

Program Summary Narrative

Introduction and Career Perspective

While I never imagined writing a dossier for advancement to Advisor step IX, here I am. This review covers my work from Oct. 2016 to Sept. 2019; yet, I feel compelled after my 35-year tenure in Cooperative Extension to give some historical perspective because impacts take longer than three years to develop and this is likely my last program review. Rather than insert old projects into tables from years back, some of my comments go beyond the review period—backward, and in a few cases, forward, since recent activities will have future impacts and these remarks can show the increasing slope of my career trajectory. When I started my program and career, Ventura County had 800,000 residents and remains at 900K today. In concert with land conservation policy, SOAR (Save Our Agricultural Resources), these stable demographics have sustained 35 years of viable agriculture. I was hired in 1985 as an Environmental Horticulture (EH) Advisor specializing in landscape issues and my counterpart Julie Newman was hired in Santa Barbara County as Nursery Crops Advisor. Together we started a Master Gardener (MG) Program in 1986 serving both Counties. The MG program was split into separate county programs a few years later.

My career trajectory would not have taken me so far without many milestone events that happened over the years. Initially I worked with Specialists: Carl Koehler, Art McCain, Dave Cudney and Clyde Elmore helped me with applied field research. Specialists were taken back into departments after ANR structural changes made by VP Farrell—Specialist helpfulness waned. Ten years later I took my first sabbatical, enrolled at UC Riverside in the Ph.D. program, and graduated 4 years later in 1998. I published my research in the journal *Phytopathology*, it was featured on the cover—setting the stage for development of an international expertise in mulch-mediated disease control. My research was further recognized by ANR with the Distinguished Service Award for research (1998). After my degree was finished, I worked across commodities with other advisors, though my program focus has been EH. The use of mulch in landscapes and agriculture as a disease suppression tool is an outcome from my research in the late 1990's until present and is still a common topic requested for my lectures to landscape and arborist audiences. In 2019 I wrote a review paper on landscape mulches (ANR publication 8672). Recent milestones include national and international awards, international invitations to present, strong leadership roles within ANR, and I was awarded a one-year sabbatical in the final review year.

The overall goal for my program was (and still is) to provide landscape and tree managers the information (through UC or my own research) needed to solve local problems and make healthy landscapes in support of healthy communities as per the UC “Endemic and invasive pests and diseases”; and “Healthy families and communities” initiatives. My program supports ANR’s public value statements 1, 2, 5, 6 & 7 by promoting economic prosperity, training a more qualified workforce, building climate-resilient communities, promoting healthy people and communities, and developing an inclusive and equitable society.

Administrative Duties

I was interim County Director in Ventura from Jan. 1, 2017, until July 31, 2018, or 1.5 years of the review period. As interim director I struggled with a budget cut (which occurred prior to my interim role) to our county operation and over the period of my short tenure worked with Patricia Verdugo Johnson to restore over 60K of that budget. I navigated a 4-H issue which required statewide help, and coordinated a retreat for 4-H leaders to get back on track. We also continued to work out the difficulties of a multi-entity partnership that was established in 2015 among UCANR, the Thelma Hansen Trust, and the County of Ventura. I worked with advisors on their salary actions as a supervisor, and tried to keep staff (academic and others) apprised of County Director meeting information which I attended on phone and in person in Davis. During my tenure as Interim Director, I developed a position request for an YFC Advisor which ranked in the top twenty statewide and was recommended for funding in 2018. My role as interim CD ended with the hire of Annemiek Schilder (August, 2018) the current director.

Theme I--Landscape Horticulture & Arboriculture

Background, Rationale, and Problem Theme I encompasses all environmental horticulture (landscape) and arboriculture/urban forestry research and program efforts. Exposure to trees promotes human physical and mental health (Ulmer et al., 2016); thus cultivating a healthy urban forest canopy aids in fostering healthy communities in alignment with UC’s strategic initiative. Extended drought in Southern California caused landscapes to lose trees and green canopy cover. The poorest neighborhoods often lack trees on streets and around dwellings. There is a need to find trees that will thrive in

our warming climate which involves an increased number of very hot days, longer droughts and higher maximum temperatures in increasingly northern latitudes. I identified several gaps in tree pest publications, mulching and other subjects where ANR does not have adequate information available to the general public and landscape industries.

Clientele, Goals, and Inputs Clientele include arborists, landscape contractors, landscape architects, consultants, horticulturists, county, state, and federal workers, and educators. My goal is to provide research-based information, and solve problems related to trees, landscapes, and their sustainability in the face of an increasingly hot climate. Approximately 0.25 of my FTE were applied to this theme. Grants from the Hansen Trust partially funded research in this theme. Low-maintenance trees that will thrive in urban landscapes are critical for human health and well-being in urban areas.

Methods, Outputs Research projects were focused on trees and other woody plants (e.g., roses). I am a collaborator on the Climate Ready Trees research conducted by the USDA/Forest Service. My role has been to study pruning requirements of trees at the control test plots and in my own version of the climate ready tree study at Hansen REC. I initiated a study on carbon storage and mycorrhizal efficiency of urban trees. Findings from the climate ready tree study, my sabbatical studies, and drought survey research have identified several taxa which can grow with minimal water and minimal pruning doses. Low maintenance trees that will thrive in urban landscapes are critical for human health and well-being in urban areas.

As chair of the regional conference committee of the Western Chapter of the International Society of Arboriculture (WCISA), I oversaw development of 20 regional conferences each year during the review period impacting over 5000 arborists in three states. I developed or co-developed seven meetings/workshops for arborists: two Soil School's for Arborists (along with collaborators Tracey Takeuchi and David Kelley) and two Rendezvous meetings (Downer, 2018), a meeting in Kiev, Ukraine, and two workshops on recycling urban timber. I have been a proponent of urban wood recycling for several years. I gave two workshops on this topic, and donated pieces I created from urban timber to the Western Chapter ISA annual meetings for several years and during the period of review, as well as at the Statewide Master Gardener Program Conference. These pieces were featured during meetings to display the beauty and utility of urban wood.

Rendezvous meetings are a new method of outdoor education that I started in 2017 (Downer, 2018). They are held in remote natural ecosystems and focus on significant tree stands. Presentations in the "woods" give participants a wilderness experience while learning about how and why trees grow the way they do in nature. I used information developed from *Rendezvous Meetings* in my invited presentations to show how urban environments can be modified to provide what trees have evolved to need in their native settings. *Rendezvous* attendees indicated a heightened awareness of the environment, improved mental well-being and increases in knowledge and transformative knowledge for their business. One survey respondent said, "I have transformed my tree health care business to conform to my new knowledge".

Four *Botany for Arborists (BFA)* articles were published in *Western Arborist* which many consider the premier tree industry journal for arborists in the world. I wrote nineteen BFA articles in *Western Arborist* and am in the process of revisions and compilation for a book. I published newsletters and peer-reviewed publications, social media outputs (Facebook and Research Gate), and blogs. I only just started blogging while on sabbatical.

I first traveled to Ukraine in 2012, to observe trees in the exclusion zone (Zone) around the Chernobyl nuclear reactors. The Zone was established after the accident of 1986 to limit human exposure to resulting radionuclides. This led to three more trips, two research projects, and work to develop arboriculture in Ukraine as a more professional discipline. I am a founding member of Арбористика Україна (Ukrainian Arborists) and follow them on their social media Facebook page also called Арбористика Україна. I helped organize and spoke to the group at its first meeting in September 2016 (Arbor Summit), then again in April, 2018. The group met on its own (without my visit) in 2019. Dr. Karlik and I were able to complete and publish journal articles on two projects from these visits (Downer and Karlik, 2019; Karlik and Downer, 2019). In 2020 we plan to visit the Zone again to look at lichens associated Zone trees and to meet again with Арбористика Україна.

Outcomes, Impacts, and Condition Changes Changes in knowledge and practice (behavior) occurred from the invited lectures and workshops presented. A Qualtrics survey (See attached report: conducted on line in 2020) shows increased knowledge in botany, wood utilization, and pruning skills. Climate-ready tree research is ongoing, and proposed impacts include an increased use of heat tolerant trees in the urban forest that are better adapted to urban environments. My research shows that trees planted at the right time, and given only three pruning cuts/tree/year (in the first few years), can grow without further care for most of their lives. Climate ready tree utilization will lead to increases in physical and mental health of those exposed to a greener urban environment. These trees require less care and water to survive, and will improve the environment for people living in the poorest neighborhoods where tree survival is low. Rose research will lead

to increased efficiency of rose fertilization and fewer minerals applied that are not necessary, thus healthier plants in an environmentally healthier landscape. This will increase the amenity value of rose landscape plantings while decreasing salts in soils. The development of wood products from recycled urban timber is now a multi-million dollar industry with a clear growth trajectory. Web searches for “slabs”, “live edge wood” etc. yield many options where there few were five years ago. An extra impact is that for every kg of urban wood saved, there 1.6 to 1.8 kg of carbon dioxide are withheld from the atmosphere.

Better understanding of tree biology fosters increased quality of tree care. My botany for arborists series is mailed to approximately 5000 members in three states and elsewhere around the world. My invited presentations around the world, and leadership with ISA, and Western Chapter ISA impacted over 2000 arborists in four states each year of the review period, producing knowledge and behavior changes among its members that resulted in a more vibrant urban forest and healthier humans exposed to that forest.

My travels to Ukraine and encouragement of the budding arboricultural industry there created a camaraderie among Ukraine arborists unseen in the previous decades and led to the establishment of Арборсттика Україна. By bringing arborists together and presenting relevant arboricultural research, I was able to increase the professionalism of arborists in Ukraine, raise the standard of care for trees in Eastern Europe and improve the lives of those exposed to well managed trees. During their field day in 2018 I was able to critique the quality and methodology of cuts made to trees and give guidance for improvement. The work in Europe has been immensely interesting to Arborists here and a few have traveled with me to assist. Arboriculture in Ukraine, and trees of the Chernobyl Zone, were subjects of several invited presentations. I think it is significant that they continue their “Arbor Summit” even after I stopped coming (2019) and the meeting is again scheduled for 2020.

Theme II--Pest Management

Background, Rationale, and Problem Pests and pathogens debilitate trees and landscape plants, reducing their ecosystem services and limiting beneficial ecosystem services. Diseases shorten the life span of landscape trees and plants, require extra labor to manage, and result in costly removal processes when death occurs. Proper management of pest and disease problems requires knowledge of pest biology, and host responses to pests. Disease pathogens are especially difficult to understand for most landscape/tree managers because pathogens are microscopic, are often internal, and are not easily detected.



Figure 1: Soil structure, mycorrhizal fungi and disease suppressiveness are all increased in soils under woody mulch chips.

Clientele, Goals, and Inputs In most cases, these are the same clientele as in Theme I. However, I also work with agricultural producers such as avocado growers and others as needs arise, and support the work of the other “Ag” advisors in our office with plant pathology expertise. The goals of this theme are to increase knowledge, detection capability, and innovate new management strategies for pests and diseases in Ventura County that limit the losses due to insects, diseases and other pests. I have grants from the Thelma Hansen Fund, am a collaborator on grants with others (Drill, Oki) and utilize my Master Gardener volunteers (Theme III) as extenders.

Methods, Outputs Applied research on mulch effects of *Phytophthora* survival, the survival of pathogens in mulch stock piles, the interaction of wood chips with *Armillaria* infection of trees, and the role of *Botryosphaeria* were drivers for the outputs. The main outputs in this theme are written publications, including journal articles, trade journal articles, and ANR publications, as well as invited presentations to pest management audiences. The landscape Disease symposium is a targeted output to landscape audiences interested in plant diseases.

Outcomes, Impacts, and Condition Changes Changes in knowledge and increased cultural control practices have reduced pesticide applications and increased landscape values by millions of dollars in California (See Qualtrics report). Many of my extension outputs are in Pest Management. I have an international reputation for *Phytophthora* control using organic matter (mulches) as evidenced by an invited workshop to Varese, Italy in 2018. While active research in this area has tapered off, I continue to focus on publication and presentation outputs. My recent sabbatical focus was on publications, particularly ANR-based publications. Working with the UCIPM statewide program, I began revision or production of several new Pest Notes. In 2019, Igor Lacan and I published a new UCIPM Pest Note on *Armillaria* an important landscape pest. I revised the Pest Note on tree decay fungi and initiated four other notes which are waiting release from UCIPM or have been accepted with revision (see sabbatical report). I wrote a Journal article on *Armillaria* control (2019), and began a new UCIPM pest note on *Botryosphaeria* in landscapes with my graduate student Dee Vega and

Themis Michaelaides (Kearney Ag Station). The impact of these publications should be control of a deadly landscape and orchard pathogen with reductions in pesticide usage.

As a Cal Poly Pomona adjunct faculty member, I instituted research-based lab exercises for plant pathology (Diseases of Ornamentals) instruction which were adopted by other instructors. These labs teach not only the principles of plant pathology, but the basics of experimentation, thus fostering greater science literacy at the state college level.

The Landscape Disease Symposium (LDS) was developed as an output for ornamental plant pathology information. This one-day seminar is always accompanied by a published proceedings for attendees that can be found at <http://ceventura.ucdavis.edu> in an issue of *Landscape Notes*. One LDS was given in 2018. Of the participants who responded to an online survey about the symposium (n=51), 94% reported they gained new knowledge and 61% reported they changed their management practices. Clientele indicated that they changed their mulching and cultural practices, reduced their use of pesticides, and improved communication or my research findings with their clientele. Over 90% of LDS survey respondents found the proceedings a useful resource in supporting their work.



Figure 2 Mulches once rare in landscapes are now used in over 25% of Ojai commercial and residential landscapes.

My mulch--root rot control research was fully adopted by Avocado Industry growers who now all mulch their orchards as a disease and pest management practice. According to Dr. Ben Faber (UCCE Avocado Advisor) every avocado orchard is mulched in Ventura County and now worldwide from Chile to Australia because of this research. In the United States, avocados are a 2.5 billion dollar crop. Expert assessment of this practice suggests 25% of the profitability is associated with mulch utilization and its increase in tree and soil health, water savings, and weeds controlled without spray. In Ventura County the impact of this practice has increased yield as much as 40 million dollars. I also advocated the practice for landscapes which before I conducted the research and education were little mulched. Now mulches replace lawns in many yards and commercial landscapes (figure 2), have decreased water applications by millions of gallons and increased soil and root health in thousands of landscapes worldwide. This research-based practice was adopted as a funded practice of CDFG Healthy Soils Initiative and USDA NRCS EQUIP grants because of the work that I and Advisor Faber conducted over the last twenty years. One of the largest tree care companies in the world (Brightview Tree Co. in Fillmore, Ca) now mulches all their containerized specimen oak trees based on my research findings, cutting their costs for pest management and fertility and water by thousands of dollars.

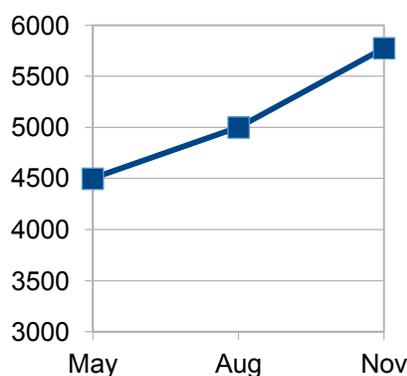


Figure 3: Number of reads by research gate members in 2019

Social Media and Evaluations for Impacts in combined themes--*Measures of Research Effectiveness*

As measured by Research Gate (RG), my scholarly outputs are increasing and increasingly regarded as valuable by others in the scientific community. At the end of this review period my RG article “reads” trajectory shows a nice upward slope (Figure 2). The number of reads trend is now over 6000 (milestone attained Jan. 2020). The RG interest score places my profile in the top 20% of RG members suggesting a high degree of interest in my work by other RG members around the world. Recently, I used social media: Facebook, LinkedIn and Research Gate to distribute my Qualtrics Impacts survey (see attached file). Of those able to estimate the value of the research impacts from my work they totaled \$433,600 or an average of 31,000 per respondent for all themes. One respondent indicated they have increased their

profit by millions of dollars based on my research. This estimate is likely, as they are a multi-state corporation employing thousands of tree care employees.

