

ANNUAL REPORT: June 1, 2010 – May 31, 2011
(i.e., Summer 2010, AY 2010-2011)
DEPARTMENT OF ENVIRONMENTAL AND FOREST BIOLOGY
SUNY-ESF

NAME: ROY NORTON

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> |
|-------------------|--------------|------------------------|-------------------------|---------------------------------|
|-------------------|--------------|------------------------|-------------------------|---------------------------------|

SUMMER:

FALL:

| | | | | | |
|---------|----------------|-----------------------------|----------|-----------|----------|
| SPRING: | EFB 355 | Invertebrate Zoology | 4 | 42 | 2 |
|---------|----------------|-----------------------------|----------|-----------|----------|

NOTE: PLEASE INDICATE WHICH COURSE(S) HAD A SERVICE-LEARNING COMPONENT AND BRIEFLY EXPLAIN THE NATURE OF THIS COMPONENT. For examples of service-learning in courses, see: <http://www.esf.edu/students/service/courses.htm>. Service-learning is a form of structured experiential education in which students engage with the community to be active learners, to enrich their sense of civic responsibility, and to explore practical application for course content. Faculty oversight, reflective thinking, and reciprocity are key components of service-learning. EFB courses currently listed with service-learning components include: 416/6/1, 486, 518, 521, 532, 446/646.

- no service learning component -

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 420 | Internship in EFB | 3 | 1 |
| EFB 495 | Undergraduate Experience in College Teaching | 2 | 1 |

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

Workshop in Soil Acarology. One full week (~60 hrs) of instruction at the Acarology Summer Program, at the Ohio State University, Columbus, Ohio (July 2011). About 20 participants from 10 countries (graduate students or professional biologists).

4. Guest Lecture Activities

| Course No. | Title | No. of Lectures |
|------------|--------------------------|-----------------|
| EFB 132 | Orientation Seminar: EFB | 2 |

II. STUDENT ADVISING

A. Number of undergraduates for whom you are the student's official advisor 43 and unofficial advisor **0** (but it seems like 50)

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 - none

CO-MAJOR PROFESSOR- none

MEMBER, STEERING COMMITTEE (other than those listed above) - none

CHAIRMAN OR READER ON THESIS EXAMS, ETC.

1. Anna Flach (PhD, Chemistry) – Chairman of Qualifying exam (2-14-11)

2. Danica Marlin (PhD, Rhodes University, Grahamstown, South Africa) – External examiner for thesis (February, 2011)

3. Anna Seniczak (PhD, University of Technology & Agriculture, Bydgoszcz, Poland) – External examiner for thesis (April, 2011)

III. RESEARCH COMPLETED OR UNDERWAY

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

1. Completed and published: see publication list (~6%)

2. Completed and manuscript approaching submission (by end of June, 2011):

a. The fossil mite family Archaeorchestidae (Acari, Oribatida) I: redescription of *Strieremaeus illibatus* and synonymy of *Strieremaeus* with *Archaeorchestes*. (with E. A. Sidorchuk) – to be submitted to *Zootaxa* – 2%

b. The fossil mite family Archaeorchestidae (Acari, Oribatida) II: redescription of *Plategeocranus sulcatus*, with new diagnoses of supraspecific taxa in Archaeorchestidae (with E. A. Sidorchuk) – to be submitted to *Zootaxa* – 2%

c. Tasty or defensive – First proof of chemical defense in oribatid mites (with M. Heethoff, L. Loener and G. Raspotnig) – to be submitted to *Proceedings of the Royal Society (B)* – 1%

3. Manuscripts in preparation or research underway:

a. Ghosts of predation past: convergence in the evolution of defensive mechanisms in oribatid mites, as determined by molecular phylogenetics (with M. Maraun, S. Scheu and P. Pachtl) – 1%

- b. **Megachthoniidae, a new genus and family of primitive mite from northern New Zealand – 1%**
- c. **Taxonomic distribution of alkaloid toxins in oribatid mites (with R. Saporito and M. Garrafo) – 1%**
- d. **Functional anatomy of ptychoid oribatid mites as revealed by synchrotron X-ray microtomography (with M. Heethoff and students, Tübingen University, Germany) – 2%**
- e. ***Paraquanothrus*, a new genus of relictual oribatid mites from ephemeral rock-pools in Utah and Georgia (with E. Franklin, Manaus, Brazil) – 1%**

