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- [Comparative Biomechanics](#)
- [Comparative Endocrinology](#)
- [Comparative Physiology & Biochemistry](#)
- [Ecoimmunology and Disease Ecology](#)
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- [Phylogenetics & Comparative Biology](#)
- [Vertebrate Morphology](#)



EXPERIENCES----HOW I BECAME AN INSECT EVOLUTIONARY PHYSIOLOGIST

*By Jon Harrison
SICB Program Officer 2012-2013*

I love my job. Why? Well first of all, since being a teenager I've loved to read about and observe the natural world, and this is still the most fascinating and fun activity for me. Second, I love the opportunity to teach at all levels; it's stimulating and usually incredibly fun and rewarding. Third, I'm convinced that nothing has advanced the human condition more than basic scientific research. The public thinks that it's all about applied research (biomedical, defense or corporate tech), but I believe that all the applied work builds on the foundation of basic science. I'm continually stunned by how little we understand about how life works, and I feel incredibly lucky to get to devote much of my life to deciphering its patterns.

How did I get here? When I think back, I think it was a combination of luck, help, and a determination to find a meaningful, enjoyable way to make a living. Like most biologically oriented high school and college students, I was pre-med. I thought being a doctor would be a great way to help people, and that I would enjoy learning the subject. But a series of experiences turned me away from this path. In my last year at the University of Toronto, I had some great courses in plant systematics and environmental science that seemed to mesh really well with my love of back-packing and hiking. However, everyone told me that this was an area without jobs. I decided to accept admission at the University of Pittsburgh Medical School (my home town), and spent the summer doing some hiking in the Sierras interspersed with political action related to regulatory oversight of nursing homes and home health care (still a major issue). There I met some of the most predatory doctors imaginable, and read Ivan Illich's *Medical Nemesis*, which

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**SICB IN SPRING
PRESIDENT'S REPORT, PETER WAINWRIGHT**

Spring is here in Northern California. The fruit trees are blooming like mad and artichokes and asparagus are showing up in big piles at the farmer's market. Wherever you are I hope spring has made itself known. It seems just yesterday we were in West Palm Beach for the annual meeting, enjoying great weather, old and new colleagues, and an amazing program.

Our annual meeting was a festival of integrative organismal biology. I was amazed by the breadth and depth of the research that Past President Ken Sebens presented in his plenary talk on the first evening. A career's worth of shoreline community ecology with insights from geography, biomechanics, modeling, great organisms and more. Thank you Ken! Our symposia were diverse, classic SICB, and represented outstanding science. Contributed sessions were magically scheduled for appropriately sized rooms (how do the program officers do



President Peter Wainwright at the 2015 Business meeting, with the plaque for outgoing President Billie Swalla

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SICB EXECUTIVE OFFICERS

Peter Wainwright

President-Elect 2015-17
University of California,
Davis

Louis Burnett

President-Elect 2015-17
College of Charleston

Billie Swalla

Past President 2015-17
University of Washington

Karen Martin

Treasurer 2013-19
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Kathryn Dickson

Secretary 2015-18
California State University,
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Sherry Tamone

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Richard Blob

Prog. Officer-Elect 2015-16
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Brett Burk

Executive Director
McLean, VA

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EXPERIENCES IN SCIENCE EDUCATION**FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS**

By Michael G. Hadfield, Professor of Biology Emeritus, University of Hawai'i at Manoa (UHM)

First recipient of the M. Patricia Morse Award for Excellence and Innovation in Science Education

Each recipient of the Morse Award is given the opportunity to offer a perspective on a topic in education by contributing to the "Experiences in Science Education" series. The inaugural article by Mike begins below.

The first M. Patricia Morse Award for Excellence and Innovation in Science Education was presented to Mike Hadfield at the 2014 SICB meeting in Austin, TX.



It is news to no one that sometimes administrators make very bad decisions, and that sometimes those bad decisions negatively impact very many people. This was the case when a National Science Foundation (NSF) division head unilaterally decided in 2012 to terminate a training program for minority undergraduate students entitled, "Undergraduate Research Mentoring in the Biological Sciences" (URM). This program was unique in that it offered possibilities to support and train students during both summer and academic-year programs to qualify for entry into graduate degree programs in the biological sciences. There was no similar program available at the NSF, and an important, unique opportunity for minority students disappeared with it.

The University of Hawai'i internship program was supported first through the NSF predecessor to URM, entitled "Undergraduate Mentoring in Environmental Biology" (UMEB), then URM and, in its last years with contributions from a NSF "Centers in Ocean Science Education Excellence" (COSEE) grant at the University of Oregon. All of these grant programs emphasized training for underrepresented minority students. The NSF

recognizes four ethnic groups to be significantly underrepresented in scientific professions: Native Americans, Hispanic Americans, African Americans, and Hawaiian and Pacific Islanders. Because of its unique location as the only major research university in the Pacific area, the University of Hawai'i program focused particularly, although not exclusively, on Hawaiian and Pacific Islanders. The 'audience' for the internship program was enrolled students from colleges, most of them two-year, community colleges, in Hawai'i, American Samoa, the U.S. Territory of Guam, the U.S. Commonwealth of the Northern Mariana Islands, and the three countries with compacts-of-free-association (COFA) with the U.S.: Republic of the Marshall Islands, Republic of Palau, and Federated States of Micronesia.

Our program, from its origin, was named, "Environmental Biology in the Pacific Islands." I was its director from 2000 until its end in 2015, a job that brought to me the first M. Patricia Morse Award for Excellence and Innovation in Science Education, awarded by the Society for Integrative and Comparative Biology in 2014. I consider the award a

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"...we continue to be financially stable and able to meet our obligations, as well as support our students and symposia during our annual meeting."

SICB FINANCES

TREASURER'S REPORT, KAREN MARTIN

This has been an interesting year for the financial welfare of our Society, for a number of reasons. First and foremost, we continue to be financially stable and able to meet our obligations, as well as continue to support our students and symposia during our annual meeting. For five years, we have not increased meeting registration fees. Membership dues have remained the same for nine years.

Total assets at the end of FY 2014 were \$1,872,848. Total invested funds were \$1,311,418 as of 30 December 2014, up from \$1,220,128 at this time last year, an increase of \$91,290, or about 7.5%. Donations to SICB in 2014 totaled \$19,137, including a generous gift of stock from Jarid Simons for the Hyman fund worth over \$13,500 ([Table 1](#)). In early 2015, Dr. Simons donated an additional gift of stock to the Moore fund, worth over \$27,300. SICB is very grateful for the generous gifts from Dr. Simons. Of the twelve named funds, four remain below the target of \$25,000 that will make them permanent and self-sustaining ([see Table 2](#)).

During FY 2014 a change in the membership year from Jan–Dec to Apr–Mar affected the receipt of dues. While this change was much needed to align our membership year with the timing of abstract submission and our

annual meeting, some members delayed renewing memberships until reminded by the abstract deadline in August. In spite of this, most members got back on board with the new program, and the revenues from dues were nearly identical in FY 2014 as in FY 2013.

The SICB journal continues to do well under the editorship of Hal Heatwole. Revenues were over \$319,000 from Oxford Press, against expenses of about \$102,000. The anticipated passing of the editorial baton to Lynn Martin upon Hal's retirement should be smooth, and no negative financial impacts are anticipated.

The Austin meeting in 2014 brought in \$384,000 in revenue against \$380,600 in expenses, thus finishing in the black by about \$3500. This razor-thin positive margin indicates that revenues and expenses are fairly evenly matched for the annual meeting, showing good management and sound predictions. For 8 of the past 10 years, the annual meeting has finished in the black. (The exceptions were Orlando in 2006 and Phoenix in 2007.) The report on the West Palm Beach meeting will appear in the Fall Newsletter.

SICB has many named funds that provide assistance for student research and travel, and for meeting awards and speakers. Analysis of these funds over the past 8 years revealed some stagna-

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DONATIONS REPORT

by Darwin Jorgensen

Your donations have a profound effect on SICB and on the future of comparative biology. Prior to the 2014 meeting in Austin, the SICB Development Committee implemented a tiered donor recognition plan. We have continued that program this year. Five levels of giving are recognized, and acknowledge donations from January 2014 (at the end of the Austin meeting) through the end of the West Palm Beach meeting this past January. You may have noticed ribbons attached to donors' meeting badges at the Florida meeting. The Society leadership wishes to extend the

most sincere thanks to these individuals and encourages all members to consider donating to the Society's Endowment. Several funds make up the Endowment and you can request that your donation be applied to the fund of your choice. Please know that the Endowment is crucial to the continued success of the Society and that every dollar counts. The Society plans to continue to recognize donors in the newsletter and with ribbons at the annual meeting. On behalf of the Executive and Development Committees, again, thank you for your generous support.

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FROM THE DEE
RESEARCHERS DATABASE:
 Foraging Behavior and
 Dietary Specializations in
 Herbivores
Denise Dearing

2015 - SICB WEST PALM BEACH RECAP, POST-MEETING SURVEY RESULTS, AND 2016 UPDATES

PROGRAM OFFICER, SHERRY TAMONE

I want to thank everyone who attended the 2015 West Palm Beach SICB meeting for contributing to another successful meeting. It was good to reconnect with old friends, and also with post-docs who just last year were graduate students. As a long-time member of SICB (my first meeting was in San Francisco in 1988), I am amazed at how invigorated I felt after this 5-day meeting. I hope you attended as many excellent talks as I did, and I hope you were able to take part in some of the many workshops that were held during the 4-day scientific program. The West Palm Beach meeting, like the 2014 Austin and the 2013 San Francisco meetings, demonstrated that attendance is steady; close to 2000. This is remarkable since, only 15 years ago, less than 1000 researchers attended. I expect the 2016 Portland meeting to be at least as well

attended as West Palm Beach because of the scientific program (12 Symposia have already been selected; see below) and the cultural setting.

