

Distinguished Economic Botanist Awards

The 2009 recipients of the Society for Economic Botany, Distinguished Economic Botanist Award are Drs. Michael Balick and Nina Etkin. Dr. Balick is the Vice President for Botanical Science, Director and Philecology Curator, Institute of Economic Botany at The New York Botanical Garden, and also a past president of the Society. Dr. Etkin, who passed away this year after a long illness, was a Professor and the Graduate Chair of Anthropology at the University of Hawai'i—Manoa, as well as past Editor-in-Chief of Economic Botany. Dr. Etkin's acceptance speech was presented at the Society's 50th Annual Meeting in Charleston, South Carolina, by Paul Ross,¹ her partner and best friend for nearly 40 years. Following is the text of Paul Ross and Michael Balick's presentation.

Dr. Nina Etkin



¹ Paul Ross is presently Administrator, Hawaii Medical Center East, Honolulu, Hawaii.

Having lived with a terminal diagnosis of lung cancer for over five years, Nina died in late January 2009. By all statistics and odds, she should have died after two years; however, like everything else she did, she defeated expectations.

We both knew in January 2004 what she was saddled with. As a director for an oncology program in Hawai'i, I knew all too well what this diagnosis meant. And so did she. But rather than turning inward and shutting down, Nina opted to turn the final years of her life into her most professionally productive: she continued to serve as graduate chair, hooded four of her favorite Ph.D. students in one ceremony last year, wrote 20 articles and completed two books, the most recent of which, *Foods of Association* (Etkin 2009), will be published this Fall. She almost completed a third book. All of these accomplishments came while enduring the drone and enervation of regular chemotherapy.

Her disease brought to us real-life lessons of what were once only matters of academic interest:

- That although 90% of lung cancer is attributed to inhalation of a natural product, hers was of a less direct variant,
- That part of her treatment was derived from plants—periwinkle and the pacific yew—that were at once antineoplastic *AND* carcinogenic,
- That the much touted antioxidants *de jure*—the blueberry, goji, mangosteen, noni—could be contraindicated and potentially antagonistic to allopathic treatment,
- That common supplements could relieve symptoms but also potentiate or add to side effects by, for example, promoting bleeding or compounding sedation,
- And on and on....

These were direct, obvious, and real-life ironies.

As many of you know from her writings, Nina had disdain for simple description and strove to focus attention on data that addressed or was informed by theory. “*SO WHAT?*” was one of her favorite expressions. Before the days of Power-Point, she actually commissioned an elaborate

slide expressing this sentiment. She would use it at least once—sometimes more than once—in whatever presentation she was delivering. This was not always directed to her audience. It also served as a self-reminder that what she said had a point and addressed issues that were of broader relevance than whatever the topic at hand. As her career developed, she became a little more sophisticated, or at least less direct, or maybe more entertaining, in how she conveyed this concern; but it was always there.

It was no accident or surprise that she spent what she knew to be the last months of her life devoting her best hours to Charles Darwin. Her wish was not to occupy her final productive days and hours with a round-the-world cruise or sky diving; with a roll of the eyes she would quickly dismiss these activities for the terminally ill as *so* clichéd. Rather, Nina was devoted to learning as much as she could about Darwin and link the insights of his writings to what she understood of ethnobotany—not exactly the “Bucket List” that would find its way into Morgan Freeman’s and Jack Nicholson’s life-script.

In the last six months of her life she raced to get a volume together on the Ethnobotany of Darwin’s Garden. She hurried to get the backbone of her treatise published in October 2008 in the journal *Ethnobotany Research and Applications* (Erkin 2008). Along the way, she would come home to share excitedly—more often with the enthusiasm of a graduate student than a staid and seasoned scholar—what to me were seemingly inconsequential tidbits of information about Darwin. It was this insatiable intellectual curiosity rather than her cancer, chemotherapy side effects, or wearing fatigue that defined and enlivened her last days. Through all these weeks, Nina knew that she was in a race against time that even she would inevitably lose.

