



SOVE Newsletter

President's Message



William Walton

Planning for the 6th International Congress is progressing well. The theme of the Congress is "Molecular Ecology: Bridging the Border between Genetics and Ecology." The quadrennial International Congress will bring together the international community of vector ecologists, public health scientists, and students working at the forefront of vector-borne disease biology and ecology across the hierarchy of investigation that defines modern vector ecology. The Congress will include focused symposia, poster sessions and informal discussions aimed at identifying the latest developments in vector ecology research and gaps in our knowledge with a view towards improving current and developing novel control tactics for vector-borne diseases. The Congress Organizing Committee headed by Dr. Greg Lanzaro has identified thirteen symposia. The topics of the symposia are broadly defined into modern approaches for vector man-

agement as well as symposia focusing on specific vector-borne diseases. The agenda combines presentations on the latest innovations of basic and theoretical approaches for vector and disease management with applied research studies across the diversity of vectors. Each symposium is being organized by two eminent scientists in their respective fields. Two student symposia featuring advanced students from across the discipline of vector ecology are also planned. A preliminary agenda containing the symposia titles is posted currently on the SOVE website (http://www.sove.org/Society_for_Vector_Ecology/Conference.html). The conference agenda including the names of the speakers and titles of the presentations should appear on the SOVE website in early May.

The Congress will be held September 22-27, 2013 at the La Quinta Resort and Club near Palm Springs, California. The dry desert climate is typically beautiful at this time of year with a mean daily temperature of 29°C (84°F); the days are still warm (average high temperature: 37°C [99°F]) and nights are pleasantly cool (average low temperature 20°C [69°F]). If your travel plans afford you a day before or after the meeting, the Coachella Valley and surrounds offer a wide variety of habitats to explore from the cactus and brittlebush-dominated Sonoran Desert in Anza Borrego and the Salton Sea at 69 m below sea level to the south side of the upper valley where a tram trip can take you from the cottonwoods, sycamores, mesquite and California fan palms of the Lowland Cienega at 800 m altitude to the coniferous forest of the Upper Transitional Zone at 2600 m. The High Desert on the north side of the valley is the home of the bizarre Joshua trees. The meeting venue at the base of the Santa Rosa Mountains includes multiple restaurants that should satisfy the epicurean desires of discerning foodies and provides plenty of other activities. I look forward to seeing you in September!

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Regional Reports



SOUTHWESTERN USA

Steve Mulligan, regional director

West Nile virus continues to dominate vector-borne disease activity in the United States, as evidenced by the large resurgence in human infections throughout the US, and in particular Texas and the Central States. Two states in the Southwest (Arizona and California) also experienced a rebound in WN activity and human cases. According to CDC data as of December 11, 2012, Arizona had recorded a total of 125 confirmed, symptomatic human WN infections, of which 82 (66%) exhibited neuroinvasive disease symptoms, with four deaths. There were an additional 28 asymptomatic, viremic blood donors. In contrast, during 2011, Arizona reported 69 cases, 49 (71%) exhibiting neuroinvasive symptoms, with four fatalities and thirteen presumptive viremic donors.

California was hard hit with WN activity in 2012, experiencing its third highest case rate since the WN introduction in 2003, according to data from the California Department of Public Health WN website www.westnile.ca.gov. There were a total of 479 symptomatic human infections, 309 (65%) of which were WNND, with nineteen fatalities, and an additional 48 asymptomatic infections, in 2012. The median age of the symptomatic cases was 55 years with a range of 1-94 years, and 280 (58%) were male. Calendar dates for the onset of symptoms for all patients ranged from May 23 to December 9. Los Angeles County reported the highest number of symptomatic cases with 157, followed by Orange (42), San Bernardino (33), Sacramento (29), Stanislaus (26), Kern (25), and Fresno (24) Counties. In all, 33 counties reported human WN infections during 2012. By comparison, there were 158 symptomatic cases with 111 WNND (70%), nine fatalities and eighteen asymptomatic infections in 2011. The reported incidence of WN illness per 100,000 population for the State was 1.27 in 2012, in contrast to an incidence of 0.40 in 2011.

Nevada was an exception to the national trend in 2012, with eight total WN human cases, five WNND (63%), one death and one viremic blood donor; compared with sixteen cases, twelve WNND (75%), two fatalities and three viremic blood donors in 2011, according to CDC data.