Theme III--Master Gardener

Background, Rationale and Problem Ten years ago I resumed leadership for the Ventura County MG program as a permanent part of my program. While I was on sabbatical in 2018-19, my coordinator, Leah Haynes, retired. I came back (during sabbatical) to chair the hiring committee for a new Education Specialist (Alexa Hendricks) whom we hired this year. I guided Ms. Haynes to develop the VC MG program into an effective tool for output of UC-based information that supports the UC initiatives: healthy communities, water conservation, pest exclusion, and healthy food. Alexa Hendricks and I are continuing that effort with a new training class in 2019 and a refocus of issues the program addresses.

Clientele, Goals, Inputs Clientele for the MG program are the gardening public in Ventura County and the volunteers themselves. The goals of the program have been to limit the spread of exotic pests, to reduce the amount of water used in landscapes; and to develop healthy communities by improving the “green” infrastructure in Ventura County. The most important input to the MG program is volunteer time, valued at **\$1.2m** (Table 1) based on volunteer hours reported in the VMS. The program also maintains an annual budget of about \$15,000 from fees, donations and gifts. MG volunteers have donated **\$16,356** to the program since 2017. In-kind donations from water districts and designated volunteer site partners were **\$124,865** for the review period. The mission of the UC Master Gardener Program is to extend research-based knowledge and information on home horticulture and food production, pest management, and sustainable landscape practices to the residents of California guided by our core values and strategic initiatives. I set the program goals for the VC MG program and supervise the Education Specialist. My goals for the VCMG program were to stall the spread of exotic pests through education, reduce water applied to landscapes with use of drought tolerant plants and appropriate irrigation; educate the general public on tree care basics; continue to grow the program in rural communities and increase the involvement of Spanish speaking volunteers.

Methods, Outputs The Master Gardener program relies on volunteers as extenders of University of California research-based information. This is done in a variety of outreach methods, including over twenty hands-on drip irrigation workshops, invited presentations from our speaker’s guild, one-on-one contacts at public events i.e., the Ventura County Fair, the Helpline, and with public interactions at our nine public volunteering sites. I conduct about 25% of the training courses for VC master gardeners. I also support training efforts in other counties. The VC MG program relies on its strong retention of volunteers (VCMG enjoys one of the top retention rates in CA), an extensive training curriculum, and volunteer-based leadership. Our volunteer retention is so high that we have adopted every other year training cycles so that we don’t grow too large a program for our resources. The value of volunteer service hours exceeded \$1.2m dollars during the review period (Table 1). The program relies on designated volunteering sites around the County. Ten years ago volunteers were centered at the Hansen REC. Eight new sites were developed over these years, broadly increasing the reach and scope and equity of volunteer impacts within VC communities. Two new sites were developed during the review period (Oxnard Historic Farm Park; Ag Museum of Ventura County). Nine demonstration gardens showcase low water-use plant materials and landscape concepts. Volunteers educate the public on exotic pests, water conservation, native plants, sustainable vegetable production, and many other gardening topics.

Outcomes, Impacts, and Condition Changes The VC MG program directly supports the following UC ANR Public Value Statements:

- Protecting California’s natural resources
- Building climate-resilient communities and ecosystems
- Promoting healthy people and communities
- Developing an inclusive and equitable society

In 2018-19, volunteers gave over 49 gardening related talks attended by 1000 members of the public; these educational efforts helped slow the spread of Asian Citrus Psyllid and Huanglongbing disease in Ventura, saved millions of gallons of water, and increased wellness of County residents through gardening education. Ventura County MG volunteers transformed a site at the Ag Museum of Ventura County (Santa Paula, CA) into a vegetable and native plant garden that is now used to educate 3000-5,000 children per year on urban food production. Callegus water district partnered with VC MG program using their bill mailing system to spread MG program output, educational material, and flyers to over 100,000 Ventura county residents. Volunteers are helping to limit the spread of exotic pests such as Invasive shot hole borers, and golden spotted oak borer. Millions of gallons of water are saved each year through volunteer outreach at irrigation workshops, lectures at the nine volunteer sites and gardens and by the combined networking efforts of the over 200 volunteers.

Table 1. Value of Master Gardener Volunteer Service

Volunteer Metric ⁺	2017	2018	2019*	total
Volunteer number	193	198	174	
Volunteer hours	14,081	16,130	12,052	42,263
\$Value of service hours	\$397,647 @\$28.24/hr	\$469,060 @29.08/hr	\$360,957 @29.95/hr	\$1,227,664
⁺ Data from the VMS			*no trainee class this year	

Mentoring

Over the current review period, I have tried to serve as an informal mentor for both ANR colleagues and students outside the UC system. I have mentored new employees, including our new Director (Schilder) and our newest Advisor (Shapero). Although I was on sabbatical during Dr. Schilder’s first year as County Director, I was active in her support and offered assistance and consultation a number of times as was intended in my sabbatical plan.

One way I have mentored is to invite and include colleagues and students as authors on publications. In one case, a former student had not published her MS thesis and I prepared a Journal article from her thesis work (See supporting evidence: bibliography; Takeuchi and Downer, 2019). I have a personal goal to increase the number of papers that students produce from the Cal Poly Master degree program. After hearing an excellent talk at ASHS on technical writing, I gave a lecture on how to write a scientific paper to the Department of Plant Science graduate students in 2017—the effort was subsequently lauded as the best direction they had in their graduate studies. I currently advise three graduate students in that program. I included a student author on a recent UCIPM Pest Note. Upon revision and creation of new UCIPM pest notes, I sought out colleagues in ANR as authors that were trained in plant pathology to assist in publication revisions. At the end of the 2019 review period I was selected as a mentor in the ANR staff mentor program, which will fully develop in 2020.



Figure 4: Graduation

Professional Competence and Activity

Professional development and Training

I requested and was granted a one-year sabbatical (taken during the last year of this review period--see sabbatical plan and report). My studies in the desert Southwest of drought-adapted plants and trees supported the two *Trees of the Chiricahuas* meetings in which I presented at the Southwestern Research Station (Amer. Museum of Natural History facility in Portal, AZ) and articles written in my landscape notes newsletter as well as in the *Western Arborist* for the International Soc. of Arboriculture. During my sabbatical I revised or wrote six UCIPM Pest Notes, five peer reviewed journal articles and many popular articles, blogs etc.

Disciplinary Society or Professional Association Memberships

I am a member of the following professional groups:

- -International Society of Arboriculture (ISA)
- -Life Member of Western Chapter of ISA (WCISA)
- -American Society of Horticultural Science (ASHS)
- -American Phytopathological Society
- -International Society of Horticultural Science
- -Sigma Xi (the scientific Research Society)

- -Арборгстика Україна (Ukrainian Arborists)

Evidence of Professional Competence

Over my career I have received multiple awards from the International Society of Arboriculture (ISA) for teaching and research. My recognition as an award recipient has continued on a national and international level. In 2017, I received the Award of Merit from the Western Chapter of ISA, it is the highest award the Chapter confers. This award is “bestowed upon an individual active member to recognize outstanding, meritorious service in advancing the principles, ideals and practices of progressive arboriculture.” In 2018, I received the Richard Harris Education Award by the Western Chapter ISA. This award commemorates excellence in teaching. Later that year I received the Richard Harris Letters Award from the ISA, an international award that I accepted in Columbus Ohio at the international meeting. This award recognized my publication efforts, particularly the *Botany for Arborists* series in the Western Arborist. I sit actively on two boards, providing leadership as regional conference committee chair for WCISA and Research Chairman for the John Britton Fund.

In September 2018, I was invited to the annual meeting of the Arizona Community Tree Council in Prescott, AZ and delivered the Keynote presentation entitled *The role of organic matter in desert ecosystems*. Further evidence of international recognition occurred with an invitation to develop a workshop in Varese, Italy in 2018. I presented a half-day workshop on root rot and mulch-mediated root rot control to Italian arborists and landscape consultants. I presented at two annual meetings of American Soc. Horticultural Science (ASHS) and once at Арборгстика Україна in Kiev, Ukraine, and four times for the 2017 and 2018 WCISA annual meetings. In August 2019 I moderated a session on educational methods at the ASHS annual conference in Las Vegas and made an oral presentation on using social media impact gardeners.

University Service

I served on the Academic Assembly Council (AAC) executive committee all years of this review as either President or Past President. I worked on bylaws revisions, wrote newsletters to the assembly, prepared for an AAC meeting at the statewide conference in 2018, and helped advocate for the salary equity program. I was appointed in 2017 to the Peer Review Committee and served all three years of this review period (even while on sabbatical). I completed written reviews of over 25 packages and was secondary reviewer on as many. I participated in all sessions to discuss policy, individual reviews and make recommendations to changes in the e-book in our summer wrap up sessions. I participated in the search and hiring of Matthew Shapero, range science advisor in Ventura/Santa Barbara. I was an active participant of the search process for the UCCE/Hansen REC Director position, and most recently as chair of the search committee that hired Dr. Schilder. I spent a week traveling in Northern California to provide three-hour Master Gardener plant pathology trainings in five counties.

Public Service

Over the last several years and all three years of the review, I held an adjunct professor position at California Polytechnic University in Pomona. In 2008 my former arboriculture and plant pathology mentor Dr. Frederick Roth retired from Cal Poly Pomona, leaving a huge hole in a declining plant science program. Dr. Valerie Mellano (former County Director, San Diego) was hired as plant science chairman and I was recruited to teach after Dr. Roth fully retired. We have a critical shortage of plant pathologists and talented arborists in California. Cal Poly teaching is an approved consulting effort. I consider my Cal Poly work a statewide public service as I provide skills that they would not have otherwise. I head the arboriculture program there and also teach plant pathology--both upper level plant science courses. The department increased from under 100 plant science students to over 200 in the department during my recent tenure. I also helped coach and train Cal Poly’s National Collegiate Landscape Competition (NCLC) Team which placed second in the nation in 2018. In the three years of this review I coached NCLC team competitions in Utah, North Carolina, and Colorado.



Figure 5: Coaching the NCLC team

Other activities include:

- Arbor Summit 2019. The first arboriculture summit for high school and college students was held in December of 2019. While the event was held outside the review period, a year of planning (in 2018-19) went into this first and very successful event.
- I served as a member of the Ojai Tree Committee, providing technical expertise on trees to the Ojai public works staff.
- I am one of the “Garden Professors” and work collaboratively with Dr. Linda Chalker-Scott (Washington State U.) and others on the GP Facebook and blog sites where we have over 23K followers worldwide that read our science-

based garden information blogs and posts. A recent survey (results presented at ASHS, Downer and Chalker-Scott, 2019) of GP site members indicates high impact from our work around the world. Members adopted new practices such as root washing of trees, increased mulching using fresh wood chips, applying less pesticides, and have a behavior change of greater critical approach to pesticide and other horticultural product selection. The survey also found that blog readers (the blog is a separate site that can be found at <http://gardenprofessors.com>) were more likely than non-readers to adopt science-based gardening information. As a Garden Professor I write regular blogs, and in the last year of my review period they were read by members around the world more than 13,000 times. GP reach increased by thousands of members while I was an Administrator/Garden Professor.

Programmatic Affirmative Action

Program parity was maintained for landscape clientele from 2017-19. However program activities were suspended in the sabbatical year of 2018-19, excluding a few events and lectures that were previously agreed to and were out of County. I feel our master gardening program has made exceptional strides by selecting Spanish speaking trainees and we now have the first programs in Spanish coming on line in some Ventura County communities. In my work with the Western chapter of ISA we have invigorated the Spanish Arborist Committee and their first regional conference is now planned for early in 2020 all in Spanish. At California Polytechnic University in Pomona, almost all of my students were either Hispanic or Asian or African American (72%). White students make up only about 25% of the students in the plant science program. The national Collegiate Landscape Team is over 50% Hispanic and we have increased the number of women team members significantly to about 30% of the team as well as getting the first female coach in the last few years (previously it was all male on the advisor side). All of my graduate students are Hispanic/Asian. In my work on the John Britton Fund as a board member we have set aside grant funding to support the women in arboriculture committee of the Western Chapter of the international society of Arboriculture. This will support climbing and chainsaw and other educational training for women working in the tree care industries.

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Supporting Documentation

Professional Competence and Activity

A. Professional Development and Training

Begin Date - End Date	Location	Name, Description and Occurrence of Activity
9/18-21/17	Kona, Hi	Attended ASHS annual conference
4/9/18	Ontario, Ca	ANR statewide Conference
8/4-8/18	Columbus, Oh	Attended ISA annual Conference and research presentations.
2/26/19--3/05/19	Chiang Mai Thailand	Attend horticultural tour of Chiang Mai and International Flower show in Chaing Mai.
06/11/19	On Line	Attended Amer. Soc. Hort Sci. Webinar on Hazardous Trees
06/25/19	Austin, TX	Pre-Conference Horticulture Tour of nurseries and landscapes
07/26/19	Texas A&M	Woody Plant Conference
06/28/19	Nacodoches, Texas	Wild About Woodies Conference
07/22-24/19	Las Vegas, Nv	Attended ASHS annual conference
8/29/19 – 9/7/19	Portal, Az	Fungi of the Chiricahua Mountains. A mycology field course. Field Identification of fungi and molecular identification techniques.

B. Disciplinary Society or Professional Association

Disciplinary Society/Prof. Assoc Name	Membership/Meetings Attended/Activities
American Soc. Horticultural Science	Member/attended Annual conference In HI 2017 and again in Nevada, 2019.
American Phytopathological Soc.	Member
International Soc. Hort. Science	Member
Sigma Xi	Member
International Soc. Arboriculture	Member: Attended conference in Ohio in 2018
Western Chapter (ISA)	Member/Chairman of Regional Conferences Committee

C. Evidence of Professional Competency

Begin Date - End Date	Location	Name, Description and Occurrence of Award, Recognition, Professional Presentation, Office or Activity
Jan 2017 to current	Ca, Az, Nv, Hi	Chair of the WCISA regional Conference Committee
5/11/2017	San Diego, CA	Western Chapter International Society of Arboriculture: Award of Merit.
9/19/17	Kona, Hi	Invited presentation (“ <i>Diseases of Figs</i> ”) to workshop conference at ASHS meeting
3/20/2018 - 3/27/2018	Varese, Italy	Fitopatologie degli alberi in ambiente urbano e loro controllo biologico: Invited presentations and workshop on landscape diseases and <i>Phytophthora</i> control.
4/24/2018 - 4/25/2018	Santa Rosa, Ca	Western Chapter International Society Arboriculture: Richard Harris Education Award
8/4/2018- 8/8/2018	Columbus Oh	International Society of Arboriculture: Harris Letters Award (also later reported in ANR report). This award was given for my extensive publication record in the fields of arboriculture--it is internationally recognized.
3/26/19	Texas A&M	Invited presentation on palm nutrition.
7/24/19	Las Vegas, Nv	Invited to moderate session on Educational Methods at the American Soc. Hort. Sci. meetings
9/10/19	Portal, Az	Invited presentation on <i>Trees of Chernobyl</i> by the Southwestern Research Station.