The Post Meeting Survey Results are in and we (the executive officers and I especially) heard you (all 660 of you) loud and clear! While 78.4% of the survey respondents felt that the meeting was very good or excellent, this is a slight drop from last year (87.8%). While the meeting was well organized, the science content interesting, and the convention center large and easy to move about in, the lack of a dedicated meeting hotel and the need to shuttle attendees from disparate regions of West Palm Beach were frustrating for some folks.

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BROADENING PARTICIPATION COMMITTEE REPORT

CHAIR, MICHELE NISHIGUCHI

Broadening Participation meeting in Washington, D.C., September 14-15, 2014

Michele Nishiguchi, Brian Tsukimura, and Cheryl Wilga attended an invitation-only Broadening Participation (BP) meeting held September 14-15, 2014, at the FASEB campus in Bethesda, MD, sponsored by The American Physiological Society (APS), The Council for Undergraduate Research (CUR), and The Leadership Alliance. The meeting was facilitated by Brooke Bruthers, who is the lead co-PI for the NSF BP funded grant to APS. The purpose of the meeting was to have the four currently funded BP grantees [CUR, APS, The Leadership Alliance, and The Society for Developmental Biology (DEB)] present their current ongoing work in broadening participation in their societies from the past two years. NSF Division of Integrative Organismal Systems (IOS) representatives were also present, and updated the group on funding opportunities that may be available next year for societies as well as other scientific groups. APS also invited repre-

sentatives from other scientific societies to get their feedback and also provide them with information on types of programs that are being implemented at the undergraduate level to increase diversity within the societies.

Two invited speakers were at the meeting to give their insights for broadening participation. The first speaker was Dr. Clifton Poodry, a senior fellow in science education at the Howard Hughes Medical Institute. Clif was previously the Director for the Department of Health and Human Services, Training, Workforce Development and Diversity at the National Institutes of Health. Clif spent many years developing programs at the NIH to increase diversity in the biomedical workforce, and spoke about how developing training, promoting institutional change, and leveraging diversity are key components that lead to a better environment for broadening participation. He suggested that societies should focus on informing and educating their members on diversity issues by hosting workshops

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2015 EDUCATION COUNCIL

2015 TALX Workshop: Teaching and Learning Quantitative Biology

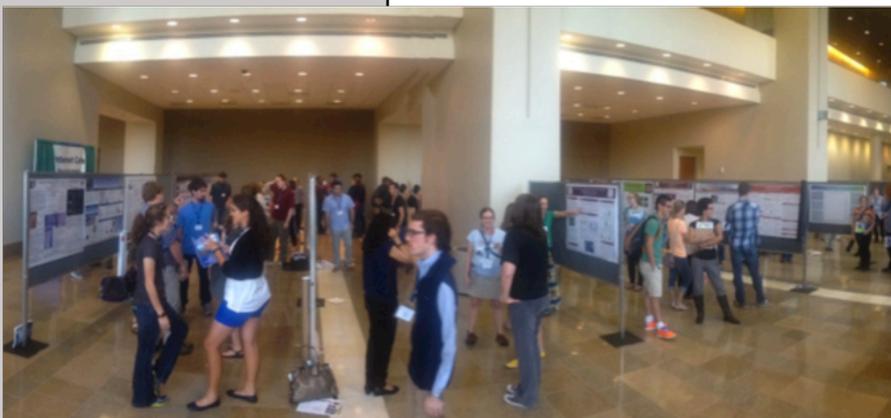
The TALX Workshop in West Palm Beach – part of an “educational theme” for the meeting focused on quantitative biology – was coordinated with the society-wide symposium, “Leading Students and Faculty to Quantitative Biology through Active Learning,” organized by Laura Miller and Lindsay Waldrop. The TALX was highly successful, attracting about 50 participants who stayed the full 2.5 hours and many even longer to continue fruitful discussions. The workshop included 9 demonstrations on how active learning could be used in teaching quantitative biology. The highlight of the TALX was a lively discussion moderated by Emily Braley with panelists John Jungck, Lou Gross, Fred Adler, Nina Fefferman, and Jim Peterson. Go to <http://teach-mathbio.web.unc.edu/sample-page/talx-workshop/> for a summary of the workshop activities; materials for the demonstrations and the symposium talks will eventually be posted there. The organizers are working on a set of papers from the symposium and workshop for submission to ICB. Contact the Educational Council chair (**Chair. EdCouncil@sicb.org**) if you are interested in organizing or presenting as part of the 2016 TALX: Teaching and Learning through K-12 Outreach.

Walters receives 2015 Morse Award

Dr. Linda Walters is the 2015 winner of the M. Patricia Morse Award for Excellence and Innovation in Science Education, which is given annually to a SICB member to recognize achievement in education. Dr. Walters is Professor of Biology at the University of Central Florida (UCF), where she has taught for the last 17 years. She is being recognized by SICB for her remarkably diverse contributions to student and public education in central Florida. Her research on human impacts on the marine environment blends seamlessly with service-learning opportunities in the classes she teaches and with public outreach programs in marine conservation, particularly focused on oyster-reef restoration. Linda has been previously recognized by the University of Central Florida for her work on service learn-

ing, as well as by the Coastal and Estuarine Research Foundation as Outstanding Educator of the Year. She even finds time to write conservation-oriented children’s books! In addition, she is director of the UCF Center for Success of Women Faculty. Dr. Walters’ award was recognized at the start of the Moore Lecture on the last day of the annual meeting in West Palm Beach. Congratulations and thanks to Linda for her diverse contributions to science education!

This award is based on nominations. Please consider nominating yourself or a colleague for this honor.



The 5th Annual Arrival Day Undergraduate Poster Display featured more than 100 posters to start the meeting (photo by Bram Lutton)



Linda Walters is presented the 2015 Morse award plaque at the 2015 annual meeting by outgoing Education Council Chair, Bob Podolsky

Late Breaking News about the 2018 and 2020 SICB meetings: Because of a great deal offered by Marriott, the SICB Executive Committee recently voted to have the 2018 annual meeting in San Francisco, CA, and the 2020 meeting in Austin, TX. In 2019, we will meet in the eastern USA at a venue to be determined.

CALL FOR NOMINATIONS AND APPLICATIONS FOR SICB AWARDS AND LECTURES FOR 2016

The George A. Bartholomew Award. Each year the SICB Division of Comparative Physiology and Biochemistry recognizes a young investigator for distinguished contributions to comparative physiology and biochemistry or to related fields of functional and integrative biology. Eligible candidates are those who have completed their doctorate within the past seven years and who are members of SICB. The person chosen as the recipient of this award will be invited to present a special address at the 2016 SICB Meeting in Portland, Oregon. **The deadline for nominations and applications is 24 August 2015.**

The Howard A. Bern Lecture was created by SICB to honor the outstanding contributions of Professor Howard A. Bern to the field of comparative endocrinology and to the society. The lecture is given annually at the SICB meeting by a scientist who has made significant contributions to the field of comparative endocrinology. Scientists from around the world are eligible, and affiliation with SICB is not required. **The deadline for nominations is 24 August 2015.**

The Carl Gans Award, administered by the SICB Division of Comparative Biomechanics, is given annually either to an outstanding young investigator (who has completed the doctorate within the past seven years) for distinguished contributions to the field of comparative biomechanics, or to an investigator at any level for the single most significant contribution to the literature of comparative biomechanics (research paper, review article, or book) published in 2014. Candidates must be members of SICB, and cannot have received the Bartholomew Award. **The deadline for nominations and applications is 24 August 2015.**

The M. Patricia Morse Award for Excellence and Innovation in Science Education is an annual prize awarded to a SICB member at any career stage for significant achievement in science education. This award honors the achievements and contributions of M. Patricia Morse, President of SICB in 1985, to the Society especially in the area of education. Please see the article written by Trish in the SICB Newsletter, Spring 2009, on "John Moore, SAAWOK and the SICB." The SICB Educational Council will accept and evaluate applications as well as nominations for this award. Applicants should submit a curriculum vitae, a one-page description and any supporting materials related to achievements in science education, and three letters of support. Nominators are expected to submit one of the support letters and should

arrange for the remainder of the same materials to be submitted. In lieu of an oral presentation, award-ees will be expected to write a brief article for the SICB newsletter or journal describing their achievements or any important aspect of science education. Each year's winner will be recognized prior to the introduction of the Moore Lecturer, and the Chair of the Educational Council may also authorize funds to help support the winner's attendance at that year's meeting. Please send nominations for this award to the Chair of the Educational Council at Chair.EdCouncil@sicb.org. **The deadline for nominations is 24 August 2015.**



Jodie Rummer, receiving the George A. Bartholomew Award

SICB FINANCES, CONTINUED
TREASURER'S REPORT, KAREN MARTIN

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tion, lack of growth, or loss in many of the funds. During the same period, the unrestricted funds for the society increased. With the cooperation of our management team, interest and dividends will be calculated in a new way for these funds going forward. In some cases, previous losses after poor performance of the stock market have been restored to named funds from unrestricted funds. As a result of this revision of bookkeeping practices, no named funds have lost money. With the current formula, prudent use of the funds should allow maintenance of principal and slow, steady growth. At this point the named funds are in better shape than ever before, with a total endowment of over \$1 million (Table 2). In addition we are working on a more transparent way to report the funds that will allow the Executive Committee, the Finance Committee, the Divisions, and our donors to better understand them. This is being addressed in 2015.

