

Faculty Time-Budgets and **Student Outcomes:**

A View from the Trenches



Jeffrey S. McKinnon, Assoc. Prof.

Biological Sciences, UW-Whitewater

Outline

1. What do **faculty do**, in addition to classroom teaching (my example)?
2. What are the **impacts** of these outside-the-classroom teaching activities on student outcomes?
3. How are these activities **affected** by staffing levels, rates of pay?
4. **Recommendations**

1. What do faculty do?

- (a) **teach**: 4 lecture courses or equivalent at UWW
- (b) conduct **research**, often with students
- (c) **innovate**: teaching, research, other areas
- (d) supervise **internships**
- (e) **advise**: over 30 students each, every semester

(b) My research: fish evolution

NSF-funded: \$305,000 to date, \$268,000 pending



**Collecting fish in Alaska (top),
Japan (right)**

We bring fish back to laboratory for **experiments**



**Sara Aurit measuring fish
coloration
(Sara now at UW in Pharmacy)**



**Peter Katz running experiment
(Peter received early
acceptance at MCOW)**

Students analyze data, **present at local, national conferences**



Lisa Bowers (now in Cell Biology Ph.D. at UW-Madison)

We **publish** results (e.g., from Nature, May 20, 2004)

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7. Morel, F. M. M. & Price, N. M. The biogeochemical cycles of trace metals in the oceans. *Science* **300**, 944–947 (2003).
8. Capone, D. G., Zehr, J. P., Paerl, H. W., Bergman, B. & Carpenter, E. J. *Trichodesmium*, a globally significant cyanobacterium. *Science* **276**, 1221–1229 (1997).
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11. Ridame, C. & Guieu, C. Saharan input of phosphate to the oligotrophic water of the open western Mediterranean Sea. *Limnol. Oceanogr.* **47**, 856–869 (2002).
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17. Palinska, K. A. *et al.* The signal transducer P-II and bicarbonate acquisition in *Prochlorococcus marinus* PCC 9511, a marine cyanobacterium naturally deficient in nitrate and nitrite assimilation. *Microbiology* **148**, 2405–2412 (2002).
18. Montoya, J. P., Voss, M., Kähler, P. & Capone, D. G. A simple, high-precision, high-sensitivity tracer assay for N₂ fixation. *Appl. Environ. Microbiol.* **62**, 986–993 (1996).
19. Lorenz, S. *et al.* A comparison of *in situ* and simulated *in situ* methods for estimating primary production. *J. Plankton Res.* **14**, 201–221 (1992).
20. Welschmeyer, N. Fluorometric analysis of chlorophyll *a* in the presence of chlorophyll *b* and

Evidence for ecology's role in speciation

Jeffrey S. McKinnon¹, Seichi Mori², Benjamin K. Blackman^{3*}, Lior David^{3*}, David M. Kingsley³, Leia Jamieson¹, Jennifer Chou¹ & Dolph Schluter⁴

UWW Undergrads

¹Biological Sciences, University of Wisconsin-Whitewater, Whitewater, Wisconsin 53190, USA

²Biological Laboratory, Gifu-Keizai University, Ogaki, Gifu prefecture 503-8550, Japan

³HHMI and Stanford University School of Medicine, Beckman Center B300, 279 Campus Drive, Stanford, California 94305-5329, USA

⁴Department of Zoology and Centre for Biodiversity, University of British Columbia, Vancouver, BC V6T 1Z4, Canada

* Present addresses: Department of Biology, Indiana University, Jordan Hall Rm 325, 1001 E. 3rd Street, Bloomington, Indiana 47405, USA (B.K.B.); Department of Biochemistry, Stanford University School of Medicine, Stanford, California 94305, USA (L.D.)

A principal challenge in testing the role of natural selection in speciation is to connect the build-up of reproductive isolation between populations to divergence of ecologically important traits^{1,2}. Demonstrations of 'parallel speciation', or assortative mating by selective environment, link ecology and isolation^{3–5}, but the phenotypic traits mediating isolation have not been confirmed. Here we show that the parallel build-up of mating

(c) Innovation: e.g. we are revising UWW first year biology curriculum with \$170,000 grant from NSF

**Focus is on 3-4 week laboratory research modules:
Students design, conduct experiments in groups;
present research orally, in posters,
also individual write-ups**

Outstanding student-training, time-intensive for faculty



Students collecting amphipods in field, running experiments in lab

(d) Supervise **internships:**

In Biology at UWW, 10-15 internships/semester

- many paid**
- provide **job, practical experience****
- help students network**
- enhance community relationships**

Examples:

**Northland Laboratories
University Health clinic
Veterinary clinics**



(e) Advise:

In Biological Sciences at UWW, 10-12 faculty meet with each of over **350 majors every semester, often more than once, plus students considering Biology**

Every advising session evaluated by students

Number of majors consistently increasing



2. What are the **impacts** of these outside-the-classroom teaching activities?

- (a) Student **retention**: students forming personal relationships with faculty stay in school; UWW retention up
- (b) Student **success**: in last 10 years at UWW, with more undergraduate research, internships, innovation, advising, far more students
 - enter top graduate programs
 - gain early medical school admittance
 - find jobs in their field
 - travel for research, conferences



3. How do reduced **staffing levels, non-competitive pay scales** affect non-classroom activities?

(a) **Reduced time** for advising, research, innovation, interns

(b) **Selective loss** of most active faculty--who generate grants, provide best opportunities to students

Quantitative evidence:

My fall 2004 time-budget at UWW (increase of 2 contact hours per week from 2002-3):

Hours in lecture, lab:	14
Hours preparing, grading:	14
Office hours:	5
Mandatory committee meetings:	2
Research, advising, innovation, interns:	15
Total:	50



Major (over 20%, from 19 to 15 hours) reduction in time for research, advising, etc. from two years ago!

10-15 years ago teaching load was the same with less service, almost no research expected!

4. Recommendations:

Hire enough faculty to return faculty-student ratios at least to 2001-2 levels (over long term, must do better)

Pay faculty competitively,
especially senior faculty and
most productive individuals