It appears that WN activity has not abated after fourteen years in the western hemisphere, and it will be interesting to see what trend develops in 2013. Another issue of great concern has been the recent detection of *Aedes albopictus*, once again, in Southern Califor-

nia. Susanne Kluh, Greater Los Angeles County Vector Control District (GLACVCD), has generously supplied the following update:

In late August 2011, *Ae. albopictus* was discovered in the City of El Monte in Los Angeles County for the first time since 2001. In the weeks and months following, efforts were made through door-to-door yard inspection campaigns to determine the extent of the infestation. At the end of 2011, Asian tiger mosquitoes (ATM) had been detected in an 18 square mile area encompassing three cities (El Monte, South El Monte and Duarte) and two vector control districts (San Gabriel Valley MVCD and GLACVCD).

In 2012, evidence of ATM was also found in the southern portion of the City of Arcadia, but in general, surveillance confirmed the same infestation area as determined in 2011. This could indicate that extensive yard sanitation, adulticiding and barrier spray applications may have slowed, if not halted, further expansion. These time-consuming and very labor-intensive control measures, however, did very little for the goal of reduction and even less for the elimination of the invasive species from the area.

Results of genetic comparisons of mosquitoes captured in this current infestation to specimens collected in 2001, as well as mosquitoes from other parts of the US, Asia and Europe will soon be published and will likely shed some light on the origin of the *Ae. albopictus* population currently present in Los Angeles County. These results will significantly impact future control strategies, because if this population is a holdover from 2001, then the spread in the area has been steady but slow over the past decade. Control can then be attempted by firmly establishing the outside perimeter of the infestation zone, preventing further spread and possibly eliminating, or at least suppressing, the population below a detectable level. If it is, however, a result of multiple recent introductions from the east coast, Asia or Europe, the introduction routes would have to be identified and preventative measures put into place.

For 2013, the strategy includes developing and applying much broader measures of control within the known infestation areas. Methodologies such as truck-mounted LV larviciding, truck-mounted nighttime adulticiding and the use of attractive toxic sugar baits will all be assessed. Intensive yard inspections will continue in order to verify treatment efficacy and as the most reliable surveillance tool for first detection of the mosquito in areas outside the known infestation zone.

Regional Reports

SOUTHCENTRAL USA

Richard Duhrkopf, regional director



Sometimes it's hard to tell when one mosquito breeding season ends and another begins. Last year marks the worst year on record for West Nile Virus in the South Central region. Mississippi had 249 total cases, Louisiana had 335, and Texas had 1739. I attended the meeting of the LMCA in December, and some of them still had active populations of mosquitoes. In Texas, we had activity into December as well. So, what made this year so bad?

We can take the standard paradigm of virus transmission. You need the virus circulating in a healthy reservoir population. That requires good sources of food and breeding spaces along with a suitable climate for the host animals. You need healthy mosquito populations. Again, that implies appropriate breeding sites and climate for population growth.

As I was being interviewed by various media, I was trying to explain those dynamics. One thought I had was the birds may be developing more innate immunity to the virus. Five years ago, West Nile Virus decimated many bird populations. Perhaps, now the birds were somehow less susceptible. That would mean greater numbers of infected hosts. In discussing that with some Texas folks, I learned it was probably not the case. Harris County still has a comprehensive bird surveillance program, and they reported the numbers of dead birds were as higher, or even higher than in the past.

Texas had just come out of a two year drought. Most of the rest of the middle part of the country was still in a drought, but we actually had consistent rainfall last winter. During the drought, we still had mosquito breeding, but at lower than normal levels. Last Spring, we saw increases in mosquito populations. We saw larger populations earlier than in other years.

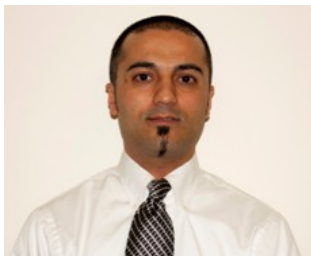
So, I considered the weather patterns of the winter using data from my own region of the state, on the assumption that the earlier mosquito populations started to reproduce, the larger they could get. I looked at three parameters – temperature, rainfall, and daily low in January, February, and March.