Finally, after the close of FY 2014 a complete audit of the society's financial records was done. For the previous years, an annual independent financial review, but not an audit, had been done. Because of the timing, the final tallies for FY 2014 are still somewhat tentative, but based on the preliminary report, all is well and no problems were uncovered. Revenues exceeded expenses by approximately \$159,000 last year.

A balanced budget was approved for FY 2016 at the Business Meeting of the Executive Committee and the Society. Because of members like you, the society's finances are sound. Thank you!

Table 2: Fund Balances for named funds of SICB, December 2014

| | |
|--|-----------------------|
| G.A. Bartholomew Fund | \$173,094.04 |
| L.H. Hyman Scholarship Fund | \$79,475.77 |
| D.D. Davis Fund | \$15,526.90 |
| John Moore Lectureship Fund | \$14,626.02 |
| A.M. Wenner Fund | \$13,066.02 |
| Dorothy Skinner Fund | \$17,035.89 |
| Symposium Enhancement Fund - Board Designated | \$123,402.07 |
| C. Mangum Fund - Board Designated | \$323,053.55 |
| GIAR Fund - Board Designated | \$220,940.74 |
| Carl Gans Award Fund | \$41,049.85 |
| Prosser Fund | \$29,133.52 |
| Bern Lecture Fund | \$12,165.00 |
| TOTAL for all funds | \$1,062,569.37 |

Table 1: Donations in calendar year 2014

| | |
|--------------------------------|-----------------|
| Bartholomew | \$95 |
| Hyman | \$17,622 |
| Davis | \$2,125 |
| GIAR | \$405 |
| Mangum | \$340 |
| Moore | \$1,190 |
| Skinner | \$245 |
| Symposium | \$225 |
| Gans | \$250 |
| Prosser | \$60 |
| Wenner | 0 |
| Bern | \$200 |
| Total Donations in 2014 | \$22,757 |



2015 - PROGRAM OFFICER'S REPORT, CONTINUED

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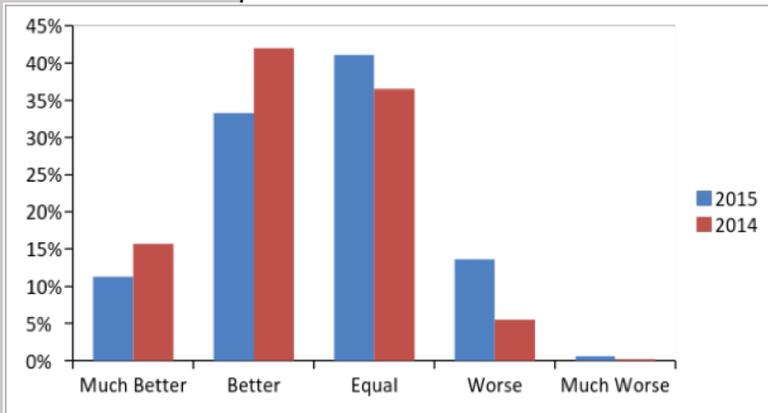


Figure 1: Ratings of SICB members who responded in 2015 and 2014 to the question, "How would you rate this meeting relative to other recent meetings of other societies?"

While most negative comments related to the need to bus people from some hotels, other factors that attendees noted were the lack of food at the convention center during the lunchtime break and the long lines for coffee during the breaks. Many attendees felt strongly that they would not attend another meeting at West Palm Beach. However, from evaluating this and past surveys, the executive committee members feel that having all attendees in a hotel adjoining (or adjacent to) the conference/convention center would have made this a great venue and an excellent meeting. While West Palm Beach is not as culturally interesting as venues such as Austin, Portland, or New Orleans, many members appreciated the warm January weather. Most respondents actually come to SICB for the overall scientific program and the networking opportunities. Less than 3% of survey respondents felt that venue was an important factor for attending this SICB meeting, but comments about West Palm Beach as a venue (expensive, small airport, dangerous intersections that "made one play froggy," and lack of culture) suggested that many attendees are interested in meeting in cities with a more vibrant cultural center.

On a positive note, most members were ex-

tremely happy about the scientific program, the organization of the meeting in general, and the socials. It is encouraging to read the responses of members, because their responses reaffirm what a great society SICB is, and what a great resource this meeting is for students and mentors. The networking opportunities that SICB provides benefit students, post-docs, and new and senior scientists. To support attendance for faculty with children, SICB has been offering subsidized day care during the meeting, and while few used this service, those who did responded very positively. For some post docs and faculty, the ability to attend the meeting was dependent on this service being available. Child care will be available at the 2016 Portland meeting.

For the third year, we incorporated a meeting App (Core-Apps) for use with mobile phones and tablets. More members used the App this year than last year (see figure 2). As expected, the biggest users of the App were the graduate students and the undergraduates, and most students found the App more useful than did the full members or post-docs. While this App was an improvement over the App used in 2014, we received many excellent suggestions that we will consider for next year's meeting App. The meeting App will not replace the hard copy program that many members feel is most useful.

Attendance was strong on most days of the conference, with a noticeable drop off in attendance on the final day. The program committee makes a point

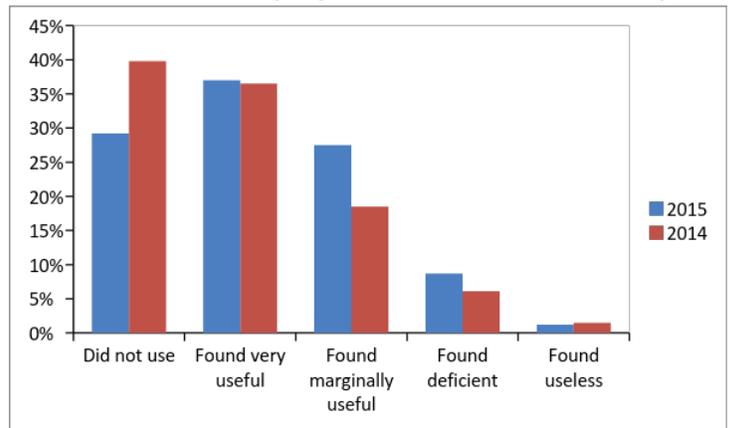


Figure 2: Ratings of SICB members who responded to questions concerning the usefulness of the Meeting App in 2015 and 2014.



"I would like to enthusiastically thank the 22 organizers of the 12 Symposia at the West Palm Beach meeting for their hard work in coordinating the speakers and adding to the excellent programs offered at SICB."

2015 - PROGRAM OFFICER'S REPORT, CONTINUED

of providing a meaningful program through the entire four days of meetings and, while some members do choose to leave early on the final day, oral sessions and symposia still attracted a reasonable audience. Perhaps you did not notice, but the final day of the program included a social, during which all drinks until 7:00 pm are on the SICB house. From my perspective, there were still a large number of attendees remaining for the final social.

Finally, I would like to enthusiastically thank the 22 organizers of the 12 Symposia at the West Palm Beach meeting for their hard work in coordinating the speakers and adding to the excellent programs offered at SICB. Thanks to Rebecca Calisi, Glenn Crossin, Paolo Domenici, Frank Fish, Jon Harrison, Tim Higham, Rich Hochberg, Valentine Lance, Oliver Love, Christine Madliger, Laura Miller, Leonid Moroz, James Murray, Zoltan Nemeth, Timothy Roth II, Colin Saldanha, Sherry Tamone, Peter Wainwright, Lindsay Waldrop, Elizabeth Walsh, Robbie Wilson, and Russell Wyeth.



If you are thinking about organizing a Symposium for the New Orleans Meeting in 2017, it is never too early to start the application process. You should contact your divisional program officer if you have a good idea for a symposium. There are also [SICB SYMPOSIA POLICIES AND GUIDELINES](#) published on the web that you should read through. The deadline for symposium proposals for the 2017 New Orleans meeting will be August 24, 2015. You can find the [Call for 2017 Symposia](#) on the SICB Meetings website.

I have received inquiries about our decision to hold our 2017 meeting in New Orleans. Do you remember why we relocated our 2009 meeting from New Orleans to Salt Lake City? We did this because we were opposed to Governor Jindal's attack on

teaching evolution in science education and his initiation of the Louisiana Science Education Act. We chose to revisit New Orleans as a meeting venue because the New Orleans City Council unanimously voted to veto the Education Act and, along with the Parrish School Board, to prohibit teaching creationism in the classroom. That is why SICB has reconsidered its boycott and is holding the 2017 meeting in New Orleans. For the full story on SICB's decision to come back to New Orleans please visit this link: <http://ncse.com/news/2013/01/sicb-lifts-boycott-new-orleans-0014676>

I am encouraged that greater than 75% of survey respondents who are Full members or Post-docs and greater than 60% of current graduate students are planning to attend the 2016 SICB meeting in Portland, OR.

The symposia for the 2016 Portland meeting are posted on the SICB web site at <http://www.sicb.org/meetings/2016/>. There are excellent symposia during each of the 4 days of the meeting (see below).