A month or so before she died, Nina discovered through word of mouth that she was to receive this award from the Society of Economic

Botany. The official letter arrived one week before her death; I was able to read it to her in her hospital room. I am grateful for the timing. Nina had a sense of the value of her scholarly work; but at the same time, she was too self-effacing to ever feel comfortable hearing how others esteemed her accumulated body of work. Appearances to the contrary, she was too self-critical and dismissive to be comfortable with the accolades of fellow scholars. So she was a little uneasy and taken aback by the award; but, frankly, she also enjoyed grappling with the contradictions it presented.

Nina at best tolerated others speaking about her, but she was never going to ever tolerate anyone speaking *for* her. So I was left with this quandary. She died having written her own obituary, even her complete and up-to-date CV. But, damn it, she died without leaving me an acceptance speech.

I have been truly moved by the many scholars—budding and otherwise—who have contacted me to express how meaningful Nina’s efforts were for their own careers and how her views helped shape theirs.² I am certain that Nina had no idea. She unintentionally scared the hell out of her graduate students with the slightest provocation—oh, maybe she *occasionally* intended to rattle their cages. But she always welcomed and valued notes of thanks and gratitude. She would bring them home for me to see or email them to my office. But none of this held a candle to the depth of emotion that has been expressed since her death. She would have been truly overwhelmed. I, too, had no idea what she meant to others. Under the special circumstances of this award, I would have enjoyed Nina’s discomfort.

On behalf of Nina and myself, and with my sincerest aloha, I thank you for this honor and recognition.

² Some of this is expressed in a special edition of the International Society of Ethnopharmacology (ISE) Newsletter. http://www.ethnopharmacology.org/downloads/newsletters/nl_2009/ise_newsletter_april_2009.pdf

Dr. Michael Balick

It is humbling for me to share the DEB award with our wonderful friend and colleague Nina Etkin, whom we miss very much. I was very moved by her husband Paul Ross' remarks and Lisa Gollin's images, which brought back many fond memories of Nina and her lasting contributions to ethnopharmacology. In many ways, however, such designations as the DEB are never really for individuals; all of us accomplish our work with the help of many others, always by "standing on the shoulders of giants" as John of Salisbury pointed out long ago in the twelfth century. In any field, it is those who have come before us, as well as those who work with us and inspire us, who have made our own meager accomplishments possible. In economic and ethnobotany those people include our teachers, our colleagues, and friends. This field has grown so much over the past decades—indeed, it is in a constant and accelerated state of evolution. This growth is due in large measure to the gifted young

people getting into economic botany and ethnobotany—many of whom are here tonight—you are asking so many extraordinary questions about plants and people, and challenging the ideas of your mentors in very healthy and constructive ways. Teachers know that they have succeeded when the students they have guided go on to accomplish much greater things. In preparing for tonight's remarks, I looked over the first issues of our journal, *Economic Botany*, published in 1947. At that time, under the leadership of Edmund H. Fulling, papers focused primarily on discussion of useful plants—descriptions and production statistics about major crops and novelties that could, and would someday become mainstream. Today, that journal, under the recent leadership of Dan Moerman and current leadership of Bob Voeks, is rich with information about plant use, but it is more about processes, practices, conservation, and biological and cultural diversity.

Looking at the founders of our Society, 50 years ago (Fig. 1), we see the greats of the field. National Academy of Science members, distinguished teachers, plant explorers and world renowned scientists, many known for their work in evolutionary biology. What brought them together? Nearly a decade earlier, with the founding of the journal, William J. Robbins, then Director of The New York Botanical Garden, noted in his introduction to the new journal,³

“A journal of applied botany is therefore needed to bridge the gap which always exists between knowledge and its application, between those interested in knowledge for its own sake and those interested in it because of its usefulness.... To develop a journal which will serve, in a sense, as a common meeting place for botanists, interested primarily in fundamental principles, and those concerned with their application and development is highly desirable in today’s ever increasing state of technological specialization. It is the purpose of *Economic Botany* to meet this need, as well as to provide information for those who value knowledge purely for the sake of learning.”