For 2002 through 2011 the January mean daily temperature was 48.4 (SD = 3.8). In 2012, the mean daily temperature in January was 51.8. For February 2002 - 2011, the mean was 50.58 (SD = 3.9). For February, 2012, it was 54.5. For March 2002 - 2011, the mean was 60.19 (SD = 3.1). For March 2012, it was 63.7. So for all three months, the average daily temperatures were higher than average.

For January 2002-2011, the mean monthly precipitation was 2.1 inches (SD = 2.8). January 2012 had 2.43 inches. For February 2002-2011, the mean rainfall was 3.5 inches (SD = 3.4). February 2012 had 2.7 inches of rain. For March 2002 - 2011, the mean rainfall was 3.1 inches (SD = 3.4). The mean rainfall in March 2012 was 4.3 inches. So, rainfall in January was normal, February was actually a little low, but March was quite high.

Finally, the low temperature could be a factor. For January 2002-2011, the mean low temperature was 20.9 (SD = 5.4). The low temperature for January 2012 was 25. For February 2002 - 2011, the mean low temperature was 22.4 (SD = 4.5). For February 2012, the lowest temperature was 25. For March 2002 - 2011, the mean low temperature was 28.3 (SD = 5.2). For March 2012, the lowest temperature was 34.

The weather played a significant role in the growth of mosquito populations. We had warm days, consistent rainfall, and higher than average nighttime lows. So far, 2013 has been about the same as 2012.



NORTHEASTERN USA

Ary Farajollahi, regional director

We are only a few months into 2013, but it is already turning to be an exciting year. I hope that this momentum continues and culminates in a productive and rewarding year for all of our colleagues in the vector world. The 79th Annual Meeting of the American Mosquito Control Association (AMCA) was recently held in Atlantic City, New Jersey, and the program offered many exciting and informative topics of broad interest for the audience. Many of our northeastern colleagues were present at this meeting, and it was good to see everyone and get updates on new projects and topics. This meeting also coincided with the 100th anniversary of the New Jersey Mosquito Control Association, the first and oldest professional mosquito control organization in the world, which paved the way for the formation of other organizations globally. The meeting was not only bursting with historical talks and innovations, but was also rife with new things to come. On the forefront is the resurgence of eastern equine encephalitis (EEE), ticks and tick-borne diseases, and continual expansion of *Aedes albopictus* and potential public health and mosquito control implications associated with that species. I am honored to serve as the northeast SOVE representative and I wish everyone a personal and professionally rewarding year. I am particularly grateful to the colleagues in the northeast who contributed to this update (Ted Andreadis, Tim Deschamps, Dina Fonseca, Randy Gaugler, Paul Lesinham, Todd Livdahl, Bill Meredith, Dominick Ninivaggi, Ilia Rochlin, Mike Turell) and I look forward to working with many others during 2013. If you have any issues or concerns that you would like the SOVE Board of Directors to discuss, please contact me (afarajollahi@mercercounty.org). Individual state reports are provided below:

Connecticut: Dr. Ted Andreadis (CT Ag Experiment Station, Center for Vector Biology and Zoonotic Diseases) reports that the summer of 2012 will be remembered as a record year for WNV activity in Connecticut. With >189,000 mosquitoes representing 14,058 pools tested for arboviruses, there were 234 West Nile virus (WNV) isolations made from 7 mosquito species from 51 locations in 44 different towns over 5 counties. The Department of Public Health confirmed a record 21 human cases (no fatalities) in 15 towns. The Department of Agriculture reported 2 equine cases, both animals euthanized. There was a low level of EEE this season with only 9 virus isolations from *Culiseta melanura* at a single location in Middlesex County. There were no veterinary or human cases reported. Additional news from the state of Connecticut by Yale University researchers and colleagues includes the recent detection of *Borrelia miyamotoi* infections in human patients. This spirochete causes an infection that is very similar to Lyme disease, and may be more prevalent in the northeast than previously assumed. Further information on this research may found in their manuscript by Krause et al. 2013 in the *New England Journal of Medicine* 368(3):291-293.