2016 Portland Tentative Symposium Schedule

January 4

1 **Neuroecology: Neural Mechanisms of Sensory and Motor Processes that Mediate Ecologically Relevant Behaviors**

Organizers: Jeff Riffell & Ashlee Rowe;
Sponsors: DAB, DCB, DCE, DEE, DNB & AMS

2 **Life on the Edge: the Biology of Organisms Inhabiting Extreme Environments**

Organizer: Annie Lindgren; Sponsors: DCPB & DVM

3 **Parasites and Pests in Motion: Biology, Biodiversity and Climate Change (SICB wide)**

Organizers: Christopher B. Boyko & Jason Williams; Sponsors: TCS, DEDE, DEE & DIZ

2015 - PROGRAM OFFICER'S REPORT, CONTINUED

January 5

1 Extraocular, Nonvisual, and Simple Photoreceptors

Organizers: Thomas Cronin & Sonke Johnsen; Sponsors: DCPB, DIZ, DNB & AMS

2 Building an Extravagant Toolbox: the Morphological Diversity of Intromittent Organs

Organizers: Brandon Moore & Diane Kelly; Sponsors: DCB, DCE, DIZ & AMS

3 Evolutionary Endocrinology: Hormones as mediators of evolutionary phenomena (SICB wide)

Organizers: Robert Cox, Joel McGlothlin & Frances Bonier; Sponsors: DAB, DCE, DEDB, DEE & DPCB

January 6

1 Are Migratory Animals Super-spreaders of Infection?

Organizers: Alexa Fritzsche & Bethany Hoyer; Sponsors: DAB & DEDE

2 Integrative and Comparative Biology of Venom

Organizers: Marymegan Daly & Lisle Gibbs; Sponsors: DCPB, DEE, DIZ, DNB & DPCB

3 Beyond the Mean: Biological Impacts of Changing Patterns of Temperature Variation

Organizers: Michael Dillon, Michael Sears & Art Woods; Sponsors: DAB, DCE, DCPB, DEE & DIZ

January 7

1 A Bigger Picture: Organismal Function at the Nexus of Development, Ecology, and Evolution

Organizers: Sharlene E. Santana & Paul Gignac; Sponsors: DCB & DVM

2 Tapping the Power of Crustacean Transcriptomes to Address Grand Challenges in Comparative Biology

Organizers: Donald Mykles, Karen Burnett, David Durica & Jonathon Stillman; Sponsors: TCS, DCE, DCPB, DEDB, DIZ & DNB

3 New Frontiers in the Integrative Study of Animal Behavior: Nothing in Neuroscience Makes Sense Except in the Light of Behavior (SICB wide)

Organizers: Suzy Renn, Hans Hofmann & Dustin Rubenstein; Sponsors: DAB, DCE, DEE & DNB

In addition to the symposia there will as usual be contributed talks, posters, and workshops throughout the 4-day meeting. Dr. Terrie Williams (UC Santa Cruz) has accepted our invitation to give the opening plenary talk. Dr. Williams is a top-notch comparative physiologist specializing in large mammals (marine and terrestrial). Her research includes marine mammal thermobiology and mammalian metabolic physiology, and she applies her research to conservation biology. She conducts her research from the Aleutians in Alaska to Antarctica, and includes her backyard of Santa Cruz as well. Plan to come to the meeting early and enjoy a few days discovering why [Portland](#) is one of the top US cities in which to live. I know from experience that there is an active craft beer industry in Portland, excellent restaurants, amazing bike routes and night life (something for everyone). Check out the 2016 SICB meeting Web-page as we will be providing updates on the venue through the year.

**FROM THE DCPB RESEARCHERS DATABASE:**

Regulation of Molting and Skeletal Muscle Plasticity in Crabs and Lobsters

Donald Mykles

BROADENING PARTICIPATION REPORT, CONTINUED*continued from page 4*

Michele Nishiguchi, Brian Tsukimura, and Cheryl Wilga at the 2015 Broadening Participation Diversity Social

that influence or intervene with more traditional views on how to promote diversity. The second speaker, Dr. Mark Leddy, from the NSF Division of Human Resources and Development, spoke about broadening participation for people with disabilities, and has extensive experience in developing programs to educate the scientific community about inclusion of disabled people. He specifically mentioned that societies need to create and implement inclusive diversity plans for their members, and engage members with disabilities so they can participate openly and without bias. There may be an RFA announced next year, but it will be open to more than just societies alone, and are again based on funds available through NSF-IOS. In March the BP committee is planning to submit a grant for funding for SICB 2016 to NSF.

Manuscript preparation

Members of the BP committee (Nishiguchi, Tsukimura, Wilga) met one day prior to the NSF meeting in Washington, D.C., to polish a manuscript, "Broadening participation in the Society for Integrative and Comparative Biology". We hope to have this manuscript submitted to either an education-oriented journal or to the society's journal *Integrative and Comparative Biology*. The manuscript contains data collected by the BP committee over the past 5 years (2010-2014), and discusses the impacts that BP has had over the years since it was formed in the society.

West Palm Beach, 2015 activities*BP Travel awards for SICB 2015*

The BP committee gave out 20 awards this year (each \$500) to the top ranked applicants. There were a total of 45 applicants: 2 assistant professors, 4 postdocs, 19 PhD, 9 MS and 11 undergraduate students. The ethnicities were divided as follows: 17 Hispanic/Latino, 6 African American, 4 Native American, 3 Pacific Islander, 0 1st generation, and 17 who did not state (some of these are counted twice because they are double URGs). A total of 30 women and 15 men applied. The 20 applicants who received awards consisted of 4 postdocs, 7 PhD, 4 MS, and 5 UGs, with 10 being Hispanic/Latino, 2 African American, 2 Native American, 5 Pacific Islander, and 4 not stated; 16 of the 20 awardees were women. We also had 5 awardees decline their award (4 had funding already, and 1 was not able to come despite the BP award due to financial reasons).

SICB 2015 meeting activities

The Broadening Participation Committee sponsors two workshops at each annual SICB meeting, based on suggestions from previous years' Broadening Participation Travel Award applicants. The first of these workshops (noon, 4 Jan 2015) was "The academic juggling trick: How to effectively manage your time during the professoriate (and beyond!)" and was run by Dr. Michele Nishiguchi from New Mexico State University. The workshop was designed to provide a foundation for budgeting time in a busy day. We had approximately 80 members attending this workshop, ranging from undergraduates to full professors.

Overview: Ever feel like you are Alice with the red queen, never feeling like you are getting ahead? Trying to manage all the lecture prep, grant and manuscript writing, while being asked to be on several committees (and never mind about your personal life)? Wishing there were 36 hours in a day? Then come find out how to manage it all in your day-to-day activities in this workshop. Dr. Michele Nishiguchi from New Mexico State University will give you hints, make you plan (yes, be prepared to do an activity!), and be prepared for the challenges of juggling the professoriate.

Support your favorite SICB fund. Click on the "donations" button on the home page.

BROADENING PARTICIPATION REPORT, CONTINUED

The second workshop (noon, 6 Jan 2015) was entitled "Don't be such a scientist, part II: How to give dynamic and informative presentations" and was given by Dr. Jake Socha from Virginia Tech. This workshop was geared towards members who are interested in how to increase their skills in giving various oral presentations (job seminars, 3 minute elevator talks, meeting presentations, etc.).



The Broadening Participation Committee sponsored a time management workshop at 2015 SICB meeting

Overview: We all want to do good science, but excellence in the lab is just half the battle. Presenting well can make or break your efforts to communicate your work to a broader audience. In this workshop designed for students and postdocs, we'll discuss strategies for giving strong scientific presentations, helping you to hone your presentation skills for SICB and beyond.

In preparation for the workshop, Jake and Nish collected examples of talks from our BP awardees to see if they could be used as examples. Although they gave some feedback to the students, overall the BP awardees already had polished talks! Again, we had over 80 members attend this workshop, which was quite a success.

Travel Awards were given to recipients at the Broadening Participation Diversity Social during the annual meeting on January 6th at Mojitos. This social turned out to be well attended (> 100 members), with the executive committee (present and past) stopping by to see the BP awardees receive their awards. There was live music, and most of the tapas were quite tasty with everyone having a good time.

We welcome the participation of all SICB members in BP and look forward to hearing your comments and suggestions for broadening participation in our society in the next year. If you have ideas or comments, please contact chair.bpc@sicb.org.



Jake Socha leading the second Broadening Participation Committee-sponsored workshop at 2015 SICB meeting



Attendees at the Broadening Participation Diversity Social on 6 January 2015 at Mojitos



EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. *MICHAEL G. HADFIELD*

continued from page 2

tribute to this unique student-training program and the many, many people who contributed to it, including its student-interns. Through these years, the program provided an opportunity that brought a total of 133 undergraduates to the University of Hawai'i between 2000 and 2014 for an in-depth experience in research training. Most of these students (90%) were Hawaiian and Pacific Islanders. Of the remaining students, four were Hispanic from the U.S. mainland, three were Native Americans (two living in Hawai'i and one from Montana), one was an African American woman from Georgia, three were Chinese students from Hawai'i, one was a Filipino student who was brought to Hawai'i as a child, and a single intern was a Caucasian woman who had lived in Hawai'i all of her life. In other words, the program served exactly the population for which it was created and designed. The NSF grants provided funds for air travel, stipends, maintenance and research costs for about 14 students each summer, plus monthly stipends for a smaller cohort during the academic year. During four summers, the grants also supplied funds for special training for college instructors from the Pacific Islands, an experience geared to both update and expand the teaching expertise of the instructor group, all of them teachers at community colleges. Both the student and faculty programs are described in more detail below.