Our Society for Economic Botany is a community, a group of people who interact and share some form of common interests and relationships. For many of us it is our primary professional society and thus a very important community. Family, school, and work are more important communities in many ways, but still, the SEB is a very important community. Numerous medical studies have shown that people involved in communities, versus those who are isolated, have healthier lives. Cacioppo et al. (2002) writing in the journal *Psychosomatic Medicine* about a group of undergraduates studied, noted that the students living without community involvement had a higher risk of cardiovascular problems and sleep dysfunction. A larger study by Berkman and Syme (1979) of nearly 7,000 adults over a nine-year period showed that mortality was higher among those who lacked social and community ties.⁴

As a graduate student, I was fortunate enough to be part of the community at The Botanical Museum of Harvard University, headed by my Ph.D. mentor and one of the SEB’s founding

members, Richard Evans Schultes. During the period of my studies (1975–1980), the professor had achieved celebrity status, both in the Amazon Valley where he worked and at home in Massachusetts. His specialty in psychoactive and toxic plants assured the daily presence of reporters, as well as psycho-groupies, at the Museum. His students were constantly leaving for, or returning from some remarkable and exotic locale, with tales of their research expeditions worthy of Hollywood movie scripts. What a glorious time it was, with graduate students that included Tim Plowman, Bob Bye, Andy Weil, Doel Soejarto, Paul Cox, Lynn Bohs, Wade Davis, Jim Zarucchi, and many others who were inspired by Schultes’ interests in plant exploration and traditional uses. I owe so much to these people, who took time from their busy lives to answer my questions and offer their wise council. This mentoring continued when I arrived at The New York Botanical Garden, from this year’s plenary speaker, Sir Ghilleen T. Prance, the founding Director of The NYBG Institute of Economic Botany. What you learn from receiving the scholarly gifts of others is that it is hard or often impossible to pay them back for their kindnesses. So, given that we all stand on the shoulders of giants, the best way to express gratitude and acknowledgment is, as Ben Franklin pointed out, to “pay forward.” In his words,

“I do not pretend to give such a Sum; I only lend it to you. When you [...] meet with another honest Man in similar Distress, you must pay me by lending this Sum to him; enjoining him to discharge the Debt by a like operation, when he shall be able, and shall meet with another opportunity. I hope it may thus go thro’ many hands, before it meets with a Knave that will stop its Progress. This is a trick of mine for doing a deal of good with a little money.”⁵

So, one is advised to pay forward by helping others to progress in their careers and aspirations. And it has been my good fortune to be able to do that through my work at The New York Botanical Garden, through The Institute of Economic Botany since its founding nearly three decades ago.

Jim Miller, in his kind introduction, has discussed my work with Rosita Arvigo in Belize, an ongoing collaboration beginning in 1987. In

³ Robbins, W.J. 1947. Why another botanical magazine? *Economic Botany* 1(1)3–4.

⁴ As discussed in Balick and Lee (2003) *The Power of Community*. *Alternative Therapies* 9(1)100–103.

⁵ http://en.wikipedia.org/wiki/Pay_it_forward (6 August 2009).



Fig. 1. Left to Right: Edmund H. Fulling (founder of the *Journal*), Richard Evans Schultes, Bassett Maguire, Walter H. Hodge (back), William C. Steere (front), G. Ledyard Stebbins, Charles B. Heiser, Jr. (back), Louis O. Williams (back), Charles M. Rick (center), Mrs. Frank A. Gilbert (front), Elizabeth McClintock, L. G. Nickell (center), R. D. Lewis (back), Quentin Jones (back), Frank A. Gilbert (front), Charles Todd (center), L. J. King (back), David J. Rogers, David D. Keck. Photograph from of The Society for Economic Botany Archives of the LuEsther T. Mertz Library, The New York Botanical Garden.

this note I'd like to focus on our current work in Micronesia, where a very broad and rich collaboration involving dozens of institutions and hundreds of individuals from many disciplines has developed into a program referred to as "Biodiversity and Human Health in Micronesia." Micronesia, in the western Pacific Ocean, is a region of vast biodiversity, with many unique plant species—76% of the plants native to these islands are found nowhere else on earth, putting this region in the top 10 most important biodiversity hotspots based on rates of plant endemism. This is the result of the isolation of the individual islands, their diverse topography, and the fact that they are found very far from continents that would otherwise dominate their floras. Micronesia contains over 2,000 individual islands spread throughout 3.5 million square miles of ocean—a total area approximately the size of the continental United States—and is located about 2,500 miles southwest of Honolulu. The Biodiversity and Human Health in Micronesia program involves the study of the botany, traditional ethnomedical utilization, and conservation of the flora across a ca. 1,500 mile long transect from the islands of Kosrae and