University and Public Service

A. University Service

Begin Date - End Date	Name, Description, and Occurrence of Activity	Org Level	Your Contribution and Leadership Role
7/1/16-7/31/17	President elect (Vice President) Academic Assembly Council	State	Attend executive committee meetings as a voting member of AAC leadership
5/5/17 – 12/31/19	Peer Review Committee	Division-wide	Took lead role on numerous cases, discussed and reviewed all cases in the system, discussed and reviewed evaluation criteria, performance expectations, interacted with personnel committee members to refine the “ebook”
5/2018	Search Committee for Range Science Advisor (Ventura County)	State	Committee member/Acting CD
7/1/17 – 7/1/18	President: Academic Assembly Council (AAC)	Division-wide	Organize Council meetings, write newsletter, meet with leadership, set goals for the organization, oversee committee chairs, prepare annual budget.
Sep 1, 2017 - Dec 25, 2017	Search Committee: Ventura County Director/Rec Center Director	County	Chaired the committee, selected and interviewed candidates and wrote recommendation/report
2/25 -2/28, 2018	Pest Management Lecture Tour in Northern California for Master Gardener Training.	State	I traveled to four northern California Counties to provide in-service training to over 300 MG volunteers. This tour was coordinated by Igor Lacan It is UC service because I am providing educational opportunities that there are few other resources (FTE) remaining at UC to provide (Ph.D. plant pathologist with expertise in ornamental horticulture)
Spring 2019	Search committee for Community Education Specialist	County	Chairman
Jul 1, 2018 - Jul 1, 2020	Past President Academic Assembly Council	Division-wide	Voting member of the executive committee, work as directed on

Begin Date - End Date	Name, Description, and Occurrence of Activity	Org Level	Your Contribution and Leadership Role
			projects for AAC, attend all meetings and support the current president in her duties

B. Public Service

Begin Date - End Date	Name, Description, and Occurrence of Activity	Org Level	Your Contribution and Leadership Role
Oct 1, 2016 - Oct 1, 2018	Ojai Tree Committee	Community	Committee member: provide University and Science based knowledge on tree care and diseases to a public panel
3/14-19/17	National College Landscape Team Utah State University	National	Team Coach/chaperon. Train and lead team in competition
9/1/17	Ventura County Farm Day	County	Provided leadership for event (interim CD) attended event and social dinner
3/13-18/18	National College Landscape Team North Carolina St. U.	National	Team Coach/chaperon. Train and lead team in competition
3/19-24/19	National College Landscape Team Colorado State University	National	Team Coach and chaperon. Train and lead the cal poly team
Jul 17, 2018	Fire Damage assessment: OVLC	Community	Conducted a fire damage assessment post Thomas fire for the Ojai Land Conservancy
8/30/18	Graduate Studies and Writing	State	Provided a lecture to MS students on how to do research and scientific writing
10/30/18	Contained Environment "Terrarium" Workshop	State	Conducted a workshop on Terrarium construction as an invited lecture for a Basic Horticulture Class.
Winter, 2017 Spring 2017 Spring 2018 2017- current	California State Polytechnic University—Classes taught Diseases of Ornamentals (Plt 427) Diseases of Ornamentals (Plt 427) Arboriculture (Plt 328) Graduate Student Advising	State " " " "	Instructor/Mentor " " " Advising MS students on their research

Extension Activities

A. Meetings Organized

Begin Date - End Date	Meeting Name and Type	Topic/Title	Role	Location(s)	Total No. of Attendees
Theme: Arboriculture					
11/17-19/16	Woodworking with urban lumber	Carbon storage using landscape trees	Meeting co- organizer	Cal Poly San Luis Obispo	28
3/29-4/1/17	Soil School for Arborists	Basic soils instruction	Co- Organizer/Presenter	Catalina Island	27
8/10-13/17	Bristlecone Rendezvous	Outdoor education about tree ecology	organizer/speaker	Bishop, CA	36
10/21-22/17	Urban wood recycling and reutilization-- A demonstration of utilizing urban wood for furniture production	Demonstration about utilizing urban wood products	Presenter	Johnsondale, CA	56
4/14-15/18	Арборсттика Україна	Arboriculture	Organizer/Presenter	Kiev, Ukraine	30
10/8-12/18	Chiricahua Rendezvous	Intense five day course on the ecology of trees in the Chiricahua Mountains	Organizer/presenter	Portal, AZ	34
8/14-18/19	Soil School For Arborists	Intense three day hands on course on basic soil science	Organizer/Presenter	Bishop Ca (Crooked Creek Research station in the White Mountains	30
Theme: Pest Management					
12/6/16	Entomology Assn. Of Southern California (EASC)	Entomology Subjects	Organizer/moderator	Arcadia, CA	40

Begin Date - End Date	Meeting Name and Type	Topic/Title	Role	Location(s)	Total No. of Attendees
03/07/17	EASC	Entomology Subjects	Organizer/Moderator	Arcadia, CA	28
9/12/17	EASC	Entomology Subjects	Organizer/Moderator	Arcadia, CA	26
12/5/18	EASC	Entomology subjects	Organizer/moderator	Arcadia CA	33
1/16/18	Landscape Disease Symposium	Plant Pathology	Organizer Speaker Editor	Santa Paula	73

B. Educational Presentations

Begin Date - End Date	Meeting Name or Sponsor /Presentation title	Presentation Topic	Location(s)	No. of Attendees
Theme: Arboriculture/landscape				
10/13/16	WCISA Regional Meeting <i>Anatomy and Physiology of Roots</i>	Botany	Santa Barbara	73
10/13/16	WCISA Regional Meeting <i>Effects of drought and disease on root systems</i>	Climate change drought, botany	Santa Barbara	73
10/14/16	California Urban Forest Council Inland Empire Chapter <i>Recommended tree species for a new climate paradigm</i>	Climate ready trees:	Riverside	48
10/20/16	Desert Green Conference <i>Trees in a hotter/drier climate</i> (team delivered with Tracey Takeuchi)	Climate Ready Trees:	Las Vegas, NV	85
11/17/16	Pleasant Valley Garden Club <i>Caring for trees during a drought</i>	Climate Change:	Camarillo	42
1/22/17	Guest Lecture at Cal Poly Pomona Plt 131 lab <i>Pruning Persimmons:</i>	Pruning:	Pomona	32
2/1/17	Karlik's Landscape Meeting <i>Managing Shade Trees During Drought</i>	Arboriculture	Bakersfield	66
5/10/17	WCISA Annual Meeting <i>Mulches: Utilizing Mulches to</i>	Arboriculture	San Diego	80

Begin Date - End Date	Meeting Name or Sponsor /Presentation title	Presentation Topic	Location(s)	No. of Attendees
	<i>Help Trees Thrive and Survive During Drought</i>			
5/10/17	WCISA Annual Meeting <i>Tree Selection for Changing Climate Conditions</i> (co presentation with Takeuchi)	Arboriculture	San Diego	70
5/11/17	WCISA Annual Meeting <i>Chernobyl III - Shade Tree Research in Kiev & Chernobyl Nuclear Exclusion Zone</i>	Arboriculture	San Diego	78
6/7/17	Florida Chapter of ISA <i>Trees in The Chernobyl Nuclear Exclusion Zone</i>	Arboriculture	Palm Coast, Florida	185
10/13/17	Desert Green conference <i>Mulch 2.0</i>	Latest on Mulch research	Las Vegas, NV	72
10/13/17	Desert Green Conference <i>Technology in Diagnostic work</i>	Using cell phones and other equipment to diagnose diseases:	Las Vegas, NV	56
4/14/18	Арбористика Україна <i>-Basic Tree biology</i> <i>-Pruning science</i>	Botany and pruning science	Kiev, Ukraine	25
4/25/18	WCISA Annual Meeting <i>Using your smart phone to diagnose tree disorders</i>	Diagnostic equipment for diseases	Santa Rosa	68
6/30/18	WCISA regional meeting <i>Tree and fungi interactions</i>	Mycology	San Marino	45
7/26/18	Western Tree Management Seminar <i>Ground Zero: Effects of Flood and Fires on Trees</i>	Disaster effects on trees	Pomona	125
8/20/18	Basic Botany and New Pests in Arboriculture	Botany/Plant Pathology	Orange County	20
9/10/19	SWRS Evening Seminar Series <i>Trees of Chernobyl</i>	Arboriculture	Portal, AZ	22
9/14/18	Arizona Community Tree Council Keynote Presentation: <i>Role of organic matter in Desert Tree ecosystems</i>	Botany	Prescott, Az	185

Begin Date - End Date	Meeting Name or Sponsor /Presentation title	Presentation Topic	Location(s)	No. of Attendees
9/14/18	Arizona Community Tree Council <i>Beneficial Fungi</i>	Mycology	Prescott, Az	92
10/5/18	Britton Fund Meeting <i>Botany for Arborists</i>	Botany/Arboriculture	Stanford, Ca	120
10/8/18	Chiricahua Rendezvous <i>Fungi of the Chiricahua Mountains</i>	Mycology	Portal, Az	32
10/12/18	Chiricahua Rendezvous <i>Horticultural value of trees in the Chiricahua mountains</i>	Arboriculture	Portal, Az	32
10/09/19*	SWRS Trees Course Fungi of the Chiricahua Mountains	Mycology	Portal, Az	25
10/11/19*	SWRS Trees Course <i>Horticultural value of trees in the Chiricahua mountains</i>	Arboriculture	Portal, Az	25

* Outside the period of review

WCISA = Western Chapter International Society of Arboriculture

SWRS = South Western Research Station of the American Museum of Natural History

ISA = International Society of Arboriculture

Theme: Pest Management

1/31/17	ABC's of Plant Pathology (UCNFA program)	Plant Pathology	San Marcos	36
2/1/17	All About Canker Diseases of Shade Trees	Plant Pathology	Bakersfield	66
6/6/17	Suppressing Root Diseases with Mulches	Plant Pathology	Palm Coast, Florida	135
6/27/17	Diseases of Landscape Figs in California	Plant Pathology	Arcadia	110
8/17/17	CAPCA Botryosphaeria the bane of landscape plants	Plant Pathology	Simi Valley	89
11/16/17	John Britton Fund/WCISA Composts--Tree diseases in mulch—what to worry about and what not to.	Plant Pathology	Stanford U.	200
1/16/18	UCCE/Ventura County	Understanding the	Santa Paula	73

Begin Date - End Date	Meeting Name or Sponsor /Presentation title	Presentation Topic	Location(s)	No. of Attendees
	Landscape Disease Symposium	biology of <i>Annulohyphoxylon</i>		
1/16/18	Landscape Disease Symposium	<i>Botryosphaeria</i> canker of landscape trees	Santa Paula	73
3/1/18	Pathogen Pests of Ventura County (Guest Lecture)	Plant Pathogens and Insects 1	Ventura	12
8/24/18	Pitahaya Field day/Pitahaya Diseases	Plant Pathology 1	San Diego	55
10/15/18	Composts and Mulches (This was for Karlik's Hort Class)	Arboriculture/Soil Science	Bakersfield	28
CAPCA = California Assn. Pest Control Advisors WCISA = Western Chapter International Soc. Arboriculture				
Theme: Master Gardener				
10/25/16	Snake Oil in Horticulture (Guest MG lecture)	Horticulture	San Diego	48
11/08/16	Pruning Native Trees	Arboriculture	Ventura	20
11/15/16	Pruning Fruit Trees	Arboriculture	Ventura	25
8/24/17	Ornamental Tree Training and Pruning	Arboriculture	Long Beach (Statewide Master Gardener Conference)	24
8/24/17	Tree Health: Recognizing and Understanding Diseases in Shade Trees	Plant Pathology	Long Beach	40
8/24/17	Palm Nutrition and Management	Horticulture	Long Beach	12
9/29/17	Trees in Chernobyl	Arboriculture	Ventura	35
1/4/18	Plant pathology (MG training)	Plant Path 1	Ventura	38
1/11/18	Composting, mulching and the use of organic materials in the garden (MG training)	Mulching 1	Ventura	38
1/18/18	Fruit tree pruning and Care (MG training)	Pomology 1	Santa Paula	38
1/27/18	Tree Care 101 (speaker at the	Arboriculture	Santa Paula	48`

Begin Date - End Date	Meeting Name or Sponsor /Presentation title	Presentation Topic	Location(s)	No. of Attendees
	Home and Garden Workshop put on by UCCE MG volunteers)			
2/15/18	Selection and Care of woody plants (MG Training)	Arboriculture	Ventura	38
2/21-28/18	Plant Pathology Basics (northern California tour) *Also shown in University Service	Plant Pathology 5	Sacramento Alameda Contra Costa Chico Marin	300+
3/1/18	Sustainable landscaping and garden design (MG Training)	Horticulture	Ventura	38
3/8/18	Diagnosing garden problems (MG Training)	Diagnostics	Ventura	38
3/1/18	Sustainable landscaping (MG training lecture)	Sustainable landscapes	Ventura	38

C. Other (including websites, social media, blogs, collaborations with other agencies, organizations, policy engagement)

Begin Date - End Date	Description	No. of Instances
10/1/2014 to present Facebook page was started in 2010.	Jim Downer facebook page. This page mainly serves the arboriculture industry and is used to communicate with arborist “friends” around the world. https://www.facebook.com/jim.downer.58	518 friends. Most of these are selected as arborists/horticulturists
10/1/2017 to present	I maintain the Landscape Notes newsletter and write all the articles at: http://ceventura.ucdavis.edu	7 issues during the review period
8/1/2018- to present	Became an administrator for the Garden Professors facebook site. Officially became one of the “garden professors” on the site and started to write blogs in the fall of 2018.	There are >23,000 members of this site and I have had impact on many of them.
2015- to present	Research Gate. A social media connection for researchers. This connects authors through their citations and tracks publications. Metrics are in reads, research interest, etc.	Not applicable
10/18-10/19	Multi State Participation: University of Arizona and SWRS. To present the Chiricahua Rendezvous and the SWRS trees course. This is a collaboration with Ursula Schuch (UA) and SWRS (South Western	2

Begin Date - End Date	Description	No. of Instances
	Research Station	

Project Summary

Project Title	Role	Collaborators	Support Amount/Duration (if applicable)	Support Source
Master Gardener				
ARC Enrichment Center	Leader	MG volunteers, Leah Haynes, Alexa Hendricks	\$7000 from 2017 to 2020	ARC and a personal (community member) donation for a greenhouse
Goebel Center All Stars Garden and other gardens at that facility	Leader	Karrie Reid @ UC ANR, Leah Haynes @ UC ANR	>\$49,505 from 2017 till present	Callegus water district
Turfgrass Demonstration and teaching garden	Leader	Alexa Hendricks, Conejo Parks and Recreation center	~\$20,000 starting in 2020 combined in-kind and cash	Callegus Water District, Conejo Parks and Rec?
Camarillo Ranch House	leader	Leah Haynes @ UC ANR	\$5600 from 2017-2020	
Oxnard Historic Farm Park	leader	Leah Haynes @ UC ANR	\$16,500 from 2017-2020	City of Oxnard
HAREC Demonstration Gardens	Leader	Leah Haynes @ UC ANR, Annemiek Schilder @ UC ANR	\$2000 from 2017-2020	Thelma Hansen Fund
Channel Islands National Park Island Endemic plants garden	leader	Channel Islands National Park @ National Parks System	n/a	
California Veterans Center Gardens	Leader	Leah Haynes @ UC ANR	\$18,630 in-kind 2017-2020	Cal. Vet Center
Statewide Master Gardener Training Project	Leader	Missy Gable @ UC ANR, Dustin Blakey @ UC ANR, Igor Lacan @ UC ANR	Several hundred dollars of travel support in 2018	Northern California County Programs
Survey of attitudes about trees and landscapes	Leader	MG volunteer trainees	Funding not required	

Project Title	Role	Collaborators	Support Amount/Duration (if applicable)	Support Source
Ag Museum demo gardens	Leader	Mg Volunteers and trainees	\$7000 from 2018 to present	Ag Museum of Ventura County
Landscape Horticulture/Arboriculture				
Chiricahua Rendezvous (2018) And the SWRS Trees course (2019)	Project leader	Ursula Schuch @ University of Arizona, Southwestern Research Station (SWRS) @ American Museum of Natural History	This was enterprise funded by attendees.	
Bristlecone Rendezvous	Developer/leader of the rendezvous	Dustin Blakey @ UC ANR	Enterprise funded by attendees	
Soil School for Arborists	I co taught and developed the course	Tracey E. Takeuchi @ California Polytechnic University, Pomona	Enterprise funded by attendees	
Fertilization of landscape Roses		John Karlik @ UC ANR	\$2000	Weeks Roses
Climate Ready Tree Study	Co PI	Alison Berry @ UC ANR, Janet Hartin @ UC ANR, Darren Haver @ UC ANR, Peggy Mauk @ UC ANR	\$12,000 (2016 to present) \$25,000 (2018 to present)	Thelma Hansen Fund John Britton Fund for Tree Research
Survey of Drought affected trees in Southern California	Co PI	Tracey Takeuchi California Polytechnic University		
Effects of urban stress factors on mycorrhizal development in coast live oak.	PI		Land and labor supplied by HAREC	HAREC
A comparison of two Horsechestnut	PI	John Karlik @ UC ANR	\$10,000 for 2016-2018 trips	Self-funded for travel