Delaware. Dr. Bill Meredith from the Mosquito Control Section of the Delaware Department of Natural Resources and Environmental Control reports that renewed efforts are now underway in the new 113th Congress to try eliminating the need for aquatic pesticide users to have to work under Clean Water Act (CWA), National Pollution Discharge Elimination System (NPDES), Pesticide General Permits (PGPs) in order to continue to apply aquatic pesticides. The recent need to have to do this was imposed nationwide by the Environmental Protection Agency in 2011, in reaction to a controversial decision by the federal 6th Circuit Court in 2009. There is strong sentiment among many entities with pretty good justification that given how well the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) has guided or regulated pesticide use for many years that this new imposition of EPA-mandated PGPs on aquatic pesticide users, given all the costs and onerous conditions associated with having to work under these new permits, is a superfluous undertaking at best and yet another example of unnecessary regulation or over-regulation. A new bill has now been introduced in the House of Representatives, HR 935, to try to rectify this matter, and it's expected that a Senate companion bill will also soon be introduced.

Maryland. Dr. Paul Leisnham (University of Maryland) and co-leader Dr. Shannon LaDeau (Cary Institute of Ecosystem Studies) of a multidisciplinary and multi-institutional research team have received 4-year funding from the National Science Foundation that extends an existing USDA grant to investigate mosquitoes that utilize containers in the context of current actions and legacies of urban decay in Washington DC and Baltimore, MD. By coupling entomological surveys and experimental manipulations with social science instruments, investigators will identify relationships between the physical and socio-economic status of neighborhoods and the abundance of pest mosquitoes, assess how exposure to mosquitoes influence ongoing practices contributing to urban decay or revitalization, and evaluate what activities best support and motivate resident-led mosquito control strategies. Additionally, Dr. Mike Turell from USAMRIID reports that he is increasing his research into Rift Valley fever and continues his significant vector competency investigations.

.cont'd, on p. 5 (Farajollahi)

Massachusetts. Todd Livdahl from Clark University reports that he and his students are working on new projects with support from a three-year NIH grant entitled "Community diversity and parasite dynamics," looking at gregarine success in response to composition of the larval host mosquitoes.

Tim Deschamps (Central Massachusetts Mosquito Control Project) reports of an unprecedented arbovirus activity in 2012. Statewide, Massachusetts saw 33 human cases of WNV, the highest number recorded in a single season. Two horses tested positive for WNV, and 307 mosquito pools (6,828 submitted for testing) were confirmed positive from 109 towns in 9 counties. EEE was also predominant in the state, with 7 human cases with 3 deaths, 6 horse cases and 2 alpacas, and 267 mosquito pools (6,828 submitted) tested positive for EEE. These samples were collected from 43 towns in 8 counties.

New Jersey. The Center for Vector Biology at Rutgers University report that they are wrapping up the final phase of a multi-year \$3.8 million USDA-ARS funded project on the "Area-wide pest management program for the Asian tiger mosquito, *Aedes albopictus* in New Jersey". Rutgers University has established collaborations with Mercer and Monmouth Counties in New Jersey, in addition to other vector control programs across the nation, such as California, Florida, Louisiana, New York, Pennsylvania, and Virginia. This project has resulted in various surveillance and control innovations, in addition to ecological and biological contributions, and has resulted in numerous peer-reviewed scientific publications. Dr. Randy Gaugler is continuing the second phase of a DWFP funded project on the "Autodissemination of pyriproxyfen against container mosquitoes that transmit dengue". WNV activity during 2012 in New Jersey was as follows: 46 human cases including 5 fatalities, 132 positive birds, 1,023 positive mosquito pools, and 5 equine cases. EEE activity during 2012 was as follows: 33 positive mosquito pools, and 6 equine cases. Additional surveillance reports may be found here: <http://vectorbio.rutgers.edu/surveillance>.

New York. Suffolk County Vector Control reports that in southern New York, one of the "big" stories in 2012 was the surge of *Aedes albopictus* mosquitoes. The Asian tiger mosquitoes were first detected in 2004, and then disappeared for a few years, coming back in 2008. Two years later, in 2011, they experienced a large number of service requests from heavily urbanized areas normally free of mosquitoes. Finally, in 2012, with the onset of the unusually warm spring and early summer, the Asian tiger mosquitoes surged over the western, more populated areas of Suffolk County and overtook another introduced species, *Aedes japonicus* as the most common larvae found in containers.

Pennsylvania. Mike Hutchinson (PA Department of Environmental Protection) reports that the first human Powassan case in 2011 prompted an effort to conduct tick surveillance in and around the patient's property. Their goal was to collect groundhog ticks (*Ixodes cookei*) and black-legged tick (*Ixodes scapularis*) in an attempt to detect lineage 1 or 2 virus. All ticks tested negative for Powassan, but that effort was the impetus for continuing tick surveillance on a broader scale in the state for detection of other tick-borne diseases.



