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## EXPERIENCES— FURTHER ON THE ROLE OF FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY

by William R. Dawson  
President of SICB/ASZ 1986

I was interested in Past SICB President Albert F. Bennett's recent essay ([Bennett, 2008](#)) on the magic of field biology. Al described how the joy of observing animals in their natural habitat and the satisfaction of overcoming challenges of improvising laboratory equipment in remote situations contributed to validation of his choice of a career in biology. His essay evoked similarly pleasant memories in me linked with



Bill Dawson and Laysan albatrosses (*Diomedea immutabilis*) on Sand Island, Midway Atoll, Northwestern Hawaiian Islands.

(Continued on page 4)

## HOW ABOUT THAT ICED MOCHA?

by Rich Satterlie, President

Our Society endowment funds are thirsty. As you may recall from our last newsletter, I challenged all of our members to forego coffee for a day and send the appropriate amount of that coffee to one of our endowment funds, which are described in detail in this newsletter. A five dollar donation from all of our members would give a significant boost to these funds and create a lasting impact on our award and symposium programs. These endowments are committed for perpetuity, with annual earnings used to fund the appropriate activity. In other words, your iced mocha-equivalents provide forever-funding opportunities.

Most recently, a fund was established to endow an award to honor

(Continued on page 12)

## GRAND CHALLENGES

by Brian Tsukimura

The **Grand Challenges for Organismal Biology** (Schwenk et al., 2009) has refocused discussion on the importance of the **organism** in biological research. The series of papers published in *Integrative & Comparative Biology* describe how this principal is important in organismal biology. In order to begin discussions of how we **implement** these Grand Challenges, the SICB, at the request of NSF, has organized a workshop to initiate discussions with the authors of these papers. The hope is to initiate discussions

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**SICB Executive Officers****Richard Satterlie**

President 2009-11  
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**Brian Tsukimura**

Prog. Officer-Elect 2009-10  
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**Brett Burk**

Executive Director  
McClean, VA



## Notes from the Seattle Underground

**W**ANTED: Individual or group of individuals familiar with downtown Seattle, to scout out the immediate vicinity of the Seattle Sheraton/Convention Center for eating, socializing, and sightseeing locations. We all know there will be a couple of Starbucks nearby, but where exactly? Are there "golden arches" for a quick Egg McMuffin in the morning? Where, exactly?

We would like to establish an annual tradition of an informa-

tive "Notes from the XXXX Underground" e-mail to all members with the most useful information on the immediate meeting hotel surroundings so we all can concentrate on the good meeting "stuff" without having to be distracted with a foraging strategy for finding food, drink, fun, and sightseeing. And we would like a student perspective as well as a more "seasoned" one. Volunteers can contact me or Secretary Lou Burnett.

*Rich Satterlie  
SICB President*

## International Bitterness – Seattle-style

**I**f you attend the annual meeting in Seattle, you need to know about this! Bitterness has been quantified and this should appeal to all scientists. International Bitterness Units (IBU) will be important to beer aficionados as Seattle is the home of countless brew pubs. Read on.

The IBU scale provides a measure of the bitterness of beer; the bitterness comes from the hops. Its measurement continues to evolve and you can do some reading on the subject at the web site of the [American Society of Brewing Chemists](http://www.asbc.org) or you can do your own research. At our fall strategic planning meeting in Seattle, SICB Treasurer, Ron Dimock, and I set out to investigate. Our investigation took us to Pike's Pub in the Public Market, where we sampled some ales with very high IBUs and some with low. Feeling bitter? Try Pike's Extra Stout com-

ing in with an IBU of 65. Feeling mellow? How about a Pike Weisse Wheat Ale with an IBU of only 24. We consider this a preliminary investigation that will require much more research in January.

*Lou Burnett  
SICB Secretary*



*"Consider supporting  
your favorite  
endowment."*



## ENDOWMENTS, THE FUTURE OF SICB

JUST WHAT DO THE ENDOWMENTS DO?

*by Ron Dimock, Treasurer*

**W**ith the advent of the new Gans Award endowment, SICB now has 10 'restricted' endowments, that is, endowment funds that have a specific charge or purpose as set either by the Executive Committee or by the original donor. Since it's likely that some of these special funds and their purpose are unknown to some members, I have compiled this capsule summary of the 10 funds together with their latest balances. It should be noted that members can donate to any or all of these funds on the Society's web page.

**Carl Gans Fund.** As described elsewhere in this newsletter, the fund supports an award to honor Carl Gans and is administered by the Division of Comparative Biomechanics. Current fund balance: \$34,105

**George Bartholomew Fund.** Supports the Bartholomew Award and Lecture at the annual meeting, administered by the Division of Comparative Physiology and Biochemistry. Current fund balance: \$155,405

**Libbie H. Hyman Fund.** Supports the Libbie H. Hyman Memorial Scholarship which is administered by the Division of Invertebrate Zoology and provides assistance to take courses or to pursue research on invertebrates at a marine, freshwater, or terrestrial field station. The Hyman Grant is intended to help support a first meaningful field-station experience for a first- or second-year graduate student, or an advanced undergraduate. Current fund balance: \$33,963

**Dwight D. Davis Fund.** Supports a prize administered by the Division of Vertebrate Morphology that may be given for an outstanding paper presented by a student (or by a new Ph.D. who received the degree no more than 12 months before the meeting at which the paper is pre-

sented). In addition, a certificate will be given as well as an appropriate gift to reflect Vertebrate Morphology. Current fund balance: \$9,093