Project Title	Role	Collaborators	Support Amount/Duration (if applicable)	Support Source
populations: Kiev vs Pripyat in the Chernobyl nuclear exclusion zone				
Home Gardener Opinions about landscapes and tree Pruning	Project leader	Leah Haynes @ UC ANR	No funding required	
Pest management				
<i>Botryosphaeria</i> disease of <i>Pittosporum undulatum</i>	Advisor	Dee Vega, California Polytechnic U. MS student	Several thousand dollars through grants/scholarships	Applied for by Ms. Vega
Coordination, outreach education, citizen science for pest management (PSHB and emerging pests)	Cooperator/Advisor	Sabrina Drill @ UC ANR, Akif Eskalen @ UC ANR	\$39,987 (2018 to present)	US Forest Service
Combined vegetated and slow sand filter to disinfect irrigation runoff for reuse	Cooperator	Lorence Oki @ UC ANR	199,878 (2016 till 2018)	Prop 50 Water Grant
Pitahaya disease assessment in California trials 2016 on going.	Leader	Ramiro Lobo @ UC ANR		

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Publication type	Amount since last salary action
Peer-reviewed--scholarly journals/Book Chapters	7
Other peer-reviewed	3
Non Peer Reviewed Scientific	0
Published abstracts from scientific meetings	5
Trade Journal and Industry Publications	10
UC and County Publications	1
Landscape Notes Newsletter Articles	7
Blog Posts	15
Total	48

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1.	Insect control in the landscape.	1985.	Vol 1 no. 1
2.	Landscape Trees		Vol 1 no. 1
3.	Proteas have diseases too.	1986	Vol 2 no. 1
4.	More on insects		Vol 2 no. 1
5.	Oaks are affected by many insects		Vol 2 no. 1
6.	Peppertree psyllid update		Vol 2 no. 2
7.	What's killing Modesto Ash Trees		Vol 2 no. 2
8.	Diagnosing Shade Tree Problems		Vol 2 no. 2
9.	Ash anthracnose continues		Vol 2 no. 3
10.	Eucalyptus longhorned borers a threat to Eucalyptus Trees		Vol 2 no. 3
11.	Pepper Tree Psyllid Update		Vol 2 no. 3
12.	Armillaria root rot some new information		Vol 2 no. 3
13.	Spray nozzles and disease control		Vol 2 no. 4
14.	More on hazardous trees		Vol 2 no. 4
15.	Chemical control of rust (turf)		Vol 2 no. 5
16.	Fireblight control		Vol 2 no. 5
17.	Turfgrass water use		Vol 2 no. 5
18.	Staking causes tree failures?		Vol 2 no. 6
19.	Pepper tree psyllid update		Vol 2 no. 6
20.	Disease notes		Vol 2 no. 6
21.	Understanding bark beetles	1987	Vol 3 no. 1
22.	Are wood chips hazardous		Vol 3 no. 1
23.	Injections for oaks?		Vol 3 no. 2
24.	Kikuyugrass management		Vol 3 no. 2
25.	Watering a tricky business		Vol 3 no. 3
26.	Fungicides how do they work		Vol 3 no. 3
27.	Boron—what levels are toxic to ornamentals		Vol 3 no. 3
28.	Inhibition of tall fescue germination by glyphosate (Roundup).		Vol 3 no. 4
29.	Systemics symposium		Vol 3 no. 4
30.	Peppertree psyllid update—injections and implants		Vol 3 no. 4
31.	Diseases of palms	1988	Vol 4 no. 1
32.	Gazania crown rot		Vol 4 no. 2
33.	Wood decay in shade trees		Vol 4 no. 2
34.	The Eucalyptus long horned borer makes it debut		Vol 4 no. 2
35.	More on gazania problems		Vol 4 no. 3
36.	Another gazania disease		Vol 4 no. 3
37.	Weeds in hydroseeded turf		Vol 4 no. 3
38.	Disease of <i>Poa annua</i> on golf courses		Vol 4 no. 4
39.	Ice plant failure		Vol 4 no. 4
40.	A new pest of Ash		Vol 4 no. 4
41.	Shade tree problems disease or drought		Vol 4 no. 4
42.	Fruit control in ornamental trees		Vol 4 no. 5
43.	The most common landscape problems		Vol 4 no. 6
44.	More on tree injections		Vol 4 no. 6
45.	Pesticide training made easy	1989	Vol 5 no. 1
46.	Pine Pitch Canker in Santa Barbara County		Vol 5 no. 1
47.	Managing turfgrass during drought		Vol 5 no. 2

48.	New turfgrass diseases		Vol 5 no. 2
49.	Drought effects on turfgrass for 1989		Vol 5 no. 2
50.	The baccharis beetle is back		Vol 5 no. 3
51.	The truth about water absorbing polymers! Do they work?		Vol 5 no. 3
52.	Eugenia psyllids are here		Vol 5 no. 3
53.	Eugenia psyllid update		Vol 5 no. 4
54.	Kikuyugrass research	1990	Vol 5 no. 1
55.	Eugenia psyllid update		Vol 5 no. 1
56.	More on Eugenia psyllids		Vol 5 no. 2
57.	Polymers polymers polymers		Vol 5 no. 2
58.	Snails snails snails		Vol 5 no. 2
59.	To mulch or not?		Vol 5 no. 2
60.	Kikuyugrass fertility studies	1991	Vol 6 no. 1
61.	Inexpensive moisture meters do they work		Vol 6 no. 1
62.	Blue gum psyllid is here		Vol 6 no. 2
63.	Kikuyugrass control		Vol 6 no. 2
64.	Mulching project update		Vol 6 no. 2
65.	Eucalyptus borer	1992	Vol 7 no. 1
66.	Controlling shrub growth		Vol 7 no. 1
67.	Mulching mowers		Vol 7 no. 2
68.	Polymer studies		Vol 7 no. 2
69.	Disease alert		Vol 7 no. 2
70.	Grasscycling	1993	Vol 8 no. 1
71.	Transplanting palms		Vol 8 no. 1
72.	Eucalyptus borer resistance		Vol 8 no. 1
73.	Eugenia psyllid relief		Vol 8 no. 1
74.	Effects of pruning sycamores		Vol 8 no. 1
75.	Mulching bedding plants		Vol 8 no. 1
76.	Oleander poisoning		Vol 8 no. 1
77.	The truth about eucalyptus		Vol 8 no. 2
78.	A new pest of eucalyptus	1994	Vol 9 no. 1
79.	Effect of mulches and turfgrass on palm growth		Vol 9 no. 1
80.	Organic dust toxic syndrome	1995	Vol 10 no. 1
81.	Oleander poisoning		Vol 10 no. 1
82.	Kikuyugrass fertilization		Vol 10 no. 1
83.	Pine pitch canker		Vol 10 no. 2
84.	yardwaste mulches and weed control		Vol 10 no. 2
85.	Aleppo blight	1996	Vol 11 no. 1
86.	Lantanna blight is back		Vol 11 no. 1
87.	Oak drip: another insect problem		Vol 11 no. 1
88.	Eucalyptus snout beetle update		Vol 11 no. 1
89.	Chemical turfgrass edging		Vol 11 no. 2
90.	Snails'n mulch		Vol 11 no. 2
91.	Oh why oh why do my bedding plants die?	1997	Vol 12 no 1
92.	Plant diagnostic and soil testing labs in CA	1998	Vol 13 no. 1
93.	Another new psyllid pest		Vol 13 no. 2
94.	Flux diseases in trees		Vol 13 no. 2
95.	Giant whitefly hits Ventura		Vol 13 no. 2
96.	A new pest of <i>Eucalyptus citriodora</i>	1999	Vol 14 no. 1**
97.	Where have all the flowers gone		Vol 14 no. 1
98.	Roundup—the DDT of the nineties?		Vol 14 no. 1

99.	Phytophthora an unseen menace in the landscape		Vol 14 no. 2
100.	Calcium based control of Phytophthora root rots	2000	Vol 15 no. 1
101.	Grass control in bedding plants		Vol 15 no. 1
102.	Lerp psyllid news	2001	Vol 15 no. 1
103.	Conk season		Vol 15 no. 1
104.	Planting depths a common and serious cause of tree deaths		Vol 15 no. 2
105.	Disease spotlight: Root rot caused by <i>Oxyporus latemarginatus</i>		Vol 15 no. 2
106.	The Herbicide contaminated Compost Issue	2002	Vol 16 no. 1
107.	Palm Disease Note: Fusarium Wilt or Not?	2003	Vol 17 no 1
108.	Powdery Mildew on Oak—Its Everywhere!		Vol 17 no 2
109.	Palm Disease Note—Pink Rot		Vol 17 no 3
110.	Pruning to Control Diamond Scale		Vol 17 no 4
111.	Trunk injection with Trifloxystrobin and Myclobutanil to control powdery mildew in coast live oak		Vol 17 no 4*
112.	Disease Notes: Armillaria Root Rot	2004	Vol 17 no 5&6
113.	Catastrophic Tree damage from Wind		Vol 18 no 1
114.	What’s up with Redwoods		Vol 18 no 1
115.	Organic Amendments and Mulches for Palms: Mulching vs Amending		Vol 18 no 2
116.	<i>Dendroctonus valens</i> : The Red Turpentine beetle		Vol 18 no 2
117.	Pruning Oaks		Vol 18 no 3
118.	Palm Tree Management Part I: selecting the right palm.		Vol 18 no 4
119.	Snake Oil, Horticultural Myths, Horticultural Urban Legends, and Persuaders in our Industry.	2006	Vol. 19 no 1
120.	Some factors about soil that you need to know to understand the biology of the oak tree in California		Vol. 19 no 2
121.	New thrips pest attacks <i>Myoporum</i>		Vol. 19 no 3
122.	Fusarium wilt pathogen is a soil survivor		Vol. 19 no 3
123.	Palm trunk decays are definitely in California		Vol. 19 no 3
124.	Diagnosing your oak tree part I: Diseases		Vol. 19 no 4
125.	The Wintersmith was Here	2007	Vol. 20 no 1
126.	Research results: palm fertility		Vol. 20 no 1
127.	Diagnosing your oak tree Part II: Insects		Vol 20 no 2
128.	Deep planting kills		Vol 20 no 3
129.	Controlling landscape diseases		Vol 21 no 1
130.	Let the wet begin	2008	Vol 21 no 1
131.	Mulch effects on trees	2009	Vol 22 no 1
132.	What is wrong with my pygmy date palms??		Vol 22 no 1
133.	Establishing landscape trees		Vol 22 no 2
134.	Drought, “water-wise” gardens and saving water in landscapes		Vol 22 no 3
135.	Hey its conk season keep an eye on your palms	2010	Vol 23 no 1
136.	Potting media studies		Vol 23 no 1
136.	Use of mulches to control weeds in landscapes		Vol 23 no 1
137.	Digital diagnosis		Vol 23 no 2
138.	Why trees die		Vol 24 no 1
139.	The effects of drought on shade trees	2013	Vol 25 no 1
140.	What do gardeners think about pruning trees?	2016	Vol 26 no1
141.	Bot fungi wreak havoc during drought		Vol 26 no 1
142.	Exploring the art and science of pruning		Vol 26 no 2
143.	Research rendezvous	2018	Vol 27 no 1
144.	Pruning climate ready trees		Vol 27 no 1

145.	Chiricahua rendezvous meeting announcement	2018 cont.	Vol 27 no. 2
146.	Sabbatical: 2018-1019		Vol 27 no. 3
147.	Preparing for dry times—continued drought in California and its potential impacts on our landscapes		Vol 27 no. 3
148.	Tuning up for Pruning up: Care maintenance and utilization of hand pruning tools		Vol 27 no. 4.
149.	Sabbatical Report and Plant materials article	2019	Vol 28. no 1

*indicates an article that I edited but was authored by another advisor.

**Articles from 96 forward are available on the world wide web with color figures at:
<http://ceventura.ucdavis.edu>

Sabbatical Leave Report—

Arthur James Downer,

Advisor, Ventura County

October 1, 2018 to September 31, 2019.

This report includes the following:

a. Lists of activities, itineraries, visited institutions, and individuals consulted.

b. Progress made on the sabbatical leave project;

———*c. An assessment of the project between anticipated results and real accomplished results.*

d. A statement of planned future activity as it relates to the sabbatical leave project; including plans for completion and publications of results

Overview

Over the last few annual evaluations I had a goal of publishing completed research work. Another goal was to write my first (in 35 yrs) ANR publications. Publication was the major driver for this sabbatical. I feel I have accomplished much of this goal as well as other kinds of publications that were completed, initiated or started. I made a significant effort on national/international social media to advance scientific understanding of gardening. I also challenged myself to learn more about tree species in the Climate Ready Tree Study that are native to the desert southwest. Finally, travel was a part of the sabbatical and the plans made for national and international travel were accomplished and augmented my understanding of landscapes, drought adaptations and urban street tree survival. My time was proportioned as follows: writing 75% ; travel; 10% ; Local exploration and tree study 15%..

Activities

In march of 2017 in advance of my sabbatical plan and request, I purchased property in Portal, Arizona so that I would have housing during the sabbatical year. Portal is a very small community in the Southeastern Arizona with (they Claim) the most Ph.D. residents in the country. Indeed the population here consists of retired ecologists, ornithologists, biologists and botanists. The community is small with many “migratory” residents that have not retired yet. The nucleus that keeps Portal so academically vital is the South Western Research Station (SWRS) which is a part of the American Museum of Natural History in New York. SWRS is internationally known as a field research station for biologists studying bio diversity in the Chiricahua Mountains. Individuals consulted are listed in Table 1.

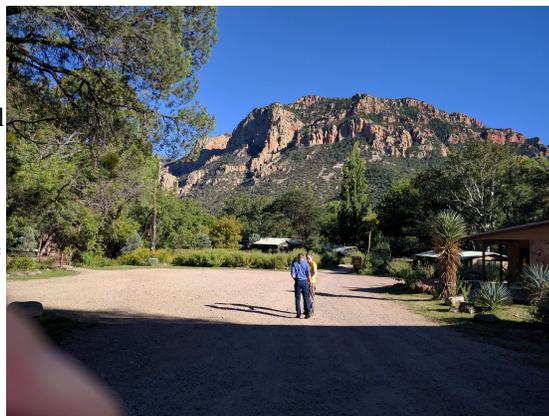


Figure 1: SWRS. the South Western Research Station, Portal, AZ

Table 1. Visited Institutions and Individuals consulted” and meetings attended

Name of Individual	Affiliated Institution/organization	Role in my sabbatical/expertise
Dr. Kevin Smith	USDA Forest Service, New	Speaker at the Chiricahua Rendezvous; Mycologist and plant

	Hampshire	physiologist.
Dr. Ursula Schuch	University of Arizona	Colleague and speaker and co-organizer of the <i>Chiricahua Rendezvous</i> and <i>SWRS Trees Course</i> ; Plant physiologist; drought adaptations of trees
Dr. Jim Malusa	University of Arizona	Speaker at trees course
Mr. Geoffrey Bender	SWRS	Director of the Station
Dr. Michelle Lannon	SWRS	Resident research scientist (entomologist)
Dr. Anda Fescenko	University of Latvia, Riga	SWRS Tree course attendee; Resource on European trees and horticultural practices
Dr. Mike Arnold	Texas A&M	Resource on Texas plants
Dr. Gu Mengmeng	Texas A&M	Resource on Texas plants
Dr. David Creech	Steven F. Austin University, Texas	Resource on woody plants Attended “ <i>Wild About Woodies</i> ” all day symposium
Mr. Adam Black	Former Director of Horticulture at Peckerwood Gardens	Oak species and other drought tolerant plants
Dr. Linda Loveless (presenter)	Arizona Native Plant Society U. Arizona	Attended annual meeting and became member of Arizona Native Plant society
Numerous colleagues	American Society of Horticultural Science	Attended Annual Meeting in Las Vegas, Nevada. Gave a presentation and moderated my session.

Presentations

I made an invited presentation at Texas A&M at the “Multi state Research Coordinating Committee and Information Exchange Group 27: Nursery Crop and Landscape Systems” on abiotic disorders of palms. I gave an invited lecture at SWRS evening seminar series title “Trees of the Chernobyl Nuclear Exclusion Zone” and two lectures at the Chiricahua rendezvous held at SWRS: one on fungi in the Chiricahua mountains and another on Trees of horticultural value from the Chiricahua mountains. I presented at one meeting for arborists during my sabbatical held at Stanford University titled “*Botany for Arborists* “ because this was a prior commitment to speak.

In Winter of 2019 I went on a horticulture tour organized by John Karlik to Chiang Mai, Thailand. The purpose of the trip was to see horticultural production and gardens in Thailand. This was an “eye opener” for me as I had never traveled to Asia before. I was particularly interested in urban tree response to “street life” which I wrote about in an issue of Landscape Notes (Landscape Notes vol. 28 no.1; which can be viewed at <http://ceventura.ucdavis.edu>). I also attended the Chiang Mai annual flower show a major event in the center of the old part of the city.