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)

- none

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

- none

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

- none

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

1. Laumann, M., Bergmann, P., Norton, R.A. and Heethoff, M. 2010. First cleavages, preblastula and blastula in the parthenogenetic mite *Archeogozetes longisetosus* (Acari, Oribatida) indicate holoblastic rather than superficial cleavage. *Arthropod Structure and Development* 39:276-286.
2. 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* 52:49-62
3. 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 Phylogenetics and Evolution* 57: 113-121.
4. Miko, L. and Norton, R.A. *Weigmannia* n. gen. from eastern North America, with redescription of the type species, *Porobelba parki* Jacot, 1937 (Acari, Oribatida, Damaeidae). *Acarologia* 50(3): 343–356.
5. 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* 82(2): 253–273.
6. Laumann, M., Norton, R.A. and Heethoff, M. 2010. Acarine embryology: Inconsistencies, artificial results and misinterpretations. *Soil Organisms* 82(2): 217-235.
7. Sidorchuk, E.A. and Norton, R.A. 2010. Redescription of the fossil oribatid mite *Scutoribates perornatus*, with implications for systematics of Unduloribatidae (Acari: Oribatida). *Zootaxa* 2666: 45-67.

8. Saporito, R.A., Norton, R.A., Andriamaharavo, N.R., Garraffo, H.N. and Spande, T.F. Alkaloids in the mite *Scheloribates laevigatus*: further alkaloids common to oribatid mites and poison frogs. *Journal of Chemical Ecology* 37:213-218.

9. Maraun, M., Erdmann, G., Fischer, B.M., Pollierer, M., Norton, R.A., Schneider, K. and Scheu, S. Stable isotopes revisited: their use and limits for oribatid mite trophic ecology. *Soil Biology & Biochemistry* 43:877-882 (an invited "Citation Classic" review paper).

10. Raspotnig, G., Norton, R.A. and Heethoff, M. Oribatid mites and skin alkaloids in poison frogs. *Biology Letters* (published online as: doi: 10.1098/rsbl.2010.1113)

11. Schatz, H., Behan-Pelletier, V.M., OConnor, B.M. and Norton, R.A. 2011. Suborder Oribatida van der Hammen, 1968. *Zootaxa* (special volume. Animal biodiversity: An Outline of Higher-Level Classification and Survey of Taxonomic Richness). *In press*.

12. Alberti, G., Heethoff, M. Norton, R.A., Seniczak A. & Seniczak, S. Fine Structure of the gnathosoma of *Archegozetes longisetosus* Aoki (Acari: Oribatida, Trhypochthoniidae). *Journal of Morphology* (54-published pages, selected as cover article for June 2011 issue.) *In press*

B. Non-refereed Publications

- none

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

- none

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

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. M. Heethoff – University of Tuebingen, Germany: defensive gland chemistry in *Archegozetes*.
- b. S. Seniczak and A. Seniczak - Univ. of Techn. & Life Sciences, Poznan, Poland: European species of the genus *Umbellozetes*.
- c. Z. Lindo – McGill University: Systematic and ecological studies of arboreal oribatid mites
- d. S. Ermilov – Nizhniy Novgorod Medical Academy, Russia: the mite family Carabodidae in Vietnam.
- e. D. Walter – The Royal Alberta Museum, Edmonton: the oribatid mites of Alberta, Canada.
- f. S. Shimano – Myagi University, Japan: techniques for DNA extraction from mites.
- g. G. Weigmann – Frei University, Berlin: Setal homologies in the oribatid mite genus *Lucoppia*.
- h. M. Maraun – University of Geottingen, German: stable-isotope investigation of feeding niche of moss-dwelling mites in Australia.

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

- Lifetime honorary member of Hungarian Academy of Sciences (elected May 2000)
- Mite species named as patronym: *Zetorchella nortoni* (Caloppiidae) – named by Ermilov, Sidorchuk & Rybalov (2010), Russia.