**John A. Moore Lectureship Fund.** This fund administered by the Education Council and the Society Program Officer supports a Society-wide lecture consistent with the philosophy and contributions of John Moore who authored the outstanding 3-part Science as A Way of Knowing (SAWOK) series in 1984 and 1985. Current fund balance: \$4,490

**Adrian M. Wenner Fund.** This fund is available to the Divisions of Animal Behavior, Ecology and Evolution and Invertebrate Zoology to present an "Adrian M. Wenner Strong Inference Award" to a graduate student or recently (less than 2 years) finished PhD student for a presentation at the annual meeting that shall be judged on the basis of how well and explicitly the presentation meets the standards of the strong inference or multiple working hypotheses approach to research, as identified for example by John Platt. Current fund balance: \$10,857

**Dorothy M. Skinner Fund.** Supports the Skinner Ward which recognizes women in the early stages of their careers (advanced graduate student or post doc) who have demonstrated outstanding scholarship and show high potential for continued excellence in research. It provides travel support to awardees to present their research at annual meetings of the SICB. Current fund balance: \$10,194

**Symposium Enhancement Fund.** This fund is administered by the Society Program Officer to help support symposia at the annual meeting, which not only are the core of the meeting, but provide the manuscripts for *Integrative and Comparative Biology*, and

*(Continued on page 9)*



***“Experiences—Part 7  
in a series  
of articles about the research  
experiences of members of  
SICB.***

*“SICB members  
like a good story about  
an expedition,  
a field experience,  
a lab experiment  
or another researcher.”*

## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 1)

field experiences in northern Michigan, southwestern U.S; northwestern Mexico; the Galápagos; the Hawaiian Island chain; Western Australia and Northern Territory, Australia; and New Guinea,. My interest in “expedition physiology,” as Laurence Irving termed it, was stimulated initially by works such as David Bruce Dill’s (1938) *Life, Heat, and Altitude* and E. F. Adolph and associates’ (1947) *Physiology of Man in the Desert*, as well as by the papers of Per F. Scholander and associates on arctic animals (e.g., Scholander *et al.*, 1950), and of Knut and Bodil Schmidt-Nielsen and associates on desert rodents (summarized by Schmidt-Nielsen and Schmidt-Nielsen, 1952). However, the importance of field work to me throughout my research career is fundamentally a legacy of having George A. (Bart) Bartholomew as my graduate advisor. Bart’s mantra (Bartholomew, 1958) that organisms are inseparable from the environment in which they live has served as a constant reminder that adequate interpretation

of environmentally oriented physiological and biochemical studies of wild animals requires information both on these animals in their native habitats and on various features of these habitats. I have commented before on this linkage in my Past-presidential address before the American Society of Zoologists (Dawson, 1988).

The field work that my students, other collaborators, and I carried out over the years contributed to our research in both analytical and logistical ways. We attempted in certain instances to characterize as precisely as possible the thermal characteristics of the habitats, particularly radiation-dominated ones, in which some of our animal subjects live. This ultimately led to the development of a network involving radiometers, other sensors for temperature and wind, and a data logger, sometimes supplemented with models having thermal properties of the animals of interest for determination of operative temperatures. This network resulted primarily from the efforts of William A. Buttemer, a graduate student with me at the time, with advice from George S. Bakken. Bill used it in a well received dissertation study (Buttemer, 1985) of conditions within the roosts of American goldfinches (*Carduelis tristis*) on cold winter nights in southeastern Michigan. The shelter from wind provided by such roosts led to significant reductions in estimated overnight energy costs compared with more exposed sites, due largely to the lower convective heat loss. We deployed the network in a breeding colony of Heermann’s gulls (*Larus heermanni*) on austere Isla Rasa, Baja California Norte, Mexico, to obtain background information for a study of the thermoregulatory be-

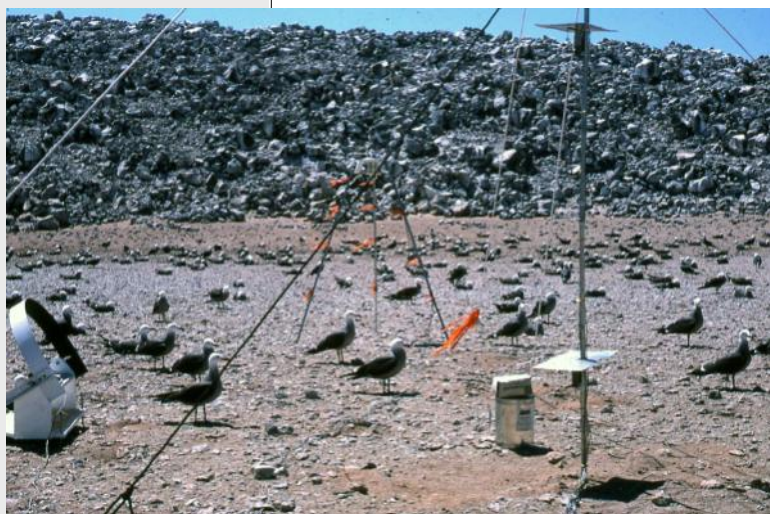


Fig. 1.—Heermann’s gulls (*Larus heermanni*) in a rookery on Isla Rasa, Baja California Norte, Mexico, with radiometers and other sensors in foreground and gulls on nests in the background.