Texas trip

I planned for a visit to Texas because there are many drought tolerant plants growing there. I made contact with Dr. Mike Arnold at Texas A&M and was invited to present information about palms at a meeting he was holding in June, 2019. I was subsequently invited by Dr. David Creech at Steven J. Austin University and Arboretum to attend their “Wild about Woodies” meeting two days later. I also attended an all day pre-conference tour of gardens, nurseries and landscapes. I made some good friends and was able to encourage Mr. Adam Black to come to the Chiricahuas and speak at the SWRS trees course. Texas was not the dusty dry place I had imagined (this was my first visit to Texas), but rather a green sweeping oak/savanna near College Station and its vicinity. I was able to study the extensive oak collection at Peckerwood Gardens, many of which are from the Sierra Madre Occidental in Mexico that may have application in dry climates of Southern California.



Figure 3: Gardens in the Mountains of Thailand outside Chiang Mai

Portal Hiking Club

The portal hiking group is a group of dedicated hikers that hike trails in South East Arizona each Thursday. The group that hikes selects the next hike and reports are posted at: <http://www.portalrodeo.com/hiking/index.html>. I found going on the Thursday hikes was an excellent introduction into canyons and places in the desert southwest I would never have seen. I was able to view trees, shrubs and other plants while on the hikes, collect seed for propagation and images of native plants in desert settings. These images were shared with clientele in Landscape Notes articles as well as on the web on my social media site and in Western Arborist articles through the Western Chapter of the International Society of Arboriculture.



Figure 4: Some members of the Hiking Club

Outputs

- The sabbatical began and ended with a week long course that I held at the Southwestern Research Station on Trees of the Chiricahua Mountains. The course was held in Oct 2018 and again one week post sabbatical in Oct 2019.
- I started the book “*Botany for Arborists*”. While I had hoped to complete it this during the sabbatical, it has taken longer than anticipated due to the editor who is transitioning out of his role, the slowness of co-authors in working on manuscripts, and the sheer volume of work required. The book will have 18 chapters and I have finished four of them.

- I became one of the “Garden Professors” on the Garden Professors Facebook webpage. As one of the “professors” I write regularly in the blog page. These have national reach and there are currently about 23,412 Garden Professor facebook site members. While on sabbatical I posted 12 blogs at <http://gardenprofessors.com>.
- During sabbatical I was able to start six pest notes for UCIPM either as new notes or revisions. Two were published one is in production and three are in process.(Table 2)
- I started six ANR 8000 publications and two were published, two have completed peer review and are waiting for associate editor review.(Table 2.)
- I published 5 peer-reviewed journal articles, two of which were about my research in Ukraine and the Chernobyl nuclear exclusion zone. (Table 2.)
- I published two “Landscape Notes” newsletter articles
- I published three “*Botany for Arborists*” articles in the Western Arborist

“An assessment of the project between anticipated results and real accomplished results” and Obstacles to completion of sabbatical outputs.

I feel that I attained most of the goals I set out in my plan. I was able to publish peer reviewed journal articles on past research projects, I traveled to the two destinations I had planned, and I learned much about desert adapted trees. My most difficult publication outputs were within ANR due to system issues discussed below.

Part way into my sabbatical I found out that my master gardener coordinator, Leah Haynes was retiring. Leah and I have worked for ten years together on the VC Master Gardener program and she was an integral part of the program and an invaluable asset. I could not let recruitment for her replacement go without my input. I chaired the committee to rehire her position and attended the interviews. This necessitated travel back to California for interviews. We selected, and the University hired Alexa Hendricks for the new position.

An obstacle to completing my publication goals is the slow process of review and publication of ANR publications; especially UCIPM publications. Our system of publication in ANR is slow --taking over a year for some manuscripts to be published. Response time from associate editors is often slow and peer review is similarly slow, sometimes taking months. UCIPM is especially slow with manuscripts residing with UCIPM staff for months at a time.

Statement of Planned Future Activities

Publications that were initiated during the sabbatical are a priority to finish writing or processing for publication. Table 2 lists those that were published and are still in progress. I am also working on the Botany for Arborists book that is to be published by the John Britton Fund. The trees course taught at SWRS is not a standing course that will be taught there every year in October and I will continue to coordinate the multi-state activity. Several of the drought tolerant trees I identified will be (or are being) propagated for planting in California. These trees will be studied for their suitability for introduction to California horticulture.

Table 2. Status of peer-reviewed publications started during sabbatical

Title	Type of	Publication Status	Notes/reason not

	publication		published
1. Lead absorption by radish is affected by soil texture and cultivar	Journal	Published	
2. A Comparison of Two Horsechestnut Street Tree Plantings in Kiev and Pripyat, Ukraine	Journal	Published	
3. Effects of sulfur, organic amendments and turfgrass on soil reaction in a clay loam soil.	Journal	In revision	Waiting on stats revision from co author
4. Comparison of Gamma Ray Dosimeters in a Field Study in the Chernobyl Exclusion Zone.	Journal	Published	
5. Non-chemical prevention of <i>Armillaria mellea</i> infection of Peach (<i>Prunus persica</i>)	Journal	Published	
6. Soil Myth Busting for Extension Educators: Reviewing the Literature on Soil Structure and Functionality	Journal	Published	
7. Mulches for Landscapes	ANR #8672	Published	
8. Wood Decay fungi	UCIPM Pest note #74109	Published	
9. Phytophthora root and crown rot	Pest Note	Finished	Waiting on UCIPM for release to Peer Review
10. Powdery Mildew	Pest Note	Finished	Waiting on UCIPM
11. Anthracnose	Pest Note	Finished	Waiting on UCIPM
12. Botryosphaeria in Landscape Trees	Pest Note	Finished	Waiting on UCIPM

13. Armillaria	Pest Note	Peer review and revision complete	Waiting for UCIPM to publish
14. Pruning landscape Trees	ANR 8000	Working with co author	
15. Container Media	ANR 8000	Out of Peer review	Waiting on Associate Editor
16. Amendments for Landscapes	ANR 8000	Out of Peer Review	Waiting for Associate Editor

Sabbatical Leave Plan—Arthur James Downer, Advisor, Ventura County Begin Oct 1, 2018 to Sept 31, 2019.

Purpose for the Leave

-To engage in field research and study of the natural history and drought adaptations of “climate ready trees” and other drought adapted and monsoon adapted trees in the desert Southwest. To seek and propagate additional species to be used in California tree/drought research projects.

-To complete several writing projects: pest notes and Peer reviewed Journal articles as well as begin a book project on the biology of shade trees.

-The sabbatical coincides with the last year in my current three year review cycle and should enable me to achieve previously mentioned and unrealized goals of further publication of completed work.

The Climate Ready Tree project

Global climate change is creating hotter and drier climates, especially in the western United States, particularly California, stressing trees traditionally used in urban landscapes and necessitating a new plant palette (McPherson et al., 2017). Trees in urban areas, especially cities, have short lifespans (Roman, and Scatena, 2011) and traditionally utilized species fail or live shorter lives as temperatures in western cities continue to rise. The plant palette that municipal foresters used for the last 60 to 100 years in Southern California is now out of date, and the ecosystem services that were traditionally expected can no longer be expected in many cases. There is a need to develop a new list of “climate-ready trees”. Greg McPherson (USFS) and Alison Berry (UCD) started a long (twenty year) project to evaluate trees for hotter and drier climates. I have been a cooperater in the Climate Ready Tree study for the last five years. I am studying the pruning requirements at the control plots at RECs in Davis, Irvine, and Riverside. I was granted funds (Hansen Trust Grant: 2016), to start a study in Santa Paula at HREC, that is a replicate of the McPherson and Berry study. Trees were selected from dry climates around the world but some are native to the U.S. desert southwest. Desert trees from the arid Southwest are not usually grown in California landscapes, so little is known about their drought adaptations or horticulture.

Exploration of the sky islands mountain ranges of Arizona, searches in New Mexico and Texas may be fruitful in identifying new species (new to landscapes in California) which we can grow along hotter California streets, and in cities and gardens. Sky Islands are isolated mountain ranges that receive summer monsoon rains. They are isolated by desert scrubs, so there is greater genetic variability of species within the Sky Islands of the Madrean desert plant communities than in other desert ecosystems (Van Devender and Riena-Guererro, 2018). Plants growing in the Sky Islands receive winter storm moisture and summer monsoon moisture very similar to the way California gardeners grow their trees. Winter

rains and summer irrigation are typically used to sustain trees in California's Mediterranean climates. Thus, there is an opportunity to examine and select suitable taxa from the native ranges of some of the trees in the Climate Ready Trees study in order to better understand their biology and suitability for horticultural use. Since all trees in the current study were produced in nurseries, their inherent form was destroyed by nursery cultivation. We know little of the actual form of some of these tree species, so examination of their morphological plasticity in-situ will help to inform what is possible in landscapes. Seed of suitable drought adapted species especially those that exhibit desirable arboreal morphologies with horticultural value, will be collected for cultivation and trial in California.

Specific events/trips

- Chiricahua Rendezvous, Oct 8-12, 2018.
- Take a Horticulture tour of Thailand (Jan, 2019).
- Attend Annual Western Chapter, International Soc. Arboriculture meeting, in HI, May 2019.
- Chernobyl Trip V, Continue research on trees in the Exclusion zone. Summer, 2019.
- Possible attendance at the European Geophysical Union annual meeting to present research on background radiation detection in the Chernobyl exclusion zone, Summer 2019.

How the sabbatical will strengthen my program

Intense study and travel will provide information for future extension presentations especially to arborist clientele. Completion of peer reviewed journal articles will provide lasting records of research that I completed and will address a multi-year goal that I set in past annual evaluations. International travel and study helps build a broader network of colleagues and extends the reputation of UC ANR and builds professional competence.

Preparations

- Attended the Arizona Native Plant Society at Cochise College in Sierra Vista, Arizona (July 28, 29, 2018) to become familiar with the botany of Southern Arizona, the resident authorities, and possible field excursion locations.
- Planning to attend the Annual Conference of the New Mexico Native Plant Soc., September 7-9, 2018.
- Developed working relationship with SWRS.
- Developed the Chiricahua Rendezvous program with colleague Ursula Schuch at University of Arizona.
- Made arrangements with Mike Arnold (Professor, Texas A&M U.) to make a visit there.

Leave Location

The leave location will be based near the South Western Research Station in Portal Arizona. The facility is a division of the American Museum of Natural History in New York. SWRS is located in a biodiversity hotspot in the Chiricahua Mountains of south eastern Arizona and hosts researchers from around the world that study natural history. For more on SWRS please see: <https://www.amnh.org/our-research/southwestern-research-station>. Also see attached email concerning collaborations at SWRS.

Assurances of Cooperation

SWRS has agreed to provide station facilities for a conference in the Fall of 2018 and assist in ongoing studies of native trees through donation of local lab space and use of their herbarium.

Financial Support

No financial support is expected or required. I will self fund all travel during the leave.

Summary of program coverage

-Research plots

Anna Howell our SRA in Ventura County has agreed to manage ongoing projects during my absence.

-Extension activities

Advisor Ben Faber and Donald Hodel in Los Angeles County have agreed to cover inquiries from local clientele.

-Master Gardener

Since we have transitioned to an every other year training schedule, there will be no MG trainings during this sabbatical leave period. Leah Haynes is extremely competent in running the day-to-day elements of the VC MG program, academic direction and approvals will be handled by Annemiek Schilder and Ben Faber.

-University Service Commitments

See Exclusions below.

-Professional competence and international travel

I anticipate attending the ISA meetings in 2019, possibly the Phytopathology meetings, another trip to Ukraine in the summer of 2019 and a horticultural tour of Thailand in early (Jan) 2019.

Exclusions

-I would like to maintain my service on the Peer Review Committee and Academic Assembly Council to complete the three year terms that both of those appointments require. This should be feasible as the meetings are occasional and some work can be done remotely.

-I would like to teach at Cal Poly Pomona in the Spring of 2019 and Accompany the University's Landscape team to the National Collegiate Landscape Competition in Colorado (March of 2019).

-I have a commitment to attend the International Soc. Arboriculture Meeting in April of 2019, and Board of Directors Meetings quarterly.

-I will also maintain pruning treatments in the climate ready tree study control sites. I have done all the pruning on these sites and we need to maintain the pruning schedule for at least one possibly two more cycles with me conducting the pruning treatments.

-I have two graduate students at Cal Poly, Pomona that I will continue to advise. An additional student may be added in 2019.

-I will make myself available to Director Schilder for consultation and mentoring during her first year in Ventura County.

Deliverables/Outcomes from the Leave.

-Writing efforts should enable me to revise and produce several (ca 6) pest notes and as many as six peer-reviewed journal articles.

-Exploration of Desert Tree habitats, a visit to Texas A & M, and botanical gardens throughout the southwest should inform the horticultural characteristics of several trees under study. Popular articles on desert trees with horticultural value are planned.

-Identification of new unknown (to California Horticulture) species is expected. My goal is to bring back at least six new taxa (or cultivar selections) that can be used in the warmer climates in California.

-I expect to begin a book project (The Biology of Trees) with a coauthor (Dr. Matt Ritter) at California Polytechnic U., San Luis Obispo.

Literature Cited:

McPherson, E.G, A.M. Berry, N.S. van Doorn. 2017. Performance testing to identify climate-ready trees. *Urban Forestry and Urban Greening* 29: 28-39.

Roman, L. A. and F. N. Scatena. 2011. Street tree survival rates: Meta-analysis of previous studies and application to a field survey in Philadelphia, PA, USA. *Urban Forestry and Urban Greening* 10: 269-274.

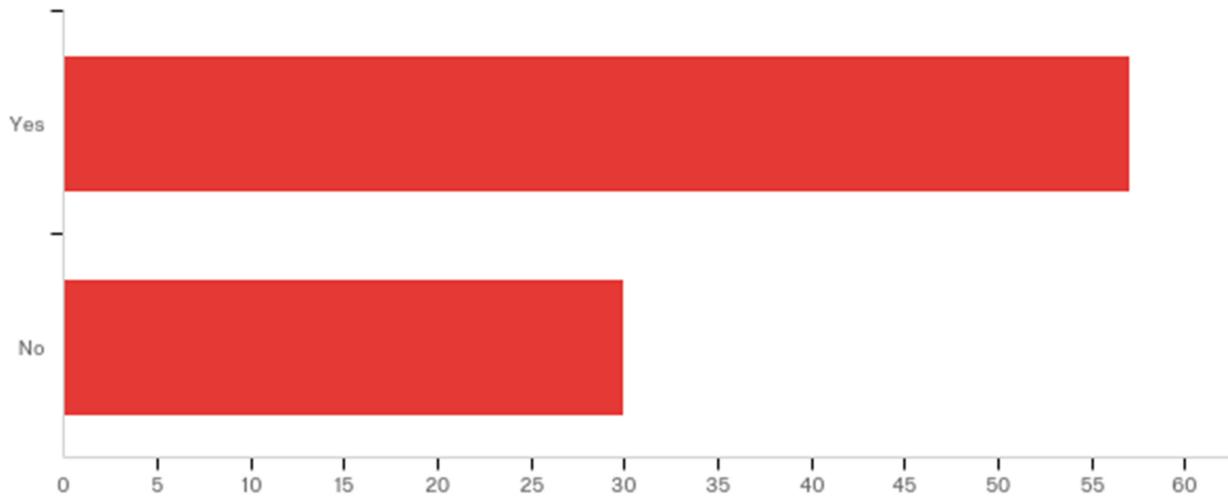
Van Devender, T.R. and A.L. Reina-Guererro. 2018. Floras of the Sonoran Sky Islands. Presented at the annual meeting of the Arizona native plant society, Cochise College, Sierra Vista, AZ. July 28.

Default Report

Jim Downer's Impact Survey
January 28th 2020, 4:27 pm MST

Comments that are in Italics are my (Jim Downer's annotations) Color codes are at the beginning of each section of open ended responses, are used for summaries of qualitative data.

