITIES (include committee participation)

A. Department-level

EFB Undergraduate Curriculum Director

ENB Curriculum Coordinator

EFB Curriculum, Course and Assessment Committee (member)

Responsible for maintenance of departmental Invertebrate Collection

Member, mentoring committees for Christopher Whipps and Gregory McGee

Co-chair of search committee for Informal Biology Education faculty member

B. College-level

Member, ESF Retention Committee

Service on CoI Subcommittee on Academic Standards

Member, ad hoc committee to evaluate academic dishonesty charges (Judicial Review)

Member, ad hoc committee to refine and streamline undergraduate-related procedures and forms.

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. One paragraph on each of the following would be most helpful:

this past year, what have you done for our students, department/college, and self professionally? NOTE: The information in this section (along with the supporting specific information elsewhere in this report) should be your strongest case for being considered for a discretionary raise, which I'll continue to award based on your contributions to the department and college this reporting period.

Activities relevant to students: I taught 41 undergraduates in Invertebrate Zoology, a time-demanding course that continues to be highly regarded by most students. I also served students directly as ENB Curriculum Coordinator (CC) and EFB Curriculum Director (CD), dealing with myriad academic and personal matters. Beyond guiding my own 28 advisees, and serving as planned or ad-hoc stand-in when other advisors are not available, I dealt daily with referrals from other faculty members (or am contacted directly by students) on the more difficult of issues.

Activities/accomplishments relevant to dept/college: These, in large part, also relate to CC and CD positions and to affiliated activities and committees as indicated above. Significant time was invested in a major modification of all Curriculum Plan Sheets and the departmental student handbook. Also, I initiated and worked with Academic Computing personnel on a revamping of the Advising interface of the Faculty Services website; this involved a reorganization of server access and form-generation and resulted in significant improvement of functionality for both advisors and students. I guided our continuing efforts to establish a functional and sustainable approach to academic assessment of our 7 undergraduate majors by working with curriculum coordinators to produce a Learning Outcome matrix that James Gibbs will build into an omnibus spreadsheet. With co-chair James Gibbs, I led a search to replace retiring faculty member Andy Saunders and expand the position to one more broadly focused on Informal Biology Education; the search seems to have been successful, but is still in the final phase.

Activities/accomplishments relevant to self: This has been a productive year for research, with 10 papers or book chapters published and 3 others accepted during the reporting period. Collectively, these are on diverse subjects (systematics, evolutionary biology, molecular biology, paleobiology, ecology, reproductive biology, functional anatomy and embryology) and involve 17 coauthors from 6 other institutions in the US, Poland, Germany, Brazil and the Philippines. I continue to serve on editorial or advisory boards of 8 scientific journals, and during the reporting period refereed 28 papers submitted to 11 journals, mostly international in scope. I also provided expert advice to 11 researchers on diverse projects associated with universities and agencies in the US, Canada, and 7 foreign countries. Travel to Germany allowed me to strengthen my ties with two strong laboratories: a group at the University of Göttingen (led by Prof. Stefan Scheu) that uses molecular tools to investigate trophic interactions, evolutionary biology and systematics of soil animals; and a group at Tübingen University (led by Dr. Michael Heethoff) that uses electron microscopy and front-line synchrotron X-ray microtomography imaging techniques to investigate embryology, reproductive biology and functional anatomy of mites.

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)

I will continue my focus on service, both to our institution (as the EFB Curriculum Director and the various connected appointments and duties) and to my profession (editorial boards and referee-service for journals). My greatest administrative challenge in '10-'11 will remain the successful implementation of the 7 learning-outcome assessment plans that were developed over the last two years. Professionally, I anticipate continued involvement with the two research groups in Germany, noted above. In July, I will teach for one week at Ohio State University's Acarology Summer Program, an international program well over a half-century old and with which I have been involved since 1977 as an instructor. In November I will teach at a similar workshop in Manaus, Brazil, if funding proposals for that program are successful. The various ongoing research projects outlined in Part III (above) will be my research focus.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2010
 - a. Course(s) to be offered
 - b. Proposed research activity

Projects outlined in III, above.

- c. University, professional society, and public service

Four weeks (dispersed) will be devoted to recruitment activities, degree certifications, revision of advising handbook, and organization of orientation and advisor assignments for incoming students, among other activities.

Teaching at Acarology Summer Program, Ohio State University

2. Fall Semester 2010

a. Course(s) to be offered

(no regular offering)

b. Proposed research activity

Focus will be on items in III, above

c. University, Professional society, and public service

At the discretion of the EFB chairman, I anticipate that activities in items VI and VII (above) will be continued.

Instructing at acarology workshop in Manaus, Brazil

3. Spring Semester 2011

a. Course(s) to be offered

EFB 355, Invertebrate Zoology

b. Proposed research activity

Focus will be on items in III, above.

c. University, professional society, and public service

At the discretion of the EFB chairman, I anticipate that activities in items VI and VII (above) will be continued