Before providing details about the training programs, it is essential for me to emphasize that they could not have happened without the collaboration and cooperation of many other faculty members. Drs. Rosemary Gillespie and George Roderick, at the University of Hawai'i at the time of the first grant, were instrumental in gaining our first UMEB grant and taking interns into their labs even after relocating to the University of California in the first year of the program. Dr. Celia M. Smith in the Botany Department at UH has been my invaluable co-PI and colleague for many years. I will emphasize her critically im-

portant roles in greater detail below. Bob Richmond, at the University of Guam when the first grant was awarded, played a major role in getting us acquainted with colleges and faculties across Micronesia and continued as a co-PI on the grant after relocating from Guam to the University of Hawai'i in 2004. Dr. Robert Toonen of the University of Hawai'i's Hawai'i Institute of Marine Biology (HIMB), also a co-PI, had many student interns in his lab and served an essential role as supervisor of a large cohort of interns at the HIMB laboratory on Coconut Island each summer. Dr. Gail Grabowsky, head of the Environmental Biology program at our neighboring institution, Chaminade University, also served as co-PI, helped greatly with recruiting, especially from the large group of Micronesians enrolled at her university, and as mentor. Thirty-eight faculty members, most at the University of Hawai'i at Manoa, opened their labs and lives to serve as mentors for interns during the 15 years of the combined UMEB, URM and COSEE programs. They were the essential backbone of a program that could not have otherwise existed.

Summer student research internships. Initial contact with students in colleges across the Pacific Islands was established by personal contact. A small group of us who were co-PIs on the UMEB grant went out to the colleges to talk to students and faculties about the program, what it offered, and what it did not. After the first two years, the attributes of the program were spread by the faculties and inter-alumni of those summers. We established an effective website (<http://www5.pbrc.hawaii.edu/urm/>) that explained the goals and procedures of the University of Hawai'i URM program and provided materials for online submission of applications and recommendations. Dates and deadlines for each upcoming summer were posted on the website, and applications were accepted through February each year. Then came the job of choosing the interns and finding appropriate mentors for each of them. Student selection was based on background criteria (how many college years each student had and science courses taken), recommendations

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. MICHAEL G. HADFIELD

from faculty, and grades. We had no rigid GPA cutoff for acceptance, because of our awareness of how different the training and standards were across the colleges. When difficult choices had to be made, we relied on the recommendations and our own impressions from the essays students wrote about their motivations for applying for the URM program and their goals. We also strived to bring in students from all of the participating colleges, depending on the distribution of applications.

The summer program lasted for ten weeks each year, beginning in late May and extending through July. Students from out of state were placed in University of Hawai'i dormitories, usually clustering mentees as close together as possible, giving them opportunities to get acquainted and socialize after spreading out to individual labs each day. Week days were divided between Monday "cohort activities" and the rest of the week when each student went to the lab of an assigned mentor. The cohort activities, long developed and organized by co-PI Celia Smith, included field trips to sites

for all of Hawai'i's NOAA staff, and many more. All field trips were designed to introduce the interns to projects and programs that, in some way, aid in environmental conservation and restoration. Other cohort activities included special lectures on topics relevant to our theme, training in scientific writing, speaking before audiences with PowerPoint presentations and statistical evaluation of research data.

The laboratory experiences were planned to take naïve students and "turn them into scientists." With this major goal in mind, mentors were educated to work closely with their assigned interns to determine her/his major interest within our "environmental biology" framework (very broadly defined) to develop an individual research project that the student could truly own. We emphasized over and over that the interns could not be "used" simply as lab assistants or helpers for graduate students in a lab. For ten weeks, each intern was guided in defining her/his project as a set of approachable questions or testable hypotheses, to learn the methods necessary for the effort, and to carry out the research. As program director (and a mentor myself each year), I insisted on 'landmarks' as the program progressed: an initial title for each intern's project, later a full research proposal, and a periodic progress report. Assisted and supported by the groups of individuals in each lab – including other undergrads, graduate students, postdocs and lab assistants, as well as the mentor – the students carried out their projects. The goals at the end of summer program were two-fold: (1) submission of a written paper in the format of a publication in a respected, peer-reviewed scientific journal, and (2) a professional oral presentation in our annual URM Summer Symposium held on the last day of the program each summer. Many of these student projects have produced data that have formed all or parts of papers published in peer-reviewed journals; a list of these published papers may be found at the end of this report. A list of all interns for the 2000-2007 programs is posted at <http://www5.pbrc.hawaii.edu/urm/>.



URM interns on a 2011 field trip to the rare plant conservation center at the University of Hawai'i's Lyon Arboretum.

in the state's Natural Areas Reserve System, the biological collections of the B. P. Bishop Museum, the rare plant propagation facility of the University's Lyon Arboretum, the Papahana Kuaola Lelekaumanu Native Hawaiian educational program, the new Inouye Regional Center, home

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. MICHAEL G. HADFIELD



URM/COSEE interns, mentors and assistants, symposium group, summer 2013. That's, me top left, and Celia Smith two rows in front of me in the turquoise blouse. Seventeen of those pictured are interns, and the remainder are others from the URM program and mentors labs who played roles in the students' training.

The success of the internship program has been attested by the many of its participants who have gone on from remote Pacific Island community colleges to complete baccalaureate degrees in Hawai'i or the US mainland, and even more who have completed their under-

graduate training and who now hold positions with agencies and NGOs in their island homes where they play important roles in environmental education, management, conservation and sustainability. Table 1, includes just a few examples. Other former interns from the summer and

Table 1: The present roles of some former UMEB, URM, and COSEE interns in conservation and environmental management and education positions in their home islands. FSM, Federated States of Micronesia; RP, Republic of Palau; RMI, Republic of the Marshall Islands; CNMI, Commonwealth of the Northern Mariana Islands.

| Name | Home | URM Years | Mentor | Current position |
|------------------------|---------------|------------------|------------------|--|
| Vanessa Fread | Yap (FSM) | '00, '02, '03 | Hadfield | Head of RARE, a coalition to develop sustainable coastal fisheries in Micronesia |
| Jorg Anson | Pohnpei (FSM) | '06, '07, '11 | Richmond | Director, Marine Programs Conservation Society of Pohnpei |
| Lynna Thomas | Palau | '01, '02, '04 | Ticktin | Planner, Palau Office of Environmental Quality Control |
| Melba White | RMI | '01 | deMaintenon | RMI, Office of Marine Affairs |
| Lex Secharraimul | Palau | '03, '04 | Hadfield | Researcher, Palau Legislature |
| Jasmine Mendiola | Pohnpei (FSM) | '11, '12 | Collier Richmond | Assistant Director, Marine Environmental Institute of Pohnpei |
| Peltin Pelep | Pohnpei (FSM) | '05, '06, '07-09 | Hadfield | Marine Science Instructor, College of Micronesia (FSM) |
| Jolly Ann Cruz | CNMI | '14 | Gates | Staff, Micronesian Islands Nature Alliance, Saipan |
| Robert Deleon-Guererro | CNMI | '11, '13 | Daehler | Division of Marine Resources, Saipan |
| Bethany Kimokeo | Hawai'i | '08-'10 | Toonen | Marine Science Instructor, Kamehameha Schools |

year-round programs have entered graduate programs in the biological sciences and at least two have completed advanced degrees; see Table 2.

Faculty training 1: 5-week internships. When we visited the Pacific Island community colleges in Palau, Pohnpei, Guam, and Majuro early in the UMEB program, we came home greatly impressed with both the dedication and labor required of instructors in the colleges. They teach multiple courses per term, work hard to get island students ready to complete degrees at four-year colleges, and have almost no time left over for professional updating. With this in mind, I applied for a Research Opportunity Award to supplement the second UMEB grant for two summers, 2005 and 2006. The aim was, "... to bring instructors from the Pacific Islands community colleges to the University of Hawai'i for six weeks of intensive exposure and

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. MICHAEL G. HADFIELD

Table 2. Examples of some interns who have completed baccalaureate degrees and gone on to graduate programs in the biological sciences, a non-exhaustive list.

| Student | Home | Intern Years | Mentor | University Degree/Date |
|-----------------------|----------------|-----------------|----------|---|
| Gwendolyn Sisior | Palau | '02, '04 | Smith | UHM, Natural Res Mgmt, M.S. 2010 |
| Lynna Thomas | Palau | '01, '02, '04 | Ticktin | UHM, Natural Res. Mgmt, M.S., 2010 |
| Kaipo Perez | Hawai'i | '07-'09 | Jokiel | UHM |
| Peltin Pelep | Pohnpei (FSM) | '05, '06, 07-09 | Hadfield | UH Hilo, Ev & Conserv. Biol. M.S. 2013 |
| Guadeloupe Ruiz-Jones | New Mexico | '06, '07 – '09 | Hadfield | Stanford Univ., Biol. Sci. Ph.D. candidate |
| Jacques Idechong | Palau | '04-'07 | Richmond | Univ. of Guam, M.S. candidate, marine biology |
| Jewel Potoae | American Samoa | '09-'10 | Collier | Indiana Univ., Ph.D. Candidate, Biological Sci. |
| Chandra Ledgesog | Yap (FSM) | '10 | Thomas | Univ. of Guam, M.S. cand, Environ Sci. |

training in recognizing local environmental problems and conducting research into potential solutions." The participants would be taught molecular methods for examining genetic diversity and be supplied with the equipment for performing such studies back in their home institutions for training their students there. The NSF ROA provided funds for travel and subsistence for the instructors in Honolulu and for purchase of "footlocker labs," that included PCR machines, gel boxes and power sources, minifuges and automatic pipetters; i.e., everything necessary to isolate specific DNA sequences that could be sent elsewhere for sequencing. The instructors trained on the equipment and then took it back to their home institutions.