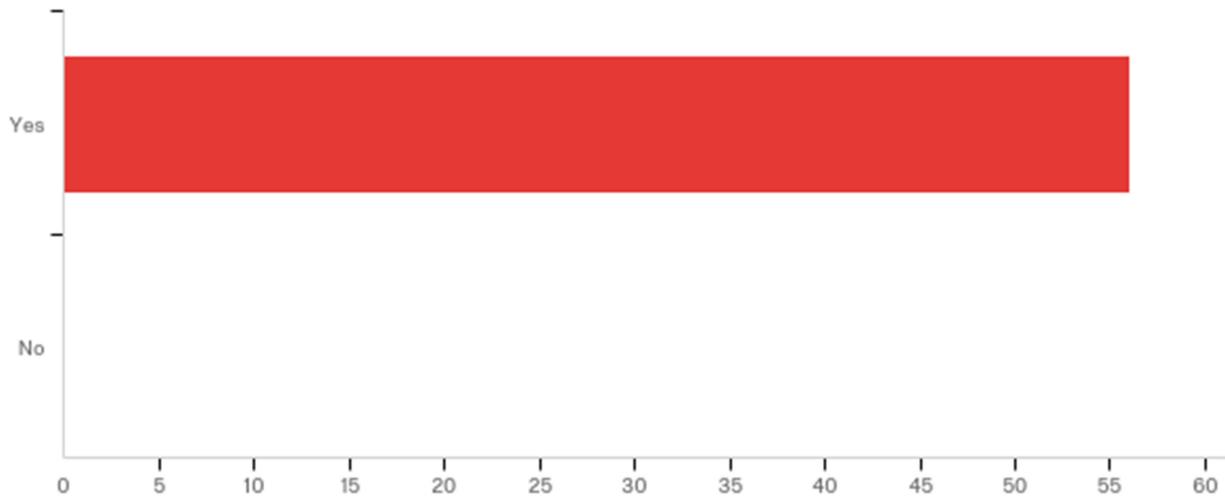
Q2 - Have you previously attended a Landscape Disease Symposium?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you previously attended a Landscape Disease Symposium?	5.00	6.00	5.34	0.48	0.23	87

#	Answer	%	Count
5	Yes	65.52%	57
6	No	34.48%	30
	Total	100%	87

Q3 - Has the landscape symposium helped you to better understand landscape diseases?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Has the landscape symposium helped you to better understand landscape diseases?	1.00	1.00	1.00	0.00	0.00	56

#	Answer	%	Count
1	Yes	100.00%	56
2	No	0.00%	0
	Total	100%	56

Q4 - How has the landscape symposium helped you better understand landscape diseases? (Write below)

How has the landscape symposium helped you better understand landscape diseases? (Write below)

Mulching

Increased diagnostic ability

How to prevent/control diseases

Improved communication with my clientele

I have a better understanding when and how to prevent plant diseases.

Jim's more wholistic approach with the awareness of new diseases and what they look like

Everything is connected. The more stressed the landscape plants and trees are, the more vulnerable to pests and diseases. As long as there is balance in the natural ecosystem – most plants and trees can defend themselves pretty well against most diseases – with the help of symbiotic fungal relationships, at least up to a certain degree. Some fungi are harmonious, but there is a point where they can become a lethal pathogen. Proper cultural care is half of the battle. LDS speakers addressed different elements and diseases. I still refer back to my notes on the specific diseases discussed, and when I read my notes, I wished I had a better memory, because unfortunately, reading my notes years later, I realize what I forgot! Recognizing diseases such as Botryosphaeria in the landscape sooner. Fungicides cannot be used as cure, only protection.

The symposia organized by Dr. Downer provide those of us in the various fields of plant health care the opportunity to learn about new pests and diseases that impact our urban landscapes and forests. Presenters share information on symptoms, identification, life cycle, and management. It is also a great venue for researchers to showcase the fruits of their work and present it in a manner that is accessible to the lay person.

Clear explanations of how diseases work.

Increasing my understanding of the diseases AND improving my talking points on how I communicate the situation to my clients

By understanding how landscape diseases are impacted by plant health. It has caused me to keep a sharper eye for anomalies in plant growth

Downer's research is massively applicable to my practice in commercial arboriculture. As a result of attending symposiums where he has lectured, I've understood more about various pathogens and their strategies as well as understanding efficacy of various treatments and how to talk to my customers about them in a more well informed manner.

Helped to better understand causes and how transmitted

It helped me better understand the various different types of disease in the landscape, disease triangle, importance of mulch to prevent disease in trees and much more.

Putting a potential pathogen into the larger context of the whole environment (geography, soils, fires, animals, geology etc) is a far better way to understand "disease" as opposed to a pathogen without a context. With a finer tuned understanding, handling the "pathogen" may take a very different path.

Most recent research and information on current issues

Better identification and Life cycles which greatly enhance field and professional work

Being able to understand the disease triangle and beyond allowed me to change factors under my control to prevent or treat diseases. It reduced costs for my organization.

With the results of some research

Disease ID, new and old disease, trends

it has better made me to deal with SOD

It helped recognize the symptoms, treatments and possible prevention

Become a better diagnostician

It's how education and learning work. Exposure to information and assimilation of that information

Keeps us informed on the latest diseases and research.

A valuable example of the UCCE messaging/ outreach

kept up to date on current issues

Being a plant pathologist myself it is always good to compare notes with others especially if they are working in another geographical area.

Up to date controls and introduced to new diseases

It gave me the latest information regarding the pests and diseases and the BMPs that are most effective in the management and control.

I can be sure of my self diagnosis of disease and pests .

The landscape symposium helped me better understand landscape diseases by introducing me to the Multifaceted interrelation between plants and soil, microbes, hosts and beneficial insects.

Information from the symposium(s) have given strategies to mitigate and/or prevent disease in plants.

Made technical information easier to understand.

It made me aware of how diseases can be prevented or mitigated. It reminded me to take a step back and assess all factors that could be affecting the plants in a positive or negative way. It emphasized plant selection, cultural practices, and current effective treatments. It made me aware of things I have to constantly be aware of and how to properly assess problems whether biotic or abiotic. It made me aware of commonly occurring diseases as well as invasive species to watch out for. Strengthened and refreshed my understanding of botany, mycology, and other aspects of plant science.

Identification and remedial actions.

By teaching identification and control

I have been trained to correctly identify pathogens in the landscape because of current and past seminars from the landscape disease symposium coordinated by Dr. Jim Downer.

Made me aware of both the pests and associated diseases that affect landscape trees and shrubs as well as the other plants and organisms that exist in California

Trends in spread of plant diseases and also Methods of treatment

Improved my understanding of diseases and provided the latest control methods

illustrating symptoms, explaining transmission, vectors and susceptible species, showing results of studies on treatments

Identifying and treating

Recognize, and treat landscape diseases.

Starting out early in my career, I always was smarter after a symposium

Understanding how they are passed on to other hosts and how to prevent it from happening

Expert knowledge on pests and how to identify the Symptoms of pests.

It has helped me to better understand root diseases and their impact on trees.

We learned about how diseases are vectored and spread, as well as went into detail about the relationship between disease and the decline spiral. I also learned how to identify a few specific diseases that are important in our area, such as Botryosphaeria on Ficus.

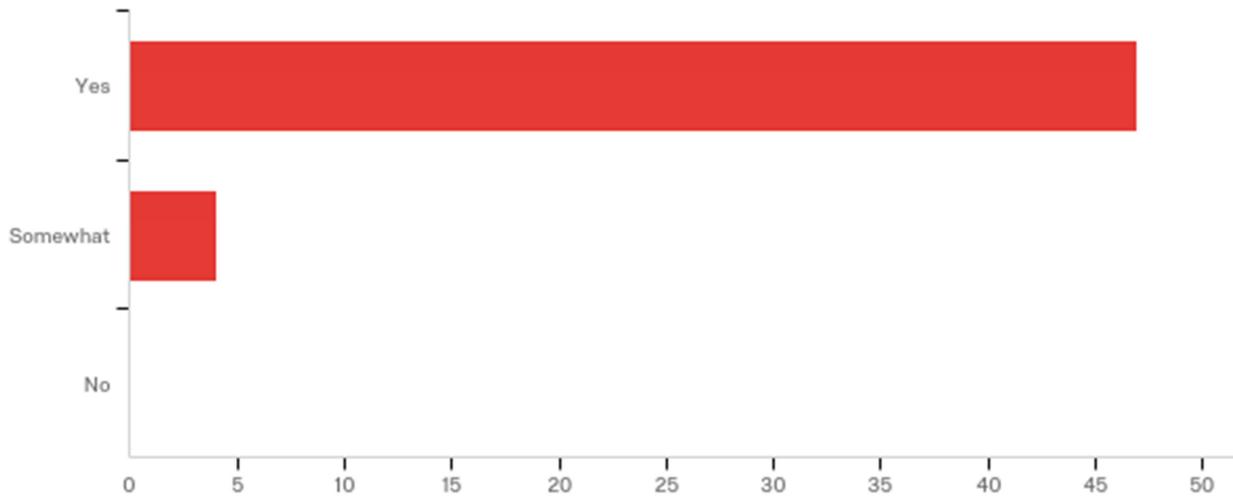
By showing things I have never heard before

Help to correctly ID insect pests and diseases and clearly understand how they affect plants and trees and how to prevent and control those pests

By illustrating signs and symptoms with excellent images, discussing likely hosts, vectors, and methods of infection and transmission of diseases. This has been instrumental in my practice as a consulting arborist who is often required to diagnose diseases in my clients' trees.

Identification of pathogens through evaluation of symptoms and signs, conditions that lead to disease development and understanding best management practices to reduce pesticide use when appropriate.

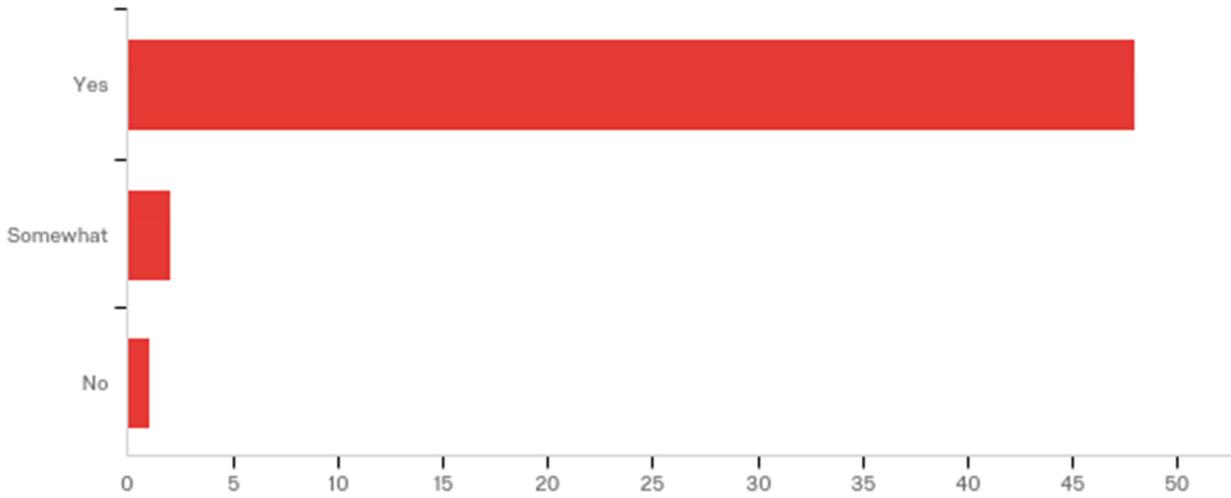
Q5 - Answer the following questions related to the landscape disease symposium. Have the proceedings been a useful resource?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Answer the following questions related to the landscape disease symposium. Have the proceedings been a useful resource?	1.00	2.00	1.08	0.27	0.07	51

#	Answer	%	Count
1	Yes	92.16%	47
2	Somewhat	7.84%	4
3	No	0.00%	0
	Total	100%	51

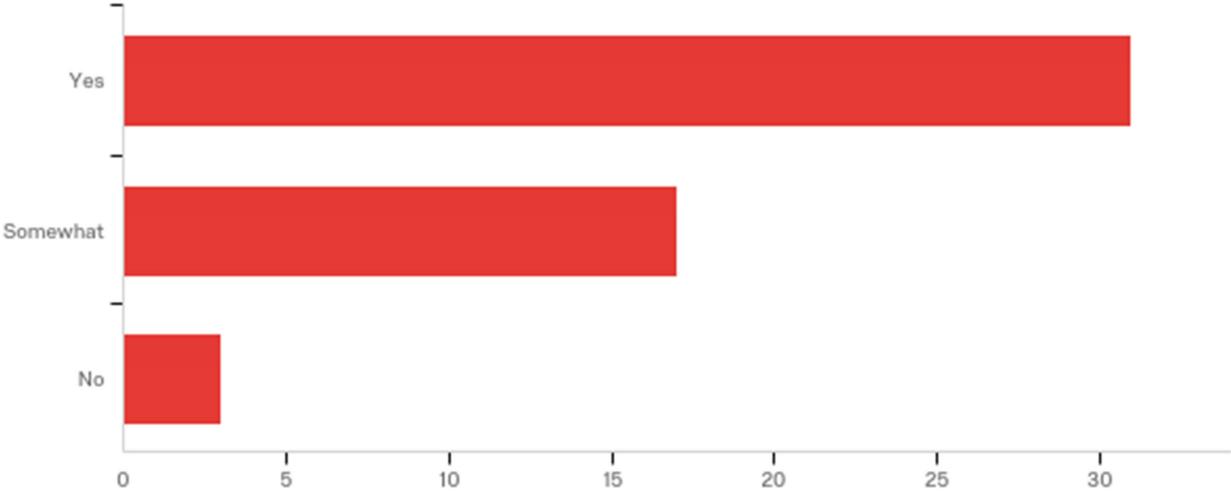
Q6 - Have you gained new knowledge about pathogens affecting landscape plants?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you gained new knowledge about pathogens affecting landscape plants?	1.00	3.00	1.08	0.33	0.11	51

#	Answer	%	Count
1	Yes	94.12%	48
2	Somewhat	3.92%	2
3	No	1.96%	1
	Total	100%	51

Q7 - Has the symposium changed your management practices?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Has the symposium changed your management practices?	1.00	4.00	2.06	1.39	1.94	51

#	Answer	%	Count
1	Yes	60.78%	31
4	Somewhat	33.33%	17
2	No	5.88%	3
	Total	100%	51

Q8 - What practices have you changed

What practices have you changed

Mulches and Mulching

Outreach and clientele education

Increased cultural practices

Reduced pesticides

Particularly our water management has changed in response to the presented info.

What practices have you changed? I really can put my foot down in discussions with clients that even any kind of irrigation – especially summer irrigation. -- can further problems with phytophthora – especially when applied from above, as water can splash up spores and re-infect. Applying phosphonates in areas where phytophthora is a problem – not as a cure, but to slow disease down. Mulch and mulch and more mulch, even if it is from a eucalyptus tree. I try to make a landscape as diverse as possible.

As an independent diagnostician and consultant, I have incorporated information that I have learned from these symposia directly into my reports where I provide my clients with recommendations on disease management. One sample of this is with regards to Armillaria. I have sited results of Dr. Downer's research on the subject and regularly recommend that they thoroughly disturb the soil, remove large root debris, add organic amendment and a Trichoderma based biofungicide prior to replanting. Now this is not a cure for the disease, but as Dr. Downer showed in his research it does improve the life expectancy for replant trees and seems to delay infection of the replacement plants.

We used to inject trees A LOT. after hearing dr downer talk about the harm from the injection holes, we now save injection as an absolute last resort

Closer attention to plant health

Stopped recommending treatments that don't. Began implementing lots of cultural solutions such as mulching instead of trying to use fertilizers or unnecessary chemicals and I've my diagnostic strategies have been improved exponentially

Better utilize the disease triangle and improved cultured practices that will help prevent unnecessary infection courts.

Increased diagnosis and Controls

Cultural practices are the biggest change.

Mulching

More ID, Less shotgun approach for selection of materials, cultural/mechanical changes

pruning practices

Mulch use, increased it; diversity in plantings

management of greenwaste PHC staff uses info for guidance on recommendations

Horticultural practices

removing diseased plant material, proper disposal, potential treatment, not moving diseased material that could potentially spread disease.

What and how to look for certain diseases. When some mutate and how diseases grow.

Driving decisions for pruning trees, treatment methods, and how to inform/advise others about proper practices.