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

- none

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</u> |
|--|---------------------------|
| Acarina (Russian Journal of Acarology) | 2 |
| Acarologia | 6 |
| African Invertebrates | 1 |
| Annales Zoologici | 1 |
| Applied Soil Ecology | 1 |
| International Journal of Acarology | 4 |
| The Biological Journal of the Linnean Society | 1 |
| Experimental & Applied Acarology | 1 |
| Frontiers of Zoology | 1 |
| Journal of Systematic Paleontology | 1 |
| North-West Journal of Zoology | 1 |
| Systematic & Applied Acarology | 3 |
| Soil Organisms | 1 |
| Zoologisches Anzeiger | 1 |
| Zootaxa | 2 |

| <u>Agency</u> | <u>No. of proposals</u> |
|------------------------------------|-------------------------|
| ESF- McIntire-Stennis | 1 |
| Austrian Science Fund (FWF) | 1 |

Other

Book proposal evaluation for publisher (Springer): Mites: Ecology, Evolution & Behavior

Chapter review for The Handbook of Zoology (DeGruyter, publ.)

Evaluation of Prof. W. Niedbala (Adam Mickiewicz University) for national award (Poland)

c. Participation (workshops, symposia, etc.)

| <u>Name of workshop, etc.</u> | <u>Date</u> | <u>Place</u> |
|-------------------------------|-------------|--------------|
|-------------------------------|-------------|--------------|

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

- none

D. Foreign Travel (Where, When, Purpose)

- none

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, Gregory McGee, Elizabeth Folta

B. College-level

Member, ESF Retention Committee

Service on CoI Subcommittee on Academic Standards

C. University-wide, including Research Foundation

- none

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 42 undergraduates in Invertebrate Zoology, a time-demanding course that seems 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 43 advisees, and serving as planned or ad-hoc stand-in when other advisors are not available, I dealt almost daily with referrals from other faculty members 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. During the reporting period significant time was invested in curricular revisions and course-proposals, and associated modifications to Curriculum Plan Sheets and the departmental student handbook. As EFB's representative, I interacted throughout the year with other college offices (Registrar, Admissions) and Faculty Governance (Committee on Instruction) to conduct routine business and to solve (or prevent) problems.

Activities/accomplishments relevant to self: This has been a productive year for research, with 10 papers published, and 2 others accepted during the reporting period; 3 others are within days of submission. Collectively, these are on diverse subjects (systematics, evolutionary biology, molecular biology, paleobiology, ecology, reproductive biology, functional anatomy and embryology) and involve 26 coauthors from 13 other institutions in the US, Canada, Poland, Germany, Austria, Russia, and the Czech Republic. Of these, one (#3) is a molecular paper that controversially infers the existence groups of terrestrial (soil) organisms into pre-Cambrian times; another (#7) gives by far the most detailed analysis of an amber fossil mite published to date; another (#9) was an invited paper that extends our highly cited previous work (a "Citation Classic" in *Soil Biology & Biochemistry*) on stable isotope use in soil biology; and a fourth (#12) is a large work on ultrastructure of mite feeding organs that will have the cover of the next *Journal of Morphology* (top journal in this field). I continue to serve on editorial or advisory boards of 8 scientific journals, and

during the reporting period refereed 27 papers submitted to 15 journals, mostly international in scope. I was an invited external examiner on PhD theses from South Africa and Poland, and a referee for a national award in Poland.

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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)

My retirement from ESF is tentatively scheduled for the end of this calendar year. During the Fall semester 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). Professionally, I anticipate continued involvement with two strong research groups in Germany (Goettingen and Tuebingen), and with the Institute of Paleontology, of the Russian Academy of Science.

B. PROJECTED ACTIVITIES FOR NEXT YEAR

1. Summer 2011

a. Course(s) to be offered

- none

b. Proposed research activity

Focus will be on Items in IIA2 and IIA3, above

c. University, professional society, and public service

Approximately four weeks (dispersed, two weeks on salary) will be devoted to recruitment activities, degree certifications, revision of curriculum plan sheets and the advising handbook, and organization of orientation and advisor assignments for incoming students, among other activities

2. Fall Semester 2009

a. Course(s) to be offered

- none

b. Proposed research activity

Focus will be on Items in IIA2 and IIA3, 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.