Pohnpei, Federated States of Micronesia in the east to The Republic of Palau in the west. Institutional collaborators in the United States include The National Tropical Botanical Garden, The Beth Israel Continuum Center for Health and Healing, and Columbia University. Local collaborators include The Conservation Society of Pohnpei, The Kosrae Conservation and Safety Organization, The Belau National Museum/Natural History Section, and the Micronesia Office of The Nature Conservancy.

Our group on each island has an ongoing plant specimen collection effort, particularly from remote and poorly known regions, along with ecological transects and floristic inventories. Two regional herbaria, in Pohnpei and Palau, are being developed through this program. Over 150 Micronesian, U.S., and international students have received training from both short- and long-term programs, classes at The College of Micronesia, and field experiences. Over 20 Micronesians have been employed as "local ethnobotanists" by the program in a formal capacity, and many times that number, hundreds of people in the region, have been collaborating as "local experts," offering ethnobotanical and eth-

nomedical data. The program serves conservation and sustainable development planning in the three island groups, through meaningful collaborations with local conservation and research agencies. The program comes at a particularly important time in the history of conservation efforts in the region because of the “Micronesia Challenge”—one of the globe’s most ambitious efforts to protect native habitat. The Micronesia Challenge, announced at the 8th Conference of the Parties to the Convention on Biodiversity, calls for the protection of 30% of the near shore marine resources and 20% of the terrestrial habitats throughout Micronesia by 2020.

In addition to the botanical and ethnobotanical work, the program has a major public health component that involves a physician/health care professional fellowship-training program in ethnomedicine and environmental conservation. Through participation in ethnomedical fieldwork and plant collection, the fellows learn about traditional medical practices involving local plants and, under the direction of Roberta Lee, M.D., are preparing a primary health care manual based on local plants for each of the three islands. In a region where the local village clinics are often lacking in prescription pharmaceuticals, local medicines and practices have been used traditionally to treat conditions ranging from bites and stings to diarrhea and wounds. Through this program, and working with local physicians on each island, we are hoping to improve the provision of primary health care by incorporating evidence-based traditional modalities, via integrative medicine, into the public health system. This model was recently presented to a region-wide meeting of the Pacific Basin Medical Association where it received the endorsement of the participants along with requests for its application to other remote Pacific Island sites. An important result of the ethnomedical component has been increased interest of a new constituency, the local health care professionals, in the conservation of the biodiversity of Micronesia.

How did this interest in Micronesia begin? The answer is an example of the importance of *serendipity* in shaping the trajectory of one’s career, as well as illustrating the power of *community*, in this case the Society for Economic Botany. At a meeting of the Society, in Knoxville I believe, I first met Diane Ragone. She and a group of colleagues were discussing our various research interests, walking down a street when a

torrential rainstorm soaked us all. Ducking into a nearby laundromat to dry off, this one aptly named “Suds and Duds,” it turned out to be a place to have a drink as well, and sit and talk. She invited me to join a field trip that The National Tropical Botanical Garden was making to Micronesia that year, with her colleagues David Lorence and Tim Flynn, to collect living plants under a FEMA grant to replace those the garden had lost in a recent hurricane. So I joined the expedition, and went to three separate Micronesian islands—all with rich floras, varying levels of traditional information intact and local people who were interested in joining forces with us. The key to the success of this program has been the interest and equal partnerships with local people—villagers, government agencies, and traditional leaders. We can credit the SEB, as well as the rain, for the initial brainstorming that led to this program.