BRAZIL-SOVE
Paulo Pimenta, Regional Representative

As announced in the preceding issue of the SOVE Newsletter, the first Brazil-SOVE congress was held October 22–26, 2012, in the city of Recife, Pernambuco State, Brazil. There were 258 participants, including 32 speakers with 22 Brazilians and 10 from Germany, Mexico, Great Britain and USA. Dr. Walter Leal (UC Davis, California) gave the opening talk entitled, "Characterization of olfactory genes in the antennae of the house mosquito, *Culex quinquefasciatus*." The conference had speakers talk from 20 – 40 minutes in seven thematic areas e.g., epidemiology, resistance and transmission of pathogens, bioinformatics in insect vectors of tropical diseases, insect vector control, biochemistry and physiology of insect vectors, population genetic and speciation, and application of new control technology. Additionally, there were three oral communication sections for young researchers and graduate students, dealing with parasite-vector interaction, vector control and pesticide resistance, and eco-epidemiology. The meeting as organized was very successful. It was agreed to expand the meeting at the international level, especially drawing participants from Europe and the US. The next meeting of Brazil-SOVE will be held in September, 2014, in the city of Recife. We are also going to send five people (Sinhal, Nagila, 2 grad students and myself) to attend the 6th International Congress of SOVE to be held September 22-27, 2013, in LaQuinta, California. See conference photos on pages 8 & 9

Society for Vector Ecology—6th International Congress

Molecular Ecology: Bridging the Border between Genetics and Ecology

On behalf of President Dr. William Walton:

Welcome to the Family of SOVE
 The SOVE 6th International Congress will be held
 September 22-27, 2013 at the beautiful and exclusive
 La Quinta Resort and Club in La Quinta (Palm Springs), California, USA.
 Program Chair: Dr. Gregory Lanzaro, UC Davis, California.
 Complete conference information will be sent to you shortly.
 For updates, please visit us at: www.ove.org
 Hope to see you there!
 Valerie Montigny
valerie@ove.org

For Your Calendar

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The International Symposium on Ectoparasites of Pets
 April 7– 9, 2013, Munich, Germany
 For further information, go to www.ise2013.net/
 [Courtesy: Nancy Hinkle]

3rd International Forum for Surveillance and
 Control of Mosquitoes and Mosquito-borne Diseases
 organizers: Entomological Society of China, Asian Society
 of Vector Ecology and Mosquito Control, Beijing Institute
 of Microbiology and epidemiology
 May 27 – 31, 2013
 Suzhou, China
 Contact: Rudy Xue, xueamcd@gmail.com

First Announcement:
 Final Conference on Integrated Mosquito Control
 Co-sponsored by European Commission, LIFE+ Program
 October 23-24, 2013
 Montpellier, France
 More information forthcoming...
 Contact: Christoph Lagneau
<http://www.lifeplusmoustique.eu/>

Here comes singin Charlie!
 (on popular demand)

THE CLIMATE

1. We sing of the polar bear fearless and bold.
 He never feels hot and he never feels cold,
 Because where he lives summer never occurs,
 And the rest of the year he wears plenty of furs.
 Toora lee, toora lay,
 And the rest of the year he wears plenty of furs.

2. The crocodile lives in the tropical belt
 And neither the cold nor the heat ever felt,
 Because in the winter his summers begin,
 And the rest of the year he wears crocodile skin.
 Toora lee, toora lay,
 And the rest of the year he wears crocodile skin.

3. Now we poor unfortunates live in a clime
 That calls for at least three full suits at a time:
 A thick one and thin one for days cold and hot
 And a mediumweight for the days that are not.
 Toora lee, toora lay,
 And a mediumweight for the days that are not..

(Charles Smith, Consolidate MAD)

Awards

Dr. Andre Freire Furtado was awarded life time achievement award for his contributions to Medical Entomology in Brazil at the first Brazil-SOVE meeting held October 22–26, 2012, in the city of Recife, Pernambuco State, Brazil (Dhillon & Pimenta reporting).