(Continued on page 5)

## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 4)

havior of incubating adults (Fig. 1). The repertoire of these gulls included a variety of postural adjustments as well as evaporative cooling that contributed to their thermoregulation and to the maintenance of developmentally suitable temperatures in their eggs (Bartholomew and Dawson, 1979); such maintenance is critical in radiation dominated environments such as Isla Rasa because of the relatively narrow interval between incubation and upper lethal temperatures of Heermann's gull embryos (Bennett and Dawson, 1979). Under cooler conditions the incubating birds' behavior facilitated heat retention, whereas under the intense diurnal insolation, it and panting fostered convective and evaporative heat loss, respectively. The various activities were assigned arbitrary numerical values ranging from -1 for beak under scapulars, through 0 for standard incubation posture to +1 or +2 for efforts serving to facilitate evaporative cooling or convective heat loss (+2 being awarded for maximal efforts in these regards). The sum of the values at 30-min intervals for each of 21 birds on adjacent marked nests was used as a thermoregulatory score, which could range from -1.0 (heat retention) to +8.0 (maximum facilitation of heat loss). The mean score for these incubating birds at a given time described their average thermoregulatory behavior and was used as a thermoregulatory index. With respect to the various microclimatic variables measured, this index was most strongly correlated with ground temperature ( $r=0.87$ ), evidently because that temperature represents an integration of radiant

fluxes, air temperature at ground level, and air movement. These, of course, are the same environmental variables that incubating gulls must accommodate if their thermoregulation is to be effective in protecting them and their eggs. The strong correlation we observed led us to suggest the value of ground temperature as a useful indicator of the overall effect of the complex variables affecting heat exchange by birds incubating in exposed nests in challenging places such as Isla Rasa.

During participation in an R/V *Alpha Helix* expedition to Isla Fernandina, Galápagos Islands, Ecuador, Bill Buttemer and I installed the network described above on a small peninsula (Fig. 2) to characterize the microhabitats used by marine iguanas (*Amblyrhynchus cristatus*) while on land (Buttemer and Dawson, 1993). Size related differences in foraging mode were observed, with smaller individuals feeding intertidally and larger ones subtidally. Feeding bouts by the smaller lizards closely followed daytime low tides and their timing thus shifted with the tidal cycle. These animals showed considerable flexibility in the basking sites used following emergence from the intertidal zone, occupying somewhat different sets following morning and afternoon foraging, respectively. This and their subsequent habitat use allowed them to maximize the time spent at higher body temperatures, which we hypothesized would foster, among other things, higher rates of food processing and growth.

Metabolic data for marine iguanas obtained during an earlier trip to the Galápagos by Al Bennett, Bart, and me (Bennett et al., 1975),

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*"Go to Nature. Take the facts into your own hands.*

*Look and see for yourself."*--

An exhortation by Louis

Agassiz quoted on the

façade of my university's

Museums Building.

-Bill Dawson



## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 5)

demonstrated an association of maximal aerobic scope with warm body temperatures. This led Bill and me to expect that the larger,



Fig. 2.—Study site on Isla Fernandina, Galápagos Islands, Ecuador. Note the assemblage of marine iguanas (*Amblyrhynchus cristatus*).

subtidally feeding marine iguanas would time their foraging bouts and exploit their terrestrial environment in ways that maximized their time at such temperatures. Instead, when they fed (generally at 2- to 3-day intervals), their foraging efforts consistently occurred just after midday. Our microclimatic and behavioral observations indicated that these lizards' timing of emergence from the cool water and their subsequent microhabitat selection allowed them to maximize rates of rewarming and, we hypothesized, thereby deal sooner with electrolyte loads and other homeostatic challenges incurred during feeding.

The detailed behavioral observations that intensive field work can provide are often crucial for interpretation of comparative physiological observations. This became evident in an early field expedition to the Gulf of California in which Bart and I participated. We found brown pelicans (*Pelecanus occiden-*

*talis*), great blue herons (*Ardea herodias*), and yellow-footed gulls (*Larus livens*) nesting near one another at the northern end of Isla Angel de la Guarda, Baja California Norte, Mexico, in late April, when solar radiation was becoming intense but nights were still cool. We were impressed by the conspicuous difference in thermoregulatory capacity among hatchlings of the three species (Bartholomew and Dawson, 1954). The semi-precocial downy hatchlings of yellow-footed gulls were most proficient, panting when exposed to the sun and avoiding deep hypothermia through regulatory thermogenesis when unbrooded at night. The altricial naked hatchlings of the brown pelican marked the other extreme, lacking effective defense against either solar radiation or cool temperatures. The heron hatchlings were intermediate between these extremes. Had we confined our study to physiological measurements of the young in this early phase of development, we would have wondered how they could, with their divergent thermoregulatory capacities, all successfully develop in such a demanding physical environment as the Gulf of California. The answer, of course, lies in the fact that the functional thermoregulatory unit consists not of the chick with its limited capacities, but of the young individual, its siblings, and an attentive parent. The level of attentive behavior involving brooding or shading in the three species proved inversely correlated with the thermoregulatory capacities of the chicks at hatching, ensuring that the hatchlings are maintained at developmentally appropriate temperatures. Parental brown pelicans were extremely attentive in brooding or shading their helpless young,

(Continued on page 11)



*In Seattle,  
2 society-wide and  
8 regular  
symposia cover a  
wide range  
of topics.*



## PROGRAM OFFICER REPORT

### EDUARDO ROSA-MOLINAR, PROGRAM OFFICER

**H**ola Amigas y Amigos de la Isla de Puerto Rico!

I hope that all of you are doing well. Our 2010 SICB meeting in Seattle, Washington promises to be as successful as our historic 2009 meeting in Boston. We received 1318 abstracts (this number includes only symposium, contributed talks, and poster presentations), making it the second largest SICB meetings ever. There will be two society-wide symposia and eight regular symposia covering a wide range of topics and the divisions of SICB. Each of these symposia has a full day of speakers planned and many have additional complementary oral and poster sessions.