The first of these workshops took place at the Kewalo Marine Lab in summer 2005. Faculty from Palau Community College, College of Micronesia, and American Samoa Community College took part in a workshop taught by several experts from the University of Hawai'i. The training was very "practical," in that the faculty-students designed most of the research questions that they would use in learning the methods, e.g., are fish sold in local fish markets actually the species named by the sellers? We timed this five-week experience to coincide with the second half of the UMEB student internships, so that the instructors could participate in the final summer symposium with their students, and it was a great

success. The instructors were trained, and they returned to their colleges with the capacity and equipment to train their students, at home, in these important modern methods. This program was repeated the following summer with three additional instructors taking part. The ultimate results were observed by those of us mentoring students from these colleges in successive summers and finding the students better prepared to carry out more sophisticated projects.

Faculty training 2: short courses.

When we joined the COSEE program at the University of Oregon in 2010, we received funding for additional summer interns from U.S. community colleges, as well as funds to support new faculty training projects. Following the lead of the University of Oregon program, we organized two summer short courses, presented in the summers of 2011 and 2012. To "aim" these courses at topics that the participant faculty felt were most useful to them, we traveled to the schools in late 2010 to meet with the instructors and their administrators. Visits were made to the College of the Northern Mariana Islands, Guam Community College, Palau Community College, College of Micronesia Yap campus, College of Micronesia FSM in Pohnpei (the main campus of COM), and College of the Marshall Islands. We also sought input from faculty at community colleges in Hawai'i. This information gathering experience led us to develop two courses: "Microbes



FROM THE DCB RESEARCHERS DATABASE:
Biology of Animal Movement
Gary Gillis

"Together, the internships and faculty-training programs for Hawaiian and Pacific Islanders have reached and significantly enhanced the scientific capacities of communities across the Pacific Ocean."

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. *MICHAEL G. HADFIELD*

in the Sea" (August 8-12, 2011) and "Genetic Linkages in the Pacific Ocean" (Aug. 6-8, 2012). An outstanding group of scientists volunteered their time to present these short courses; in 2011, participants included Dave Karl, Director, Center for Microbial Oceanography: Research & Education (C-MORE; <http://cmore.soest.hawaii.edu/index.htm>), Margaret McFall-Ngai and E. G. Ned Ruby, University of Wisconsin Madison, Greta Aeby, Hawai'i Institute of Marine Biology (HIMB), Sean Callahan, UHM Department of Microbiology, Audrey Asahina, Ying Huang and M. G. Hadfield, Kewalo Marine Laboratory, Pacific Biosciences Research Center, UHM, Kyle Van Houtan, NOAA, Grieg Steward, Matt Church, Jim and Foley; in 2012, Ryan Kelly and Dan Barshis from Stanford University, Tom Oliver and Carl Meyer from HIMB. COSEE funds provided for travel and subsistence costs for the faculty participants, plus travel and per diem expenses for

some of the scientists who presented materials to the classes.

For both of these short courses, the "faculty-students" were provided with a large set of publications relevant to each topic as pdf files on a flashdrive and with a notebook containing all printed materials, methods, etc. used or discussed in the courses.

The 2011 course was taken by 14 community-college instructors, two from Northern Marianas College (Saipan), two from Guam Community College, three from Palau Community College, two from the College of Micronesia/FSM, two from the College of the Marshall Islands, one from American

Samoa Community College, and one each from two community colleges in Hawai'i (Maui CC and Kapiolani CC in Honolulu). The Population-Linkages short course in 2012 enrolled nine faculty from American Samoa, Palau, Commonwealth of the Northern Marianas, Federated States of Micronesia, Guam and the Marshall Islands. Surveys taken at the end of each course reflected great satisfaction with the materials learned and the quality of the training. It was apparent that each of these courses met our goal of providing a significant update in the participants' knowledge of a field that will be useful and valuable as they train

many hundreds of students in their home colleges across the Pacific.

Together, the internships and faculty-training programs for Hawaiian and Pacific Islanders have reached and significantly enhanced the scientific capacities of communities across the Pacific Ocean. Many students have been made to understand that they are scientists



A photo of some of Trish Morse's beautiful silver creations, which will serve as the logo for the Morse Award and the work it recognizes, which she conceives of as "Enabling the STARS of the Future!"

with a responsibility to use and share their knowledge in their home islands. Many have been stimulated to complete baccalaureate degrees in the U.S., Australia, or elsewhere and a significant group has gone on to pursue advanced degrees. Many intern-alumni now hold significant positions in the islands where their contributions are very important. The community-college faculty members are sharing their new and updated knowledge with many hundreds of undergraduates, making those students better able to participate in essential problem solving required for coping with the 21st century challenges of climate change. Those challenges are perhaps greater and certainly more urgent for many of the Pacific Islands than any other part of the world. And so, 15 years of NSF support through

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. MICHAEL G. HADFIELD

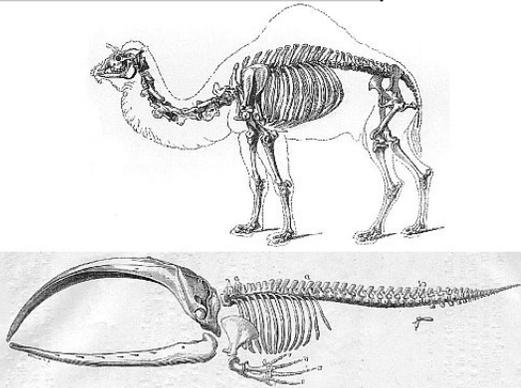
the UMEB, URM, and COSEE programs have paid off in exceptional ways. We can only regret that a lack of wisdom on the part of a very few individuals has brought these programs to a close.

Acknowledgements. (1) For many years, both the UMEB and URM programs thrived with the support of our NSF program officer, Dr. Sally O'Connor. Her wisdom in formulating training grants and wisely using the funds provided has been invaluable to us. It was through her guidance that we were able to support the first faculty training programs described above. (2) My co-PIs, Drs. Celia Smith, Gail Grabowsky, Bob Richmond, and Rob Toonen, have played truly essential

roles in making the UMEB/URM programs happen. Celia both did the bulk of organizing the cohort activities for each summer program and shared with me the leadership of the weekly colloquia with the year-round interns. Gail was our link to our sister college, Chaminade University, and brought many of her Pacific Island students from CU into the programs. Bob Richmond's broad 'connections' across the Pacific Islands and acquaintances within the island colleges were invaluable in our efforts to become known in the colleges and to recruit interns from them. And Rob was our essential "dean of interns"

for the many who we sent each summer to the Coconut Island lab of Hawai'i Institute of Marine Biology, finding them mentors, arranging their transport and generally "looking after" these students. All four of the co-PIs also served as mentors, both summer and year-round, for many interns. It is important to mention here that no PI or faculty member ever received any salary from any of the named grants. It may be unique that five PIs shared an incredible labor over many years while seeing all of the funds in the grants go to undergraduate training. (3) Literally dozens of faculty members at UH have donated great amounts of time over the last 15 years to serve as men-

tors for interns, a job often made more "complex" by involving young students from other cultures away from their island homes for the first time. Guiding these students to a successful summer experience took skill, patience, and a great deal of individual sympathy. The islands of the Pacific will long be indebted to these teachers. (4) The instructors at the community colleges across the Pacific are true heroes in every sense. In multiple courses each term, they "teach their hearts out" to students with minimal secondary school training, nearly all speaking English as a second language. They are devoted to their students and they work hard to find opportunities for them to participate in programs like those we have had at the University of Hawai'i. (5) Individuals in my own laboratory group have added more to the UMEB/URM/COSEE programs than most people will know, helping with field trips, assisting students, preparing materials for the faculty courses and a thousand other things. Audrey Asahina, Brian Nedved, and Shaun Hennings have notably made a difference, and many people, not least me, owe them a great debt. (6) Dr. Jan Hodder and her associates at the Oregon Institute of Marine Science and the Hatfield Marine Science Center brought the NSF COSEE – Pacific Partnerships program to their universities and shared the benefits with us as one of the partners. Their vision of a program focused on community colleges was exceptional, both in their plans for student training and faculty workshops. It was their model we followed in developing the two very successful COSEE short courses in 2011 and 2012. Our debt to Jan Hodder is great. (7) The funds to finance all that I have described came from two successive NSF-UMEB grants (1999-2008), a NSF-URM grant (2008-2015) and a NSF-COSEE grant (2010-2014). Of course, we couldn't have done it without those funds. (8) Finally, and certainly not least, I personally thank the colleagues who nominated me for SICB's M. Patricia Morse Award for Excellence and Innovation in Science Education. I am humbled to have been chosen to receive this award, and I hope very much that I have



Mammals have 7 cervical vertebrae, regardless of the length of the neck! (reproduced from Owen 1866)

FROM THE DEDB RESEARCHERS

DATABASE:

Innovations and constraints in morphological evolution

Frietsen Galis

EXPERIENCES: FIFTEEN YEARS OF ENVIRONMENTAL BIOLOGY TRAINING FOR PACIFIC ISLANDERS, CONTINUED. *MICHAEL G. HADFIELD*

been successful in conveying my belief that the award truly goes to the programs described above.