Dr. John Anderson was recently awarded the prestigious John N. Belkin Award by the American Mosquito Control Association for his meritorious contributions to the field of mosquito biology. Dr. Anderson has over 50 years of experience in medical entomology and has been working on the ecology of ticks and mosquitoes at the CT Agricultural Experiment Station since 1964. Congratulations to Dr. Anderson for a very well deserved recognition.

Dr. Randy Gaugler was the recipient of the American Mosquito Control Association's Memorial Lecturer Award, where he delivered a notable lecture honoring Thomas D. Mulhern, a true mosquito control giant and innovator whose lasting contributions to our profession will forever be cherished.

Honorary Membership in AMCA was also bestowed upon Judy Hansen and Henry Rupp, who continue to provide insight and leadership despite retirement.

Dr. Wayne Crans, longtime Rutgers University professor with expertise in mosquito biology and eastern equine encephalitis, was the recipient of AMCA's cherished Medal of Honor Award.

Two PhD students from Rutgers, Andrea Egizi and Brian Johnson, received an Honorable Mention and the Hollandsworth Prize awards, respectively, in the student paper competition at AMCA.

John Soghigian, PhD student at Clark University (MA), has been awarded a two-year NSF Doctoral Dissertation Improvement Grant entitled "Evolution of Parasite-Host Fitness Tradeoffs in a Mosquito-Gregarine System."

Central Massachusetts Mosquito Control Project has received the McColgan Grant-in-Aid from NMCA to develop a specific brochure for senior citizens as part of their educational programs. This brochure will have detailed information to instruct this at-risk group of residents about arboviruses in Massachusetts. (reporting Farajollahi)

Dr. Kenneth Linthicum was awarded the 2013-AMCA Meritorious Service Award at the annual meeting for his many services, most notably as the JAMCA editor (2003-2006), Congratulations, Ken! (Dhillon & Mian reporting)

Vector Biology Resources

The National Institute of Allergy and Infectious Diseases (NIAID) Division of Microbiology and Infectious Diseases (DMID) provides product development services, and research tools and biological materials for researchers developing diagnostics, vaccines, and therapeutics, and for studying vectors of human pathogens. Visit [Vector Biology Resources for Studying Vectors](#) for a listing of available resources. Key among the resources for studying vectors is provision of LIVE vectors and reagents and genomic materials offered through the [BEI Resources Repository](#). (See Vector Resources in the BEI [online catalog](#).) These resources are available free of charge to REGISTERED users in domestic and foreign institutions and NIH grant funding is not required. For information on all resources for researchers provided by DMID, visit the [DMID Resources for Researchers website](#).

[Adriana Costero, PhD](#)

[Vector Biology Program Officer](#)

[DMID/NIAID/NIH/DHHS](#)

[Email: acostero@niaid.nih.gov](mailto:acostero@niaid.nih.gov)



First Brazil-SOVE Meeting—photos





Society for Vector Ecology

1966 COMPTON AVENUE
CORONA, CA 92881-3318

Phone: 951-340-9792
Fax: 951-340-2515

valerie@sove.org

Newsletter Editor
Lal S. Mian, Ph.D.
lmian@csusb.edu

We are on the Web!
www.sove.org

About SOVE

The Society for Vector Ecology is a professional organization formed in 1968 by a group of individuals involved in vector biology and control programs in California. The membership has since grown to represent an amalgamation of diverse research and operational and extension personnel from all over the world. The Society is committed to solving many complex problems encountered in the field of vector biology and control. Among these are the suppression of nuisance organisms and disease vectors through integration of control elements, such as environmental management, biological control, public education, and appropriate chemical control technology.

The Society publishes the biannual Journal of Vector Ecology that contains research and operational papers covering many phases of vector biology, ecology, and control. The Society also distributes a periodic newsletter and holds an annual conference in the months of September/October.

SOVE Board Members, Editors, Webmaster

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william.walton@ucr.edu

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foster.13@osu.edu

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conmad@pacbell.net

Northwestern USA

David Sullivan
zanuscol@msn.com

European

Bulent Alten
kaynas@hacettepe.edu.tr

Brazil-SOVE

Paulo Pimenta, Ph.D.
pimenta@cpqrr.fiocruz.br

EDITORS

Journal Editor

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mklowden@uidaho.edu

Newsletter Editor

Lal S. Mian, Ph.D.
lmian@csusb.edu

WEBMASTER

Ryan Reneau
webmaster@sove.org