In addition, this year we have a late-breaking symposium entitled **"Insights of Early Chordate Genomics: Endocrinology and Development in Amphioxus, Tunicates and Lampreys"** organized by Stacia Sower and Linda Holland. This symposium provides the latest findings from invertebrate chordate and agnathan genomes in regard to the evolution of developmental mechanisms and the neuroendocrine systems. These findings are already challenging several current hypotheses and providing directions for new comparative studies.

In response to the authors of the 'Grand Challenges in Organismal Biology' series of papers, NSF asked SICB to organize a workshop to implement these concepts in a broad overarching sense. Entitled: **"Implementation of the Grand Challenges in Organismal Biology"** and organized by Brian Tsukimura, Program Officer-Elect, the workshop will include the Grand Challenges authors and Executive Board members from other societies to begin a discussion on implementing the Grand Challenges. Elsewhere in the newsletter Brian

will provide the rationale and describe the focus of the workshop. I encourage you to read the description and attend the workshop.

The plenary lecture this year will be given by our past-president of SICB, John S. Pearse, Ph.D., University of California, Santa Cruz. We have scheduled excellent society-wide lectures such as the Howard Bern lecture, George A. Bartholomew Award lecture and the John Alexander Moore lectureship. In the 2009 Spring newsletter Patricia Morse wrote a [great article on John A. Moore](#) and his work. The Moore lectureship was established in 1990 by the SICB Educational Council. Thomas E. Lovejoy III was the first Moore Lecturer in 1993. The Moore Lecturer for the 2010 SICB meeting is Bruce Albert, Ph.D., University of California, San Francisco. Throughout his career Albert has demonstrated a strong commitment to improving science and mathematics education. Albert is the immediate past-president of the American Society of Cell Biology and has returned to the Department of Biochemistry and Biophysics at the University of California, San Francisco after serving as the president of the National Academy of Sciences (NAS). Alberts also serves as the editor-in-chief of the journal *Science*.

The welcoming social, coffee breaks, and end-of-the-meeting dessert social will provide ample time for interaction and discussions among members and visitors. [The Seattle Sheraton Hotel](#) is within walking distance of all types of attractions, restaurants, nightlife and entertainment. Registration and the exhibit hall for vendors, posters and coffee breaks, and divisional and society wide socials will be held in the Seattle convention center

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## SICB PROGRAMS—PO REPORT CONT.

located next to the hotel. Some society business meetings will be conducted at the hotel.

One of the tasks of the SICB Program Officer, in conjunction with



Divisional Program Officers Mike Sears, Wendy Olson, and Jim McClintock arrange the program for the annual meeting.

the Divisional and Associated Societies Program Officers, is to discuss, debate, and choose symposium proposals and award divisional financial support for the following year. For the 2011 SICB meeting in

Salt Lake City the approved symposia are:

**1. Speciation in Marine Organisms** (primary organizer: M.P. Miglietta)

**2. I've Got Rhythm: Neuronal Mechanisms of Central Pattern Generators** (primary organizer: D. McPherson)

**3. Environmentally-Cued Hatching Across Taxa: Embryos Choose A Birthday** (primary organizer: K. Martin)

**4. Bridging the Gap Between Eco-immunology and Disease Ecology** (primary organizer: S. French)

**5. The Biomechanics and Behavior of Gliding Flight** (primary organizer: R. Dudley)

**6. Bioinspirations and Applying Mechanical Design to Comparative Experimental Biology** (primary organizer: B. Flammang)

**7. Neuroecology: Neural Determinants of Ecological Processes from Individuals to Ecosystems**

(primary organizer: C. Derby)

**8. Synthesis of Physiologic Data from the Mammalian Feeding Apparatus Using FEED, the Feeding Experiments End-User Database** (primary organizer: S. Williams).

**9. Environment, Energetics and Fitness: a Symposium Honoring Donald W. Thomas** (primary organizer: M. Wojciechowski)

Congratulations! I am sure that Brian Tsukimura and the Divisional and Associated Societies Program Officers are looking forward to working with you over the next months. We will invite symposium organizers to a luncheon at the 2010 SICB meeting, giving them an opportunity to meet Brian and the Divisional and Associated Societies Program Officers and to receive information about their responsibilities and deadlines.

Finally, the SICB Society Executive Officers, Webmaster, Divisional and Associated Societies Program Officers, symposia and workshop organizers, Burk & Associates, and I have worked very hard to make your 2010 SICB meeting as productive and as engaging as possible. I thank all of you for your patience and your support during my tenure as SICB Program Officer. I especially thank Brian Tsukimura, our Program Officer-Elect, for being extremely helpful over the past year. It has been fun and a privilege working with you, amigo!!! It has been an honor and a privilege to have served and worked with you all. We look forward to seeing you in Seattle at the start of the New Year!