Why study islands? We’ve seen that islands are very vulnerable to global change, in ways that continents with their vast size and ability to be resilient to stress are not. While policy makers, most often based on continents, debated over the last decade whether climate change was real, some islanders in the Pacific saw their weather patterns change dramatically, the fish they depend on for food decline or migrate to other waters, the winds shift, the health of their reefs decline, their supplies of fresh water diminish, their cultivated species impacted, alien invasive species flourish, and their people suffer. In December 2008, a 5,000 mile wide tidal surge overwhelmed the low lying atolls of Pohnpei State and other islands in the region, breaching seawalls, pouring seawater into cultivated fields, and in some cases ruining 100% of crops such as taro that sustain local populations. The stories of how people coped with this massive destruction, and how some of it might have been avoided, are well worth learning. As Francis X. Hezel, S.J., who lives on Pohnpei, has recently pointed out:

“The problem of endangered resources is not something to contemplate in the future; it is upon us now. To the populations of the Micronesian atolls it is much more pressing than the receding shorelines and debris-strewn roads and causeways caused by high tides and wave surges. Without taro the atoll populations will have lost their most dependable food resource. We simply don’t have the luxury of waiting until we have settled the

global warming question to address this issue. It is affecting us now.⁶

The lessons from what is happening today on small islands must not be ignored, for to do so would be to turn a deaf ear to the canary in the coal mine that is trying to warn us of potential harm to come. There have been a number of observations that we have made through this program. I can't call them discoveries in the scientific sense, as they involve information known by many for generations. In this note, I'd like to highlight two of them.

The first is the impact that *biodiversity-dependant practices*, such as making a voyaging canoe, can have on culture, and vice versa. As part of the Micronesia program, we surveyed 180 residents of Pohnpei State, for their knowledge of canoe-making skills. Participants were representative of both genders and divided into three age groups: <30, 30–60, and over 60. In the analysis, as canoe-making is primarily a male responsibility, the data we presented (Brosi et al. 2007) comprised information from 90 male respondents. Clearly, as in many parts of the world, there is a decline in traditional knowledge, not only about medicinal plants, but concerning skills needed in daily life. On Pohnpei, we found evidence of declining canoe knowledge, and suggested that “at current rates of knowledge loss, canoe-making skills could disappear within a generation.” This is consistent with the work of Ragone et al. (2004) in Samoa on knowledge of breadfruit cultivars vs. age class. Traditional knowledge is not a static set of skills and beliefs, as people often change their methodologies when new practices appear that are more convenient or efficient. However, in the same way that species extinction has accelerated far beyond the bounds of what could be considered a normal background rate, so too has the loss of traditional knowledge and practices. We observed in this paper that the loss of canoe knowledge was inversely related to the adoption of Japanese fiberglass boats and gasoline motors by the local people. And as such, should the price of gasoline increase, people who were fishing outside of the reef, or who had to travel great distances to their fishing grounds

would be handicapped. In the intervening time, the price of gasoline nearly tripled on Pohnpei, and indeed, the local diet included less fish, and due to the economic crisis, more rice and starchy foods. And this is in a place where diabetes affects one in every three people 25–64 years old.

We learned that canoe making is a strongly biodiversity-dependant skill and practice, and that respondents identified 27 species of plants being used in their construction. These included cultivated species such as *Artocarpus altilis* to native species such as *Atuna racemosa* to produce the varnish used to cover the canoe. Not surprisingly, one of the essential plants cited by more than one person was plywood! In Brosi et al. (2007), we suggest that “...the management and harvest of plants for canoe building helps in maintaining respect for the value of biodiversity. Without an appreciation of the importance of specific plants in canoe making, another local incentive for wilderness conservation would disappear.” Inspired by Garibaldi and Turner's (2004) creation of the term “cultural keystone species” that have a key role in “*defining* cultural identity,” we proposed the concept of “cultural keystone practices,” to be applied to practices essential to *maintaining* cultural identity such as canoe making. The Micronesia project, under the direction of the local traditional leaders, brought this concept to the attention of the island's rulers, and they responded in a very positive and enthusiastic way, with a locally developed plan to promote canoe building, canoe games, and island-wide recognition of the importance of these traditional voyaging vessels on Pohnpei. So today, one result of local interest in many traditional activities and practices, is that more canoes can be seen in use and under construction. Not in a ubiquitous sense as in ancient times, but more so today than just a few years ago.