The symposium over the years has covered a wide range of pathogens. The most important theme for the symposium is that it almost always focuses on the most prevalent problem in the most practical way. Moreover, the hard science employed to the problem has remained provable and repeatable.

I routinely look for dead and decaying material in the landscapes that I manage, remove and destroy it to help minimize its occurrence and any minimize any possible spread of the pathogen.

Earlier ID of problems and better cultural control

How I explain to clients

Irrigation schedules.

Better management of disease problems by changing overall health, such as mulch and water management

Pruning practices

More mulching and less irrigation.

Being more alert for new vectors

Irrigation and soil management plant selection

I am better prepared to take better photographic images for submittal to diagnosticians when needed. We now recommend the use of specific types of plant material as mulches and apply them differently. We have been able to enhance our capabilities to collect sales of diseased material.

Water application methodologies and strategies, pruning strategies for woody plants, application of surface mulch, application of phytophthora treatments including IPM strategies adopted.

n = 30

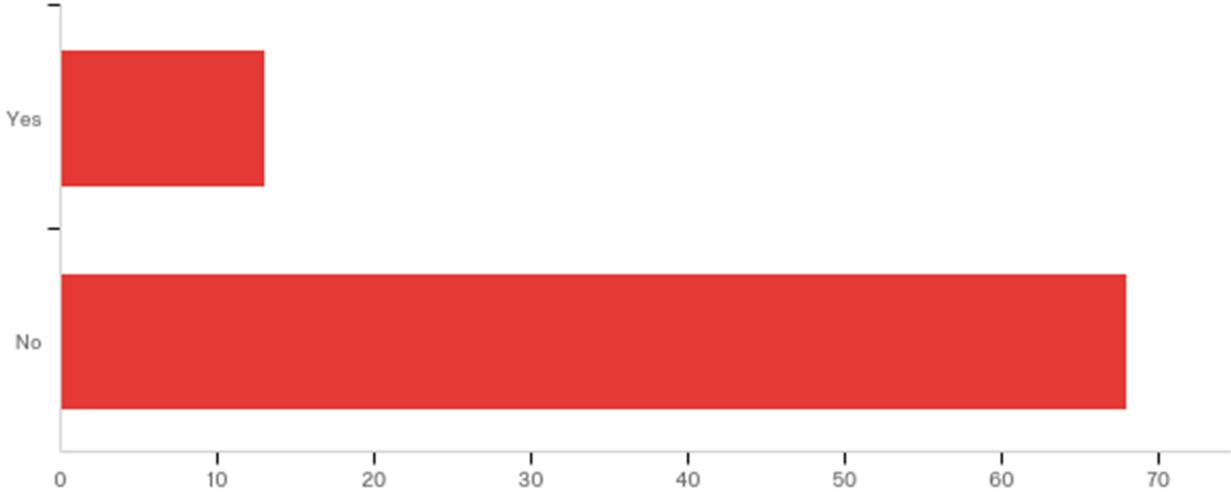
56% indicated increased cultural practices which translates in some cases to reduced pesticide usage

30% indicated mulch use changes

16% indicated changes in communication behavior with their clientele

6% indicated reduced use of pesticides

Q9 - Have you attended a “Rendezvous” meeting?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you attended a “Rendezvous” meeting?	1.00	2.00	1.84	0.37	0.13	81

#	Answer	%	Count
1	Yes	16.05%	13
2	No	83.95%	68
	Total	100%	81

Q10 - What impact did this have on your knowledge, behavior, or well-being?

What impact did this have on your knowledge, behavior, or well-being?

Changes in physical well being

Changes in psychological well being

Changes in knowledge

A large impact in my knowledge of a completely different landscape that I'm use to being around and working in. It was a well rounded trip with education seminars, field walks and conversing with industry professionals.

It was inspiring and motivating

Open whole new vistas of reading and research

The "trees course" was held in ones of the most peaceful, stunning "classrooms" that is the Chiricahua Mtns, and brought together a tremendously diverse array of experts in such broad fields relative to a tree's place in the natural environment, with lessons that can be adapted to our urban forests in our critical time. From the unexpected actions of lichens and moss that can degrade a rock to a point where a seedling can get a foothold and eek out an existence in a harsh climate, to owls whose primary means for persisting are natural cavities in trees that National Forest workers have deemed "hazards", the broad implications of a tree's role couldn't have been better presented. Considering the conducive environment and the top-notch presenters the attendees had no choice but to be immersed into an interactive experience where dendrological enlightenment is unavoidable, and even the "experts" were clearly just as much students with so much knowledge being presented. Kudos to Dr. Downer for such a novel, impactful course that I plan to actively promote in upcoming years.

It increased my knowledge and understanding. I became a lot more comfortable with colleagues after having spent so much time together. I was very happy out in the field.

Big

After hearing Dr. Downer speak at the ACTC Conference in Prescott, I have been introduced to a new world of fungi as it relates to trees. I have transformed my tree health care business to conform to my new knowledge.

learned more about bristlecone pines and relationships with their environment

My world had become bigger and warmer

It was an extremely informative experience. It made me more confident in my field of work and gave me new sources of information, tools, and skills to utilize.

I attended Trees of the Chiricahua Mountains. This trip really drove home the interconnectedness of trees and the environment they live in. Not only that, this trip meant so much to me because we learned about several scientific topics, had amazing experiences like holding whiskered screech owls, AND we had "togetherness" moments such as the attendees helping and encouraging each other to climb into and out of a cave. I saw things on this trip that I never imagined, I got to think about less typical topics like ants, and altogether I feel more well-rounded for having been on the trip. It is worth noting that this trip was not a one-off: I also attended Jim Downer's soil school in the White Mountains, and that trip was equally as well-rounded and eye-opening.

The learning experience in the field in a natural setting is dynamic. It allows for communication with colleagues in a natural setting. I have learned so much useful information about natural ecosystems and how they differ from urban environments, allowing me to better understand how I can work more effectively in the City. The experiences (I've done two) have been rewarding both intellectually and socially. Can't speak highly enough about these experiences.

Knowledge-much about Bristlecone pine, wellbeing-increased through contact with nature

n = 11

55% indicated changes in psychological well being

55% indicated changes in knowledge

9% indicated physical well-being changes

Q11 - I give numerous lectures at meetings around the Western United States. Answer the below questions if you have attended any of my lectures. What subjects were most resonant with you?

I give numerous lectures at meetings around the Western United States. Answer the below questions if you have attended any of my lectures. What subjects were most resonant with you?

- Plant diseases
- Mulches and mulching
- Chernobyl
- Trees Arboriculture

Soilborne diseases

Plant diseases class at cal poly pomona

Fungal pathogens that effect tree health.

The value of mulches, including eucalypts'

Relationships between trees and fungi. Roots and mycorrhizae.

Diseases and Pests of urban landscapes, wood decay, impact of climate change on plant health, tree pruning, and soil health managment.

Anything related to trees

Phytophthora things

Have not attended you lectures, have to give my own, wish i could

Pittosporum decline.

New diseases and disease movement

Any disease related issues impacting trees. Mulching discussions.

The importance of mulch, mycorrhizae, and various plant disease

All of them have been very relevant. They help connect all the various elements of the landscape environment that impact the health of the plants.

Disease management, tree growth and biology

Plant Biology and Plant Pathology

Tree Biology. Wood Properties.

Diseases!

ramorum Phytophthora

Bot Cankers

recognition of problems

Fungi phylogenetic relationships with trees

Each topic Jim talks about is clearly presented and gives insights from his experiences, research and learning. Many reinforce and give more support for things I already have done like mulching, others inform about new diseases, wood decay and how trees grow.

Science based landscape management ideas

landscape pathology field diagnostics, Santa Barbara (many years ago)

relations with soils and organics, how pathogens move depending on environment

Everything - your talks are always informative

Palm diseases

BMPs regarding limiting spread of disease.

Urban trees pruning and care (Kiev)

Diseases and pests with produce.

Diseases of palms resonated the most with me

Presentations at PTCA Annual Seminars & Field Days.

Mulching benefits at your Master Gardener lectures

Mulches. Chernobyl.

The way the industry currently is and how it needs to be improved to avoid many of the problems we are facing within multiple facets of the landscape industry. How the general public (and a large part of the workers in the landscape industry) has many misguided notions of what a proper landscape should be and how it should be maintained. Each lecture was diverse and had plenty of take home tidbits.

I have attended but have no stand out comments.

Tree care

Local pathogens in the landscape. Applied ecology to remedy pathogen problems. Hard science to understand the underlying biology of local pathogens.

Fusarium dieback and Phytophthora cinnamomi on avocado

The spread of infectious plant diseases throughout the Northeast

Diseases, insect predators, trees

urban soil

mulch

Mulch related concerns/practices, palm diseases

Plant diseases, new pests, management techniques

Soil science, tree care

Tree related

Proper pruning techniques.

Mulching

Non pathogenic fungal growth in landscape mulch, urban wood reuse, slowed rates of decay in the Chernobyl area

Soil fertility

You are THE PALM GUY for me.

tree care- pruning, soil, compost/mulch

Tree health, reasons for failure

root disease and soil management

Caring for trees after fire

Talks about specific disease pathogens, because Jim never dumbs down his talks, he always gives us the nitty gritty of the pathogen and isn't afraid to throw big words at us.

Soil

Talks on fungi

Soils, mulches, and debunking false claims of marketed products (snake oil).

I have heard Jim Downer speak on mycorrhizae and soil relationships, and it is always fascinating.

Pruning

structural pruning, drought issues, management of landscape disease, natural and urban interface issues.

$n = 63$

48% Plant Pathology, pathogens, diseases

29% trees arboriculture

22% mulches/mulching

5% Chernobyl

Q12 - What Aha moments did you have during these presentations that helped in your work, life or way of seeing the world?

What Aha moments did you have during these presentations that helped in your work, life or way of seeing the world?

Mulch understanding

Chernobyl

Understanding climate change

Understanding Plant Pathology

Tree Care/biology Understanding

Reusing urban wood

In the end, we all will die... humans, pets, plants.

Entire class was informative, not just one moment. So much knowledge to share and not enough time.

Chernobyl presentation was awesome

Root crown issues, new palm diseases, mulch, etc.

How everything is connected. And to come to peace with the fact that sometimes there are just too many trees to be sustained in a certain area, especially as our climate keeps changing and that nature culls itself. To not freak out and believe the talks given by certain experts that PSHB was going to wipe out over 20 million trees in So. Cal.

How a plant's environment can influence its susceptibility to infection/colonization by pathogens and insect pests.

Not sure

All our trees are doomed.

An Aha moment many traveling around the US and overseas with my parents, this taught me about the importance of taking my students off campus for experiences out in the field.

The intention of trunk injection is to have a positive effect on the tree- but misapplied it could be bad!

I understood tree care in a more complex way

The importance of mulch and trying to advocate to clients the importance of mulch

Better understanding of life in the soil has radically changed how I see the world, and therefore how I transmit that to my work. All my friends get to hear about this world also, and so I have fewer people who want to hike with me anymore! Well, maybe that is a good thing.

How we are so well connected around the country and world.

How different wood properties affect workability of those species when constructing.

I think the basic understanding of the concept brought all things together in mind. It wasn't anything fancy, but perhaps it was in the delivery or style.

The control of disease without pesticide

Thought provoking, different eyes

the way i saw the world

Understanding the difference between saprophytic versus pathogenic or mycorrhizal relationships. Especially within a labile mulch interface around trees.

The sharing about Chernobyl have been fascinating and show the resiliency of plants despite the actions of people
I have not see your presentations. I would like to. I know Aha moments have occurred when I'm teaching science environment to kids i discover more and that young people today are very concerned wanting to become more involved.

When Jim's "on", his passion for the subject matter is exemplary, contagious, and funny

use more mulch

Horticultural snake-oil was particularly good, but in general that's difficult to say, As a consulting arborist and plant pathologist myself I find that just having confirmation that you see the problems as I do is helpful. Special note should be made of the program of the WCISA annual meeting you designed as President (Yosemite) - it was among the best programs I have attended anywhere. There were several new concepts presented.

Pruning practices

Aha, I realized how little that I know and that hopefully I can learn something new every day.

That was good to encourage my principles

I like increasing my horticultural knowledge which make me better at my job.

My Aha moment occurred during your palm disease symposium. It helped me as an urban forest manager, municipal arborist understand what to look for when city palms were not doing well.

Mulch benefits to landscape soils.

The benefits of mulching to maintain moisture and for weed control

Tough question. Everything we experience adds to our life experience.

Too many to list. Stepping back and looking at the picture as a whole before you focus in on one thing. Looking at a tree and deciding what NOT to prune.

Seeing diseases and hosts and appearances of symptoms.

None that I can recall, but many "I didn't know that" moments

Dr. Downer was especially humbling in bringing new scientist to his symposiums over the years even scientist that may challenge his understanding of the subject.

That organisms and pathogens exists and can spread among trees and shrubs even though we may not see them on our tools and hands, but they can be spread inadvertently by human practices

The willingness for the understanding of treatment

Deeper awareness of natural elements and how things operate at the micro level

confirmation of previous knowledge

There is no reason not to use fresh wood chips for mulch.

Climbing spikes on palms (years ago)

How much trees affect and are affected by everything around them

Understanding how properly maintained trees fit into the urban landscape.

Eucalyptus mulch

Learning that fungus in mulch is unlikely to be a pathogen for plants was helpful.

Resilience of our forests

I would rather not work with palms.

Look at the underside of the leaf.

Jim relates arboriculture to every day practice. So when Jim talks about tree health, he relates it to trees in the field that we may see, or come across in our own practice.

The benefits of deeper mulching (not against trunk) and how fast it can improve the soil conditions.

That sometime the best maintenance is no maintenance. Let nature heal

Moment 1: This is a less serious one, but going on Jim's trips has shown me that loving trees doesn't mean I can't love other subjects too - it's fun to study lots of things! Moment 2: Jim's landscape disease symposium made me realize that disease is best dealt with by prevention, not suppression - tree care including watering regime, mulching, pruning technique, etc are all so important in preventing disease. Moment 3: Stop putting compost around your trees, you fools! Fresh wood chip mulch is the way to go.

The connection of soil bulk density and plant health in the urban landscape

Snake oil treatments that are ineffective compared to effective non chemical solutions

The most dramatic aha moment was when I learned the difference between "compost" and mulch and the benefits of woody mulches over composted materials.

The fact that fresh wood chips were best for mulching around plants, and not older or composted wood chips.

None; just reaffirming some basics.

Phytophthora is capable of developing in drought stricken plants under deficit irrigation conditions :-)

n = 60 responses

22% learned about mulch information

18% new knowledge about plant pathogens/pathology

18% new knowledge about trees and tree care

Q13 - Over the years I have conducted research on many subjects. What stands out in your mind as a significant contribution that has helped your understanding of trees, soil, pathogens or horticulture in general?

Over the years I have conducted research on many subjects. What stands out in your mind as a significant contribution that has helped your understanding of trees, soil, pathogens or horticulture in general?

Disease management with mulch
Diseases of ornamental plants/trees
Shade tree research
Chernobyl
Snake Oil

Survival/death of pathogens in compost piles.

Nematodes

Fusarium palm research

Mulch

Jeezzz, so much. The biology of roots, botany and how different tissue form and function, the soil food web, plant/tree root – fungi relationships, pruning, all the specific diseases, the never-ending importance of mulch and more mulch and why... BMPs to lessen the chance on specific diseases..

Your work on Phytophthora and Armillaria have been particularly helpful and have directly influenced how I write my recommendations.

Your volume of work but I really liked the snake oil discussion

Phytophthora and gypsum.

Your visual photographs are awesome and informative, i have looked up info on trees you mention in posts.

WE NEED MORE MULCH IN LA!!

Oak root rot research

It sounds like it'd be so simple but the implementation of reusing wood chip mulch from tree care projects back into the landscape that it came from has been major

Your research on pruning and on armillaria

planting depth; compost tea; fungi behavior;

The research has been so diverse it is difficult to give one subject. The Varied combination over time appears to show the relationship of t factors to make up the whole.

Growth patterns following atmospheric disturbance (as evidenced in Chernobyl).

Mulching stands out. It relayed the importance and the wonderful things that can occur when trees are well-mulched.