Eduardo Rosa-Molinar  
SICB Program Officer





*Endowments are  
critically important in  
sustaining the activities  
of the SICB*



## ENDOWMENTS, THE FUTURE OF SICB

(Continued from page 3)

hence are the life blood of the Society's journal. At the discretion of the Program Officer, funds can be used, for example, to support young, exciting, but perhaps poorly funded investigators, or foreign speakers. Current fund balance: \$111,675

**Charlotte Mangum Fund.** This fund, administered by Burk & Assoc Inc, in conjunction with the Student Support Committee, supports the Charlotte Mangum Student Support Program, which provides housing or

registration for students presenting at the annual meeting and who perform limited services for the Society in return. Current fund balance: \$262,000

**Grants-In-Aid-of-Research (GIAR) Fund.** This fund is administered by the Student Support Committee which determines recipients of research awards totaling \$24,000 per year and Fellowships for Graduate Student Travel (FGST), \$6000 per year. Current fund balance: \$179,317



## SICB FINANCES: MIXED NEWS?

### **Out of the Woods or Just Can't See the Ravine Ahead?!**

The recent resurgence of the stock market has significantly improved SICB's portfolio. Year to date (9/1/09) we had recouped \$132,000 or 15.8% while the S&P 500 was up 9.5%. Although this is reason for optimism, the portfolio was still more than \$130,000 below its Sept 1, 2008, value. The market is still volatile and swings of several 10s of thousand dollars in our total portfolio value are routine from day to day. A number of financial analysts are concerned that we may yet be in for a major correction or double dip recession. Our financial manager continues to hold about 20% of assets in cash and hence is poised to take advantage of any 'sales' that might accrue from a correction. Apparently he is not alone; about 70% of gross stock market capitalization still sits on the sidelines in cash and savings vs. the traditional 40% on average.

### **Boston Meeting: Great Success, Not Only in Terms of Science but also Finances**

The outstanding attendance in Boston, 1836 folks, nearly 400 more than the previous high in New Orleans, helped to make the meeting

the most profitable ever. After some wheedling and casual mention of lawyers, the hotel backed away from its contention that SICB owed an extra \$50,000 for AV than the Burk-negotiated contract had called for. That, coupled with the increase in registration, cost cutting measures, and tremendous attendance, resulted in the annual meeting being about \$90,000 in the black. While this is a major turn of events (in 2000 the Annual Meeting lost \$120,000!), that surplus was quickly absorbed into budget deficits from the bear market of the past two years, and is the major reason why SICB is ONLY about \$130,000 below the point at which the bottom began to fall out of the market.

There was considerable concern on the part of the Finance Committee that the Boston meeting was a one-of-a-kind of fluke, and that there was no assurance of a repeat for 2010. However, with the submission of 1318 abstracts for Seattle, and the strong positive correlation between number of abstracts submitted and final attendance figures, Seattle looks to be very similar to Boston. Barring some major correction

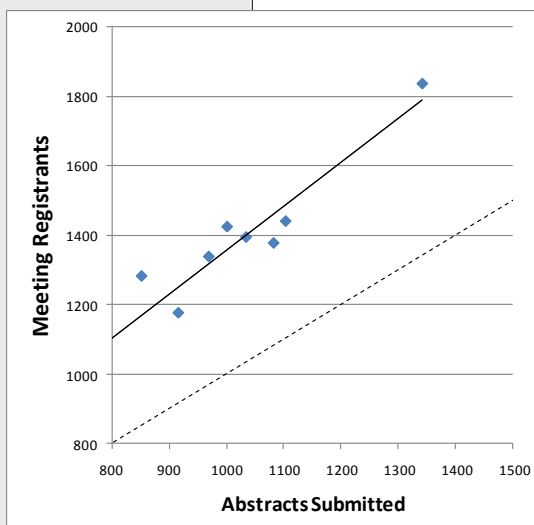
(Continued on page 10)

## MEETING STATS

Here are some interesting meeting statistics. The annual SICB meeting in Boston at the beginning of this year was the largest on record in our recent history. A total of

1345 abstracts were submitted and 18?? individuals registered for the meeting. The Seattle meeting had slightly fewer abstracts submitted 1318. The figure below represents data gathered on annual meetings since 2001 and it shows a good relationship between the number of abstracts submitted and

meeting registrants. The 2010 Seattle meeting will add yet another point on this graph toward the high end.



## Educational Council Report

Starting with discussions at last year's meeting, The Educational Council has begun a process of refocusing its role in educational issues in the society. To that end, we have contributed a number of questions to the **SICB society-wide survey**, with issues ranging from incorporating educational topics into research symposia, to highlighting the work of undergraduates, to developing a series of teaching and learning workshops, to improving the content of the SICB digital library. We hope you will take the time to answer these questions and to join us for discussions of these issues when the council meets in Seattle. Please also plan to attend the John A. Moore lecture, which will be delivered this year by Dr. Bruce Alberts.

*Bob Podolsky, Chair*

## FINANCE NEWS

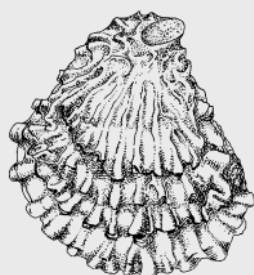
*(Continued from page 9)*

in the economy, we may go into 2011 in nearly the solid financial position we enjoyed in early 2007. That would mean that funding additional student support or other initiatives could become a reality. Whether or not Salt Lake City makes a hat-trick of outstanding meetings remains to be seen.