Papers published with interns supported by NSF-UMEB & URM grants as co-authors. Intern authors' names are in bold.

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DONATIONS REPORT, CONTINUED

continued from page 3

Thank you for your generous support!

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 Kathy Dickson

Bronze (up to \$49)

Lisa Hazard
 Bruno Pernet
 Sarah Berke
 Duane McPherson
 George Mackie
 Callum Ross
 Matthew Landau
 Malcolm Gordon
 Daniel Speiser
 Diana Hews
 Susan Hill
 Morgan Benowitz-Fredericks
 Rosemary Knapp
 Sara O'Brien
 Geoffrey Birchard
 Susan Hill
 Joshua Drew
 Barbara Stay
 Kevin Krajniak

WEAR A RIBBON AT SICB

Donations to the various funds of the SICB allow the Society to offer a superb program at its annual meetings and make this a student-friendly and family-friendly organization. At the 2015 annual meeting in West Palm Beach, Florida, attendees sported different kinds of ribbons showing their support of SICB through their donations. This will be done again this year at 2016 Portland, Oregon. Show your support!

Diamond >\$500

Platinum \$250-499

Gold \$100-249

Silver \$50-99

Bronze up to \$49



*Experiences - Part 18
in a series of
articles about the
research experiences
of members of SICB.*



Life is a twisting journey, and you often can't see around the corner. Keep going!

EXPERIENCES----HOW I BECAME AN INSECT EVOLUTIONARY PHYSIOLOGIST

[continued from page 1](#)

argued that western medicine spends excessively on few. At Pitt, I loved the courses, especially biochemistry, but felt surrounded by stressed, unhappy people in the hospitals. The lady next to me on the bus was going through a divorce with her doctor-husband who was always busy. I no longer saw medicine as a completely good, altruistic pursuit, and it certainly didn't look like fun. Paying back my med school loans was daunting, but seemed worth it to escape.

At that point in my life, I knew I loved environmental biology, but somehow had been convinced by well-meaning people that it was impossible to get a job. I spent two years in the Pennsylvania woods working with emotionally disturbed youth, an experience that prepared me for later faculty leadership. After a "What Color is your Parachute?" course on choosing a career, I finally knew that I wanted to be a solar engineer. I spent several years installing and repairing hot water solar systems in Colorado, before seeing the industry collapse when federal tax-credit programs were withdrawn. All the while I was reading biology, hiking and improving my flower identification skills. My old Sunday school buddy was my only real friend in town. He had a Master's in plant biology and was gainfully employed at what was then called SERI (Solar Energy Research Institute). He convinced me that there was employment in biology, and I decided to apply for a Ph.D.

Based on my undergraduate coursework and obsession with plants, I applied to work at the University of Colorado's Arctic and Alpine Research station, but they were stocked with students and couldn't take a flakey applicant who clearly didn't know where he was going. There was a brand new

faculty member at CU, Todd Gleeson, who was willing to take a chance on me if I would take one course in environmental physiology. My plan was to get through the first year with him and hopefully transfer, which is very embarrassing to say now.

The first year of grad school at CU totally transformed my world view. Cindy Carey's course in Environmental Physiology was awesome, Mike Grant's biometry class gave me the tools, and Mike Breed's Social Insect class opened up a completely new part of the biological world for me. Most importantly, Todd spent an incredible amount of time training me in the lab, and discussing every aspect of physiology and academic careers. I can never repay what he gave me in those Ph.D. years, but I can try to pass it on. My first projects worked at the interface of Todd's interests in muscle physiology and energetics with Mike Breed's expertise in honey bee biology, as I focused on how the ontogeny of behavior of worker bees affected their muscle biochemistry and metabolic rates. At this point I became convinced that, at least among terrestrial animals, insects are the best model systems. Their ease of laboratory use, diversity and ecological importance make them incredibly efficient models for testing hypotheses.

How many people can say that their Ph.D. organism found them? I was searching for the best insect to study thermal effects on acid-base physiology, which was a very hot topic in comparative physiology in the mid 80's. I used to love running along the foothills of the front range, and there *Melanoplus bivittatus* (the two striped grasshopper) leaped onto my t-shirt and life. At the time, there was virtually nothing known about the acid-base physiology of insects, which I still find remarkable given how critical an aspect of physiology this is for all animals.

SICB has been an important part of my professional life since the beginning. I vividly remember my first SICB meeting, Philadelphia, 1983. Somehow being able to put faces to Ladd Prosser, George Bartholomew, Bill Dawson, and Al Bennett excited me the way most Americans feel when they see a movie star. At the 1984 meeting in Denver, Tim Casey taught me

EXPERIENCES----How I BECAME AN INSECT EVOLUTIONARY PHYSIOLOGIST

how to make thermocouples in his hotel room. Over a meal, George Bartholomew urged me to find an interface to make a contribution. I've been trying to do that ever since. Over a SICB drink, Rob Dudley told me about his then-recent *Nature* paper related to insect paleo-gigantism and atmospheric hyperoxia, which I've been trying to disprove for 15 years now.

Also very formative for me, Mike Breed took me (and other grads) along on three trips to the La Selva, Costa Rica, to study the giant bullet ant, *Paraponera clavata*, at his Organization for Tropical Studies study site. There he taught us about the design of behavioral experiments, uker, and how to dig up the nests of one of the scariest animals in the forest. I will never forget being charged by a fer de lance on

"Over a SICB drink, Rob Dudley told me about his then-recent *Nature* paper related to insect paleo-gigantism and atmospheric hyperoxia, which I've been trying to disprove for 15 years now."

graduate school I noticed an incredibly cute and smart lady, and managed to become her biometry partner. We were married half-way through grad school, and have now had two great kids, 30 fantastic years together, and somehow ended up with offices down the hall from each other.

We were pretty broke when we were trying to make it to my post-doc at the University of British Columbia (UBC) so I thought I'd save us some money purchasing a used pickup to move us to Vancouver. One blizzard and a new engine later, we made it. But I got lucky on my postdoc advisor, John Phillips, a former President of SICB, and the only opera-singing insect proctologist in the world, who ran a fantastic lab at UBC. There I had the amazing opportunity to learn about epithelial transport from the masters, as well as to interact with an incredible group of faculty, postdocs and grad students in the comparative physiology group. Along with John's students, we showed that the locust renal system was primarily responsible for acid-base regulation. My wife followed me to Canada, and managed to snag a prestigious NSF fellowship while producing and nurturing our first child.

On a snowy day in Vancouver, we loaded a U-Haul, strapped the baby into the car seat, and headed for a new job at Arizona State University in Tempe. We were welcomed by a great and supportive faculty that taught me the ropes. I did a horrible job negotiating for my wife, who ended up begging for a phone. We began applying for other jobs, both together and separately, and I uncomfortably faced my own insecurity imagining being the trailing spouse. Fortunately, Jennifer garnered the largest NIH grant in the department at the time, and the dean came through with a half line that enabled us to both be $\frac{3}{4}$ time while establishing the lab and having child number two.



Jon and John Lighton studying the sensitivity of dragonfly flight to hypoxia pond-side at the "last place on Earth" - aka Zzyzx, CA.

my first night in the jungle. But it may be that the most memorable experience came after a day of pinning down katydids to observe the recruitment (and brutal butchering behavior) of these "bullet ants." That night, a katydid found its way into our room and nightmares, seeking revenge on the ear of Jennifer Fewell.

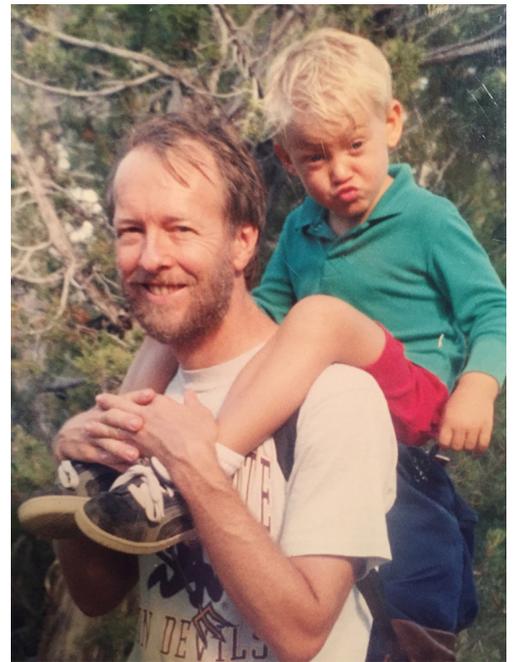
Which leads me to another great thing that happened to me while stumbling into a wonderful career. My first day of

EXPERIENCES----HOW I BECAME AN INSECT EVOLUTIONARY PHYSIOLOGIST

At ASU my research has branched out in many directions, enabled by many outstanding students, postdocs and collaborator-friends. My focus on metabolism continues, and I've gotten to study how bees thermoregulate during flight, how and possibly why locusts regulate their pH, mechanisms of gas transport in tracheal systems, the effect of body size on metabolism and function of insects, why insects are small, scaling effects on behavior and metabolism of ant colonies, and how hypoxia makes animals smaller. More applied projects have examined why and how far Africanized bees spread and how humans cause locust outbreaks, and have involved designing micropumps inspired by insect cardiovascular and tracheal systems. I particularly enjoy projects that help me develop interactions with people outside of physiology, including beekeepers, livestock economists, engineers, NASA GIS modelers and mathematicians. These links really enable us to accomplish projects at scales well beyond my meager skills.