The second observation concerns a plant, locally known as *sakau* (*Piper methysticum* G. Forst.). Without doubt, *sakau* is the most important plant on the island of Pohnpei. It is a species tightly woven into the traditional practices of the island and is an integral part of the culture, conforming to Garibaldi and Turner's (2004) concept of a cultural keystone species. *Sakau* defines Pohnpeian cultural identity in a way that makes it the *most* important cultural keystone species on the island. The

⁶ Hezel, F.X., S.J. 2009. High water in the low atolls. Micronesian Counselor #76. <http://www.micsem.org/pubs/counselor/frames/highwaterfr.htm> (6 August 2009).

plant plays a preeminent role in the origin legends of Pohnpei, indicating its early importance and divine origins. This plant, a much branched, leafy, and somewhat succulent shrub, is widely cultivated both in the upland and lowland regions. Its roots are pounded to make the beverage known elsewhere as *kava* or *awa* that is widely consumed by the bulk of the local Pohnpeian adult population, both in traditional ritual and for recreation. It was also introduced into Catholic Church ritual by Father William McGarry, a Jesuit priest, who first used it in a reconciliation ceremony in the 1970s.

One of the more common traditional uses of *sakau* in Pohnpei is in a forgiveness ritual. In this ritual, *sakau* is presented along with the statement of apology, asking that any problem between families or individuals be forgiven. The *sakau* is presented with the statement that it is *sakau en tomw*, and immediately all present know that an apology will be forthcoming in the next statement. This *sakau* is followed by another type, the presentation of *sakau en kasohralap*, a type intended to “erase the problem from memory” along with the statement that “Whatever is forgiven is forgotten now.” Balick and Lee (2009) proposed that the folk concept of classifying plants according to their stated use be known as “intentionality” citing 22 examples of how *sakau* is classified on Pohnpei based on the “declaration of the intention of its use—that is, a *message* that the presentation of *sakau* and the declaration that accompanies it conveys to the person or persons who hear it, designed to provoke a response.” This is not to imply that one plant differs morphologically from other categories defined by intention; indeed the *sakau* is the same species and cultivar. Its difference is through its meaning. Interestingly, in the same way that information on canoe plants and canoe building was widely dispersed in the community, we also could not identify individuals who stated that they knew all 22 of these types of *sakau*, but rather remembered a few that they had heard or used from earlier days. There is still a great deal to be learned, and cataloged about this sacred plant—from its ethnography to the physiological effects of its compounds, to its potential in clinical practice. It is one of those plants that people feel will continue to “speak” on Pohnpei for many

generations to come, despite the trend towards Westernization and globalization.

Our recent book, *Ethnobotany of Pohnpei: Plants, People and Island Culture* (Balick and Collaborators 2009), coauthored by 27 individuals, the majority of whom are Pohnpeians, was formally presented to the traditional leaders who helped guide this project since its inception, at a ceremony in Kolonia, Pohnpei on March 9, 2009. What was particularly significant about this project was that the book containing the ethnobotanical data was copyrighted by the *Mwoalen Wahu Ileilehn Pohnpei* (Pohnpei Council of Traditional Leaders), establishing both ownership and the very important local principle of respect for the information it contains. The publication of the information on plant use also establishes “prior art” and “prior knowledge” relating to Pohnpeian plant use, and thus, under current international patent law, helps to protect it from inappropriate exploitation by others. At the formal ceremony in Pohnpei, where the book was wrapped in a banana leaf and presented to the Iso Nahnken (King) of Net, one of the five kingdoms that make up Pohnpei, he explained that “this project is one of those rare undertakings in which Pohnpeians and foreigners needed to work together, each bringing their own expertise and skills, and the product has realized our dream for the island, something neither group could have accomplished by themselves.”

Rachel Carson, in her book, *The Sense of Wonder* (1965), observed:

If I had influence with the good fairy who is supposed to preside over the christening of all children I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life, as an unailing antidote against the boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength.

Indeed, as we develop as individuals and choose our careers, as our trajectory is determined, and we seek to stay on course, might I suggest to you this evening that the study of the natural sciences, specifically the lifetime of immersion, learning, mentoring, and community that comprise economic botany and ethnobotany, can maintain that sense of wonder, and achieve the dream Carson expressed in her formula for a lifetime of purposeful happiness?

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