### Incredible Success with the Newest Endowed Fund

The endowed fund that will support the new **Carl Gans Award** for outstanding contributions in biomechanics and functional morphology has become a reality from its inception just after the annual meeting in Boston. This award, named in honor of Past President Carl Gans, a singular figure in vertebrate morphology and in service to ASZ/SICB, has been made possible by the tremendous outpouring of financial support to a new endowment that was skillfully parented by Robert Dudley and Bob Full on behalf of the new Division of Comparative Biomechanics. The fund received a huge endorsement when Carl's brother, Leo, and Sandra Gaunt stepped forward not only with their own donations but also with a very generous dual matching challenge grant that jump-started the endowment. The fund went from its humble beginnings immediately after the meeting in Boston to over \$34,000 by the time I'm writing this. The minimum required to fund an award, hopefully in perpetuity, is \$25,000. Clearly Professor Gans is held in very high esteem by many colleagues in SICB and elsewhere. Congratulations to Robert and Bob, and especially to Leo and Sandra, but to all who made this award a reality in record time.

*Ron Dimock  
SICB Treasurer*



## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 6)

whereas yellow-footed gulls were much less so. The great blue herons were again intermediate in this regard.

Field work provides another key fund of information for eco-physiological studies concerning just how animals deal with particular environmental challenges under natural conditions. One example of this was provided by work that Al Bennett and I carried out in Western Australia on the spectacled hare wallaby (*Lagorchestes conspicillatus*), a 3-kg macropod marsupial inhabiting arid areas in which spinifex grass (*Triodia* spp.) is the dominant plant. Our

laboratory observations (Dawson and Bennett, 1978) documented excellent capacities for evaporative cooling in this wallaby, featuring a well developed panting response and saliva spreading on the forelimbs and ventral surface. Evaporative cooling increased rapidly in our laboratory tests as ambient temperature exceeded 34°C. We knew that hare wallabies are nocturnal, but we assumed that they would encounter temperatures substantially above 34°C in their natural daytime retreats, requiring expenditure of significant quantities of water in heat defense. I had the opportunity to visit Barrow Island

(20° 45'S, 115°25'E) off the north-western coast of Western Australia, one of the few places where the hare wallaby is still abundant. On this November trip (approaching the austral summer), locating these wallabies was facilitated by my Australian companions' equipping individuals with radio collars. This allowed our party to trace the individual shown in Fig. 3A to its daytime refuge in a large clump of *Triodia angusta* (Fig. 3B). My measurements within this refuge indicated that ambient temperatures reached no higher than 32°-37°C and radiant heat loads were low, even during the hottest part of the day. We concluded that diurnal use of shelter relieves hare wallabies from the need within their arid habitat for expending substantial amounts of water in thermoregulation (Dawson and Bennett, 1978). This circumstance could prove important for survival, for surface water on Barrow Island is restricted and sometimes lacking. In this case behavior appeared to contribute to resolution of a potential conflict between the demands of heat defense and maintenance of water balance.

Beyond allowing examination of the essential relation between animals and their environment in eco-physiologically oriented studies, logistical considerations not infrequently necessitate field work and the establishment of remote laboratory facilities. This is often the case for species that would be difficult to transfer to one's home laboratory or to maintain once there. It also applies in cases where retention of animals in a particular acclimatization state is a requirement or where a study deals with developmental questions in species that it would be impractical to breed in the laboratory. Interest in the development

(Continued on page 14)



Fig. 3A. A 3-kg spectacled hare wallaby (*Lagorchestes conspicillatus*) on Barrow Island, Western Australia, shortly after release. B. The clumps of spinifex (*Triodia angusta*) serving as this animal's daytime retreat.





*Providing your demographic information for SICB is important in assisting in documenting member diversity.*



## COMMITTEE ON BROADENING PARTICIPATION

I am happy to report that the committee has finally been given regular committee status with the SICB bylaws changes in the Spring of 2009. Along with this comes the responsibility to actually effect change within the society. An important addition has been the inclusion of a self-identification form during registration for the meeting. Please tell all your students and colleagues to be sure to provide this information. We are charged with increasing the diversity of membership of the Society and of fields of integrative and comparative biology. Without these vital data we will have no way of knowing how we are accomplishing this goal.

The committee will be discussing a two-prong approach that focuses on recruitment and retention. We are hoping to recruit young undergrads (or HS students) from areas where our meetings are held. The second part of our efforts will be on retention. Those who attended last year's

breakfast were surprised to see the growing diversity within SICB. However, we must take steps necessary to assure that the graduate students who have attended meetings and are presently underrepresented in the sciences will stay within the field. We are discussing a number of mentoring programs and workshops that will help with this effort.

Many of our members are involved in other societies that have long had committees to deal with issues of broadening participation. I am always happy to hear about other approaches that have worked.

Also, we are always looking for members who would be interested in helping the Society achieve greater diversity. A new Committee on Broadening Participation is currently being constituted. If you would be interested in serving this committee, please contact President Rich Satterlie.

*L. Patricia Hernandez  
Former Committee Chair*

## SICB MOCHA

*(Continued from page 1)*

Past SICB President Carl Gans. Through generous donations of a number of individuals, this fund has met and surpassed the \$25,000 minimum to set up such a fund. The story behind this remarkable effort is reported elsewhere in this newsletter.

You all probably know my favorite fund is the symposium fund. Interest-earned dollars in this fund go to defraying the costs of our annual meeting symposia, and give the organizers more opportunities to plan the symposia free of financial limitations. This could impact the inclusion of foreign speakers, or of speakers from more expensive locations. The climb of our journal reputation is due to the quality of our symposium papers, and we

would like to ensure that the climb continues by giving all of the help we can to our symposium organizers.

We also have a couple of slow-growing funds that could use the support of our membership. These include the funds supporting the Skinner Award, the Wenner Award, and the John Moore Fund. Full details of these, and all of our endowment funds, can be found on the society website.