Today the kids are out of the house, early years' grad students are provosts, and I feel like I've gained a huge new extended family of smart young researchers and students who are still teaching me about insect evolutionary physiology. Having escaped the bonds of administration, I'm enjoying more time for research, mentoring and teaching.

It is fashionable today to talk about the challenges of obtaining funding and the declining support for research and public universities. While this is partly true, it is also true that the US remains a fantastic country, arguably the best in the world, in terms of supporting academic/basic research. Academic jobs remain plentiful relative to most countries and, at least in my field of physiology, almost all Ph.D.s find meaningful work using their degrees. I appreciate it, and hope to give back, and show how basic research using our most diverse group of animals matters.



Academia is great for child-rearing, though Jon's latest hypothesis is being doubted here.

SICB IN SPRING, PRESIDENT'S REPORT, CONTINUED

[continued from page 1](#)

that anyway?!) and the poster sessions are clearly growing as a high-energy session for exchange that increasingly seems to fill an important role at our meetings. We learned a few lessons along the way, with some hotels presenting an awkward commute and a need for convenient lunches at the convention center. We'll keep trying to make it perfect.

SICB continues to be in excellent shape financially and with membership. We have experienced significant growth over the past decade, both in

membership and attendance at the annual meetings. In 2004 our meetings included about 1100 abstracts, while at West Palm Beach we had about 1500. Membership was about 2200 in 2004 and is now around 2700. There is simply no question that the growth is due in part to our dedication to the young members of our society. SICB spent over \$100,000 on students this year, in the form of support for attending the meetings and grants in aid of research. It is no accident that our meetings have such a young feel. We attract and encourage a very large population of future integrative organismal biologists.

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SICB IN SPRING, PRESIDENT'S REPORT, CONTINUED

Now that I have seen the daily workings of SICB for a couple of years and the efforts involved in putting on our annual meeting, I have to say how impressed I am. We are fortunate to have a wonderful group of people at Burk & Associates who do so much to keep our large group organized. Brett Burk and his team really are one of the biggest reasons for our success in recent years. But perhaps the real key to SICB is the level of involvement we enjoy from our membership. I want to thank everyone who participated this year - from program development and organization, to judging student presentations, helping raise money, helping us broaden participation in SICB, and all the things that have happened in the past year. Thanks to all of you. You are the reason we are so good!

THANK YOU BILLIE!

In January, Billie Swalla completed her term as president of SICB. I know I speak for all of us in expressing tremendous gratitude to Billie for all the hard work and creativity that went into her presidency. Of course, things never slow down for Billie, they just continue to heat up, and she is busy now as the Director of Friday Harbor Laboratories, a key SICB outpost. Once again, thank you Billie!

THANK YOU HAL!

Hal Heatwole is now in his final year as Editor of our society's journal, *Integrative and Comparative Biology*. Hal will complete ten years of service as the Editor of ICB and, during this time, he has solidified the very unique nature and position of our journal. ICB has done extremely well under Hal's direction, in-

creasing in impact factor and continuing to be an important outlet for our symposia. I hope that you will take a moment over the next year to thank Hal for his tremendous contributions to the journal and SICB.

WELCOME MARTY!

Over the past year we ran an open search for a new Editor of ICB. We had several outstanding applicants for the position, which speaks to the level of interest in our society and ICB. After interviewing four wonderful finalists, any of whom would have been an excellent choice, we selected Marty Martin. Marty has accepted our offer and he will begin his term as Editor in 2016. During this time of transition, I would encourage all of you to take a look at our amazing journal. I am not aware of any other major journal that primarily publishes the papers from symposia, as we do with *Integrative and Comparative Biology*. Because of this tradition, the papers published in ICB tend to have a different flavor from traditional research publications, being more synthetic. We also publish special papers from time to time, including Grand Challenge Papers and other discussions of major directions that develop within SICB. But please consider what else ICB might do. How might we grow the journal and its impact in science? Your thoughts and ideas will be welcome.

PORTLAND WILL BE FABULOUS

Even at this early date, plans are under way for our 2016 meeting in Portland. We selected twelve symposia scheduled on all four days of the meeting. Last year we enjoyed a significant upswing in support of symposia from NSF, which we are extremely grateful for, and we are working now to help symposium organizers look for funding from NSF and elsewhere. A special thanks has to go out to the energetic and visionary people who have conceived of symposia and put together the teams. This process is definitely part of what makes SICB special.

Finally, good luck with your research in the coming months and I hope you enjoy the teaching you do. And, by all means, enjoy some artichokes and asparagus! Best wishes to all!



**Candidates for
Member-At-Large:**

- **April Hill**
- **Steve McCormick**

**Ballots will be issued
later in the spring.**

**Special thanks to the
Nominating Committee:**

- **Elizabeth Brainerd,
Chair**
- **C. Loren Buck**
- **Scott Nichols**
- **Kiisa Nishikawa**

CANDIDATE PROFILES - SPRING ELECTIONS

April Hill

Current Position: Professor of Biology and Clarence E. Denoon Professor of Science, University of Richmond, VA.

Education: B.S. University of North Texas (1990); Ph.D. University of Houston (1995); Postdoctoral Research Fellow Harvard Medical School (1995-1997).

Professional Experience: Associate to Full Professor, University of Richmond (2004-present); Assistant and Associate Professor, Fairfield University (1997-2004); Associate Scientist, Yale University (2001-2003).

SICB Activities: Member of DEDB since 2000; Assembling the Poriferan Tree of Life Symposium (2013); Education workshop co-facilitator (2013); poster judge DEDB; representative of nominating committee DEDB (2013).

Other Memberships: Society for Developmental Biology; AAAS; AACU; Council on Undergraduate Research; Association for Southeastern Biologists; Partnership for Undergraduate Life Sciences Education (PULSE) Vision and Change Founding Leadership Fellow.

Research Interests: Evolution of animals, animal body plans, and animal specific gene regulatory networks; evolution of animal symbioses and genetic regulation of symbiosis; study system: marine and freshwater sponges (Porifera).

Statement of Goals: If elected as a Member-at-Large my main goal would be to ensure that the mission of SICB to further research, education and public awareness of organismal, functional and evolutionary biology is central to all proposed activities. Through my own teaching and research programs I have been a strong supporter of integrative approaches, including developing and

teaching in a student centered first-year research-based integrative science curriculum (<http://iqscience.richmond.edu/why/index.html>; <http://smart.richmond.edu/>). I also have a particular passion for ensuring inclusive diversity and broadening participation in biology, and bring experience in directing programs with these goals (<http://as.richmond.edu/hhmi/URISE.html>). SICB, as an interdisciplinary society is uniquely positioned to serve as a welcoming community for biologists from a wide array of backgrounds. Finally, as an NSF, HHMI, NIH-NIGMS PULSE Vision & Change Founding Leadership Fellow, I have significant experience in leading efforts to help departments and institutions stimulate systemic changes by transforming undergraduate life sciences education practices. My goal would be to bring these experiences to SICB to help further the education and public awareness goals.



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CANDIDATE PROFILES - SPRING ELECTIONS

Stephen D. McCormick

Current Position: Research Physiologist, USGS, Conte Anadromous Fish Research Center, Turners Falls, MA, and Adjunct Full Professor, Department of Biology, University of Massachusetts, Amherst.

Education: B.S. Bates College (1977); Ph.D. Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program in Oceanography (1983); Postdoctoral Fellow, St. Andrews Biological Station, Canada (1986), and University of California, Berkeley (1990).

Professional Experience: Graduate Program Director, Organismic and Evolutionary Biology Program, University of Massachusetts, Amherst (2003-2007); Acting Director, Conte Anadromous Fish Research Center (1998-1999); James Chair Visiting Professor, St. Francis Xavier University, Nova Scotia, Canada (1999); Japanese Society for the Promotion of Science (JSPS) Visiting Scientist, University of Hokkaido (2002); Editor, *General and Comparative Endocrinology* (2001-present); Editorial Board, *Aquaculture* (2005-present) and *Copeia* (2008-present).

SICB Activities: Member for over 30 years; Chair, DCE (2012-2014); Member of Conservation Committee (2000-2003); Panel member for 'Careers in Science' sponsored by the Student/Postdoctoral Affairs Committee (2003-2006).

Other Memberships: American Association for the Advancement of Science; American Physiological Society; American Fisheries Society (President, Physiology Section 1998-1999).

Research Interests: Environmental physiology and endocrinology of fishes, especially those that move between freshwater and seawater. Understanding the mechanisms of salinity and thermal acclimation of fishes and their underlying hormonal control.

Statement of Goals: As a Member-at-Large for SICB, I will work towards increasing the Society's capacity to serve all of our members, especially students, post-docs and young scientists. SICB is one of the few scientific societies that is truly dedicated to integrating across disciplines. In addition to organizing the annual meeting, the SICB Executive Committee has the unique capability to promote integrative science to the public and to funding agencies. With the Executive Committee, I will work to increase the visibility of SICB and increase opportunities for funding that are critical to continued success both within and across disciplines.