As always, we are forever grateful for the wonderful generosity of our members, and not just financial support. We exist because of the volunteer support of our society and divisional officers. If anyone is interested in giving of their time, either contact us (the society officers) or your divisional officers.

Now, how about that cup of Joe?

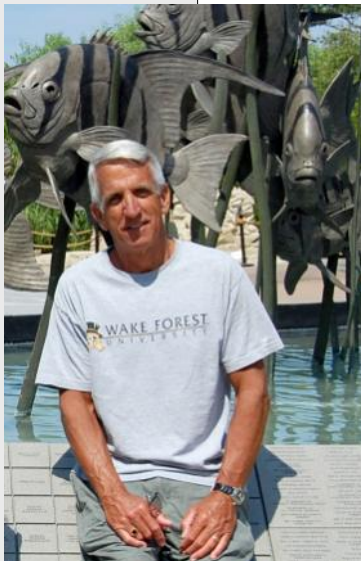
*Rich Satterlie  
SICB President*

## NINE YEARS—MORE FUN THAN ANYONE SHOULD BE ALLOWED TO HAVE

by Ron Dimock, Treasurer

This is my last newsletter as Treasurer. I'm really going to miss having Lou Burnett hound me to get it done on time! Actually, I'm going to miss quite a few things, but the finances are going to be in good hands with Bob Roer taking over. Brett and Lou will be sure to keep Bob on track.

I have really enjoyed working with the executive officers and everyone



in SICB and especially with the Burk folks. Marvalee Wake and I came on board together just as Martin Feder and Kim Smith were effecting the transition from Smith-Bucklin to Burk & Assoc, Inc., a great time for SICB and for Marvalee and me. She and the succession of presidents who have followed her were wonderful, dedicated, hard working folks who were a pleasure to work with. While it has been, I think, unprecedented for someone to

hang around in the same position for 9 years (let's make sure Lou Burnett does the same...), I am very pleased with where SICB is now compared to my first few years. Martin and Kim had the foresight to get on board with the Burk folks. The Burks (Dick and Sue and Brett) were, and continue to be, nothing short of terrific in helping SICB get firmly on its feet financially, which for a while looked like sitting on a 2-legged stool. Kim Smith, my predecessor, told me that if SICB didn't get the journal under control (which at that time generated about 50% of the Society's income and was losing subscriptions practically exponentially) and that if we couldn't identify new

sources of revenue and/or ways to economize, then SICB was doomed. With that encouragement, Marvalee and I ventured forth.

What has followed has been the superb management of SICB by the Burk crew, especially in reversing what was routinely a \$100,000-150,000 loss on the annual meeting to this past year's 'surplus' of just over \$90,000 (think about that...), the terrific association with Oxford University Press begun by President John Wingfield and pulled off by President Sally Woodin which converted the venerable *American Zoologist* to the showcase *ICB* and the stabilization not only of income from the journal but of subscriptions and especially international recognition, and, on Marvalee's watch, to getting a substantial fraction of the Society's growing resources under professional management. The 100% capital gain in 4 years on one \$200,000 investment is going to be hard to duplicate, and put SICB firmly in the black, able to withstand the withering assault of recent economic events. John Pearce and Rich Satterlie have kept the roll going, with John continuing the belt tightening insisted upon by Sally (and achieving a balanced budget for fiscal 2010), and Rich doing a fine job of responding to the 'Grand Challenges' gauntlet from NSF.

I rather doubt that most members of the Society realize how fortunate we all have been to have Lou Burnett and Ruedi Birenheide as secretary and webmaster supreme, respectively. Ruedi masterfully helped bring SICB into the digital age, and Lou has been the glue, pitchfork and roadie to see that everyone stays on course.

All of these folks and many, many more have put in untold hours (only

*(Continued on page 17)*



## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 11)

of temperature regulation in sea-birds has led various colleagues and me to a number of rookeries in Mexico and the U.S. (Fig. on front page) and, sometimes, to the establishment of laboratory facilities on shipboard and in a variety of other situations, including host uni-



Fig. 4. —Interaction on the R/V Dolphin during a 1976 cruise to Isla Rasa in the Gulf of California: (from left to right) Hermann Rahn (State University of New York, Buffalo), George Bakken (University of Michigan and currently Indiana State University); Bart (University of California, Los Angeles), Bill Buttemer (University of Michigan and currently University of Wollongong, New South Wales, Australia), and Al Bennett (University of California, Irvine).

*"The importance of field work to me throughout my research career is fundamentally a legacy of having George A. (Bart) Bartholomew as my graduate advisor."*

versities, field stations, and a U.S. Navy base. Without the willingness to go into the field and, in some instances, improvise laboratory facilities, many of the projects would not have been possible. Moreover, the prompt return of chicks and pipped eggs to their nests would not have been feasible.

In this consideration of field work, I'd be less than candid if I didn't acknowledge occasional frustrations resulting from the failure of key items of equipment to reach me in a timely or workable manner because of shipping errors, uncooperative customs officers, or malevolent baggage handlers. Nevertheless, the esthetic satisfaction of ob-

serving animals under natural conditions, the contributions that such observations make to laboratory studies, and various logistical considerations have combined to make field work an important part of my research efforts. Such work probably has had some educational and social benefits as well. I feel that I became much better acquainted with the graduate students who accompanied me on various sabbatical leaves and other field projects, in part because of more informal circumstances and more time for interaction afforded by our being off our home "reservation." Furthermore, we all gained professionally from the interactions we had with faculty, postdoctoral scholars, and graduate students from other institutions when we were all drawn together in such activities as the R/V *Alpha Helix* Program and other field projects (Fig. 4). I am certainly grateful to the Office of Naval Research, the U. S. Public Health Service, The Guggenheim Foundation, The Australian-American Educational Foundation, the National Science Foundation, and The University of Michigan's Horace H. Rackham School of Graduate Studies, for support of my field research. It is my hope for the welfare of the discipline that funding for this type of activity will continue to be available to my successors in ecologically oriented physiology.

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*"Without the willingness to go into the field and, in some instances, improvise laboratory facilities, many of the projects would not have been possible."*



## FIELD WORK IN ECOLOGICALLY ORIENTED PHYSIOLOGY—WILLIAM R. DAWSON

(Continued from page 14)

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William R. Dawson  
Museum of Zoology  
The University of Michigan

## Researchers Database

Ever noticed the cool images on the upper left hand corner of the SICB web page? They change every time the screen is refreshed.

Submit your photos and brief paragraphs to your **divisional secretary**. It is a great way to advertised what you do. It is a great way to recruit students.

**This great photo of a woodrat is from the [DEE Researchers Database](#) and was contributed by Denise Dearing.** She investigates how plant toxins influence the foraging behavior of vertebrate herbivores and the mechanisms that



herbivores employ to process toxins. Her research group is currently investigating the physiological mechanisms and tradeoffs associated with dietary specialization using different species of woodrats.

*Please take a few minutes to complete your SICB member survey.*

## SICB Member Survey

We want to know your opinion. In October all SICB members were sent a link to a Society-wide survey that will harvest information in a number of important categories. This survey was developed over the course of this past year with input from members of the SICB Executive Committee, committee chairs, and a specially appointed review team for the SICB journal *Integrative and Comparative Biology*.

The survey will provide the leadership of the Society with a wealth of information that can be used to better serve members of SICB and strengthen the Society. If you haven't filled out the survey, please take a few minutes to do it before the survey closes on November 25.

If you misplaced the email with the link to the survey, please contact the SICB Executive Office [SICB@BurkInc.com](mailto:SICB@BurkInc.com).



## Hormone Action in Animal Development

**From DCE Researchers Database.** Much of our research focuses on animals with complex life cycles because they provide unique opportunities to study the molecular basis for hormone action, environmental effects on development and life history evolution.

*Robert Denver*

## SICB GRAND CHALLENGES

(Continued from page 1)



that will ultimately lead to the creation of initiatives and possibly funding priorities within NSF. The Program Committee has also invited leadership from external societies to participate in this discussion on "Implementation" to enhance the scope of discussions and to allow these societal executive officers to bring the discussion back to their own societies. The societies that agreed to participate are: Sigma Xi (Dr. Joseph

Whittaker, President-Elect), Ecological Society of America (Dr. Mary Powers, President); Society for Developmental Biology (Dr. David Rabile, Past Treasurer); American Physiological Society (Dr. Hannah Carey, Past President); Animal Behavior Society (James Ha, Past Treasurer); and American Society for Cell Biology (Dr. Bruce Alberts, Past President). We hope that this workshop will start a national discussion on the Implementation of the Grand Challenges.

The workshop will be held on Wednesday, January 6, from noon to 3 p.m. We hope that you will be able to attend.

*Brian Tsukimura*  
Program Officer-Elect



## FUN TO BE TREASURER!

(Continued from page 13)

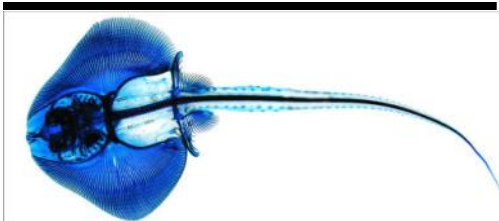
for the occasional free beer) to make SICB the premier organismal society in, I dare say, the world. For young members who are contemplating future contributions to their profession, and at some point thinking seriously about 'giving back,' I encourage you all to get



Ron Dimock, SICB Treasurer, with his youngest F2.

involved in SICB at any level that suits you. I hesitate to admit that I have been a member continuously since 1967 (life membership looks like a no-brainer now...), when Mike Greenberg my MS mentor said, "You ought to join ASZ" (need I say more??)

Thank you for all your support.



### Biomaterials, biomechanics and bioinspired design

From [DVM Researchers Database](#). Submit your photo & description to your divisional secretary. This one is from SICB Member-At-Large Adam Summers.



## SICB Needs Your Help

The SICB supports many programs within the organization through special funds it has created. **Do your part and donate to these funds on a regular basis.**

Click on Donate to SICB on the [SICB web page](#).

- Carl Gans Award Fund
- Charlotte Mangum Student Support Fund
- Dorothy Skinner Award Fund
- Dwight Davis Fund
- George Bartholomew Fund
- Grants-in-Aid of Research/FGST
- John A. Moore Lectureship Fund
- Libbie Hyman Scholarship Fund
- SICB Symposium Enhancement Fund
- Adrian M. Wenner Fund

### Form & function - annelid larvae From [DIZ Researchers Database](#).

I'm interested in the functional morphology and evolution of embryos and larvae of marine invertebrates, especially annelids. Annelid larvae are unusually diverse in form and function and provide an interesting comparative system for exploring hypotheses on the evolution of larval traits. Some students in my lab work on annelid larvae, but others use a variety of tools to address diverse topics in invertebrate biology, including variation in maternal provisioning, larval chemical defenses in bryozoans, and the phylogeography of estuarine crustaceans.

Bruno Pernet