The relationship of Symptom and substrate conditions

Resource for knowledge, open to discussion, and a good sounding board for ideas and reaction from another professional in the field. Jim has also taught/encouraged me to pass along my knowledge.

your work on soil pathogens

I now know and understand that fungi are not to be viewed as solely negative components in the biology of trees. Its quite the opposite, they are an essential component, one that must be recultivated in the field of arboriculture. The use of labile carbon rich mulches must be more utilized in our urban environment if we are going to have a long term sustainable urban forest that isn't dependant on synthetic fertilizer.

So many. I enjoy and learn something from them all. Not everything has to be ground breaking to be important either as new information or a reminder.

Mulch

I can identify a few trees and their names, not much more but love to travel. In my travels have seen many places where land is taken care of, and many places where environment has been destroyed.

I've watched Dr. Downer thrive and not thrive in his role with UCCE. I think most of that has to do with workload and focus. He's best when he has time to think, not best when he's buried in administration.

mulch, mulch, mulch

Work on mulches, composting, use of Round-up in turfgrass renovation, wood decay organisms

Palms

The use of mulch to manage certain diseases and bring life to soils.

I saw The Man walking The Way

Understanding palms more in depth

Your far reaching travels to investigate many microclimates' characteristics.

Again, mulching and it's benefit for building soil health.

Mulches!

How not all mulch is the same, pruning practices, cultural practices. Many of the studies are rooted in science, practicality, and feasibility.

How you present your information.

Mulching, care of redwoods correct pruning methods

I have always felt Dr. Downer's work with: Armillaria, mycorrhizae, organic matter in soil, and palm culture, have been exceptional and unique.

Management of insects to help control the spread of disease

Climate change

How pathogens regenerate, survive and how they are transferred from one place or plant to another

Your research work on Phytophthora spp.

myths

Phytophthora, mulch, and Phytophthora + mulch.

Palm diseases, root rot, sap rot

The arboriculture classes at Ventura college taught me a lot. (* Way outside the review period)

Mulching

The article published in Western Arborist on irrigating trees has been invaluable in my work.

Adaptability of trees to environmental changes

Palms

Mostly talks that have to do with why trees fail.

Crystal clear explanation of snake oils to help me better explain to my clients. Greater appreciation for wood chip mulch.

Too many to list. Def mulch

Your study about drought tolerant trees has been particularly interesting to follow. Seeing how you've selected test trees, planted them in drought conditions, and then treated them like street trees, has been eye opening - you can't just wing it on these important plantings. Certain trees you studied did not take well to being pruned like a street tree. Some of them died in the drought conditions even though they were "drought tolerant". Your experiment shows that if we want to create successful urban forests, our selections need to be more thoughtful and not simply based on rules of thumb or specs we read in a book.

Chernobyl

The impact of fresh mulch in the repair of damaged soil

Benefits of mulching

Research on Phytophthora species, especially as they affect avocado trees and what works in soils (regardless of tree species) to counteract the disease. Also the interactions between some beneficial fungi and soil diseases

Plants and mycorrhizae relationships

Reaching out to Ukraine and Chernobyl.

The benefits of mulching soil.

$n = 60$

35% indicated mulch research changed their thinking

5% Chernobyl research

23% pest management/disease work

25% recognized research on trees/arboriculture as significant

Q14 - How did the research findings or the information that flowed from that research change how you do your own work?

How did the research findings or the information that flowed from that research change how you do your own work?

Changed understanding or practice in use of mulches

Changed disease management practices

Improve diagnostics ability

Improved tree care ability

Utilizing urban lumber

Increased sharing research-based info with others/clients

I am more aware that plant diseases are often the consequence of (my) ignorance or sloppiness.

Helps to steer BMP'S for tree care operations

No longer concerned about eucalyptus chips for mulch

I have a much better arsenal to recognize and combat problems, and for example, know how to be super, super careful with specific diseases, such as fusarium in Phoenix canariensis.

It has caused me to slow down and take time to assess not only the plant, but also consider the growing environment and the impact it may be having on plant health. As a result my approach to plant health care has become more holistic and not solely focused on treatment of the disease or pest. In short the information shared has made me a better diagnostician and consultant.

Improved diagnostic ability

I often recommend gypsum prophylaxis.

We constantly steer our clients to remove lawn and concrete and replace it with mulch

I just answered that

Try to implement and teach proper pruning methods

Every time I learn of new research that proves, disproves or broadens the rhetoric I use it in my work and world. Absolutely.

I am more focused, organized and more efficient in my profession.

The understanding of the affect localized conditions (such as pollution) have on species selection.

It prioritized cultural practices that seemed to not have an impact on the surface and scaled some up due to the understanding of the bigger picture.

disease management

Proper material/methods for treatment

it made it easier

I have adapted to significantly reducing the amount of fertilization and fungicide treatments as a broad spectrum approach.

With new knowledge or other ways to communicate existing knowledge we can share with our clients ways to improve the landscape. Simple low cost approaches like mulch, learning how to build benches, all are interesting

I like to have good science to support my management recommendations.

I'm trying to learn and teach my grandson more about nature. We just visited UCR botanical gardens. He wants to go back and explore some more.

I've considered the research design, execution and findings as context from which to communicate landscape pathology. I could give examples, but they're a little wordy.

encourage others in BMPs of mulch use

made me more confident in recommendations for use of mulch and compost.

Practical application

We use compost and mulch regularly and oftentimes leave leaves under trees such as avocado.

Sometimes I get consulted better. By internet and spiritual connections))

The information changed my approach to palm tree care in general.

Improved knowledge resulted in greater plant growing success.

I share the information with my contacts

Sharing this information with others is my work.

Stimulated more questions and encouraged my own research. Strengthened my understanding and ability to advise and assess problems within the landscape.

Just opened my mind to new ways of looking at plants and diseases.

More aware of pruning practices

I have formed a large part of my companies policies based on the work of Dr. Downer.

I am more careful about sanitizing my tools and aware of how My practices may contribute or hinder the spread of pathogens.

Learning to adapt a method of diagnosing and treatment

Better awareness, fewer pesticide applications

Through increased understanding of the biology of Phytophthora pathogens, provide effective advice to aid management decisions on management, containment and eradication.

increased level of peer reviewed output as collaborator

Reinforced many practices that I already recommended; I've cited this work regularly in my own publications and presentations.

Helped with my inspections and explaining to clients what is happening

I am much more careful about altering soils on my work sites

Once I had the knowledge, learned proper techniques I had the confidence that the work I was doing was correct, and the best I could do.

Changes in mulch placement and depth, and irrigation scheduling.

By choosing species that are better suited for the area they are being used

Redundant

I'm a better gardener and better advocate for science-based horticulture

Jim always makes me think that there may be more than one answer. And sometimes it isn't always obvious.

Improve my explanations of soil conditions and root diseases,

Added knowledge

I've been more thoughtful in my tree planting recommendations. It is easy to simply consult Sunset Western Garden, or the Street Tree Seminar Book, and pick a tree that suits what the client says they want. But I've learned that I have to think about the real conditions of the site, how the tree is going to be treated in that location, and also reflect on my experiences with that kind of tree and whether or not I've seen it behave as desired. Essentially, Jim's research has led me to think more about right tree right place.

It was enlightening

It helped me as an arborist educate homeowners in making better long term choices

I recommend mulching on most all my project sites

I now understand how Phytophthora can affect not only plant roots in oversaturated soils but also in drought conditions.

It changes my recommendations to clients, what I use in design, and what I use at my own home.

I appreciated more the power of nature.

recommendations for increased use of mulch in urban landscapes, education about bmp with mulch

n= 60

28% helped or Increased sharing research-based info with others/clients

15% Indicated changed understanding or practice in use of mulches

20% indicated changes in practices related to disease management

18% indicated better ability to manage shade trees/plants

6% indicated better diagnostic capability

Q15 - As a result of adopting the practices recommended in my educational programs or research publications, how much do you estimate in dollars have you saved or added to your operation?

As a result of adopting the practices recommended in my educational programs or research publications, how much do you estimate in dollars have you saved or added to your operation?

oodles of money

Millions [(NOT SURE IF THIS IS CREDIBLE?) Actually it is, because it is a response from West Coast Arborists who employ over a thousand people in hundreds of cities. But I am leaving it out of the calculation because it is such an outlier]

Its how much I have saved my clients through less dump fees and better diagnosis

mmmm. a bit hard to gauge, as all my clients are residential – but I know we have saved many trees from dying prematurely, or been able to extend their life span.

Hundreds of dollars, if not more.

Not sure

Nobody I've recommended gypsum to has come back and complained.

Thousands and thousands of dollars.

\$1000.00 annually

I think I've made them hundreds of thousands of dollars more

5,000

no dollar figure is available

As a Consultant. there is great improvement increased billing due to the higher knowledge over the competition.

Hard to quantify.

50k

4000

Reducing materials applied is less about \$\$ and more about pesticide reduction. Yes, we have saved tens of thousands of dollars over the years, but the reduction in pesticide use is what sticks out in my mind.

Thousands

Sorry I could not say.

From an economic perspective, it is hard to tell. I continue to do better and my reputation improves. At least \$50,000 and it will continue to compound over time

LOts

That's hard to say. In my own practice I "leak" information and value as part of the business. That's also true of UCCE, the public good and revenues aren't strictly 1:1.

if the rest of CA would use mulch the way Ventura county does it would equal millions current still huge number

There is no way for me to quantify.

Don't know

tens of thousands

It's hard to evaluate in dollars

Hard to quantify, but improved plant growth, with reduces pathogen pressure is noticeable.

N/A

NA

N/A

None. I am a consultant not a salesman.

Impossible to determine

My company has saved hundreds of thousands of dollars. We work with high value landscapes. Millions of dollars are at stake and Dr. Downers work has been a cornerstone the entire time.

Countless

Thousands

hard to estimate

500

N.A.

too difficult to answer

10K

I don't have operation. I worked for the Ojai school district. But, doing the work correctly the 1st time me from have to do things over in the future.

Lots

N/A

I don't know.

This doesnt really apply- I'm a home gardener. However, I propagate most of my own plants

Hard to quantify. I don't practice by myself. However, my arboriculture skills have always been enhanced by what I have learned from Jim.

\$100,000

Unknown

Can not quantify

I cant quantify that

NA

At least hundreds of dollars a year over 2 decades!

I'm not sure I can estimate that

n/a

unable to define

Summary of actual dollars estimated by survey respondents

\$100,000 + 10,000 + 500 + 1000 + 50,000 + 100,000 + 10,000 + 4000 + 50,000 + 5000 + 1000 + 2000 + 100 + 100,000

The sum of those reporting a monetary increase equals \$433,600 n=14

Q16 - How many acres of managed landscape would you estimate this figure applies to?

How many acres of managed landscape would you estimate this figure applies to?

275 cities... lots of land

I can't give you a useful figure. Its been over a good number of years and clients

na

100's

20-30

Thousands of homes across Los Angeles

18

I have no idea

50

not appicable

Thousands!

2

100

10000

1,000's of acres. We apply products for pest control regularly at UCR, UCLA, UCI, Cities of NPB, HB, LB, SB, Garden Grove, Westminster, Burbank, Riverside, Fullerton, Tustin, Orange, and over 1,500 other clientsetc.

100s of

500 households, 4 communities og over 400,000 people; it is not always about acerage with trees where people live

Thousands

hard to quantify but easily thousands

I am not a landscape manager

1000

3

I'me not working on acres, only trees personally.

Acres of Port of San Diego parks.

N/A

NA

N/A

0

N/A

40 acres locally. I also consult on thousands of acres across the country and I often refer to Dr. Downer's work when consulting and lecturing.

800- 1200

Hundreds

in my case, many hundreds of acres over the years

10

N.A.

N/A

25 acres

I believe NHS is about 40 acres, plus the 7 other sites. I would say around 100 acres at the most.

I am in the crop advisory business now

N/A

400 acres. Total in different commercial properties

not applicable

NA

About 100 acres

Unknown

Several thousand

NA

1000 acres? 150 residential site visits a year averaging $\frac{1}{3}$ acre over 20 years?

15 or 20... I work primarily on smaller family homes and lots.

n/a

unable to define

Q17 - List any other impacts my research or teaching may have had on your life, work or health?

Chernobyl

Urban wood

Increased personal well being

Increased capacity at work

Increased knowledge

Career/life changing inspirational effects

List any other impacts my research or teaching may have had on your life, work or health?

I am still alive.

I have applied information learned to the landscape maintenance field countless times. I am able to combat issues that arise in the landscape that I wouldn't have been able to do if not for Jim

Production has been enhanced by that research

Increased confidence, less need for lab work

I remember being blown away by all the knowledge and explanations I gained when I attended my first LDS in 2011, which was when I just had taken my arborist test and didn't even know yet if I had passed the certification. The world of roots, fungi and opened up for me. After that I looked forward to any lecture or talk you gave, because even years later, if something might have been about a familiar subject, I knew I would always discover kernels of new information. You just made me understand so many things on a much deeper level and I wish I would have been able to take your arboriculture class, your soil lab, and been able to join the rendezvous at the bristlecones, because that must have been mind-blowing and pretty spectacular in its own right.

Improved my diagnostic abilities, writing, communications skills, networking with other attendees, and fortified my love for this industry!

A confirmation that a scientific approach is desirable

Love them CE hours. Wish it could continue.

It's cool learning about Chernobyl

You're teaching is educational and entertaining and going to one of your lectures makes my life better

How teaching can be such an important tool that may get overlooked at times

Definitely feel heather just by spending most my time outdoors and all the walking that involves.

Urban wood products in my home made by hand improve my wellness!

Dr. Downer is a solid individual. By simply being who he is, he motivates one to be a better human being.

greater ease in managing customers

Conservation, reduction of footprint, and proper selection of resources.

your positive attitude

You have redirected my focus in my career.

The desire to continue to learn, humor, respect for the work you do, and the camaraderie of our Western Chapter family

Your support of arborists has been an inspiration to me.

general value of looking closer at issues before taking action

You get me out to meetings. When I see your name on the program I make every effort to attend.

It makes me strive to do better and push myself harder to excel.

Increased blood flow in my head))

Improved field observation and identification of issues in the landscape, both natural and urban.

I'm not filling my green waste barrels as in the past

Thanks for contributing to my body of knowledge

Constantly increases my knowledge and viewpoints. Each article or talk is invigorating and has me researching other articles or concepts. It has reinforced my passion with in the horticulture industry and scientific research. It is amazing how far your work has reached locally and globally and it is inspirational.

Like a good coach, your teaching has been inspirational and educational

Dr. Downer has some remarkable 'staying power'. His career has lasted a long time. Our community, county, and state, are very fortunate to have someone who has demonstrated complete commitment to his career, the environment, and the betterment of man.t

Inspired to make a career out of being a steward of the environment

Very helpful in my approach to management, consulting, and my own presentations

Effective diagnosis and detection of Phytophthora pathogens which affect trees.

Finding a kindred spirit

Improved my understanding of how much there is to learn yet. Made my work easier

I am inspired by the quantity and excellence of your research and the huge amount of time you spend giving back to the community

It has helped me to recognize proper, and improper pruning techniques.

N/A

I appreciate that Dr Downer shares his research with his followers on Facebook. It has allowed me access to information I normally would not have and has enlarged my world view

Jim was always an advocate for research with the various groups he worked with, especially Western Chapter and the ISA. Jim helped to teach me the importance of research early in my career.

I want to go visit Portal, AZ., see the Chiricahua Mountains, attend soil school (I always have a conflict), and I appreciate you bring the students to NCLC.

Jim is someone that I look up to in my career. Jim is always reminding us to check our facts and research the information we hear, rather than fall prey to spontaneously generated fact. This has been important to me, a young professional, who hears so many things from older arborists in the industry. It would be easy to believe everything they say, because they should know based on experience. But I've heard arborists say the most outlandish things

sometimes and have researched it myself and found that they were misinformed. Jim teaches us to think critically, something we could all use more of.

Enjoyment of learning more about pests and diseases of trees

I enjoy my work more, I feel more competent in my dealings with the public, and I have been able to teach others what I have learned, thus multiplying Dr. Downer's effect.

Joy of learning.

Mental health improved by gaining hope!

increased understanding leads to increased curiosity. Increased value as an employee and business owner. Reduced use of pesticides in practice = reduced body burden exposure. Increased access and interaction with peers.

N=49

12% attributed increased personal well being

18 % stated increased in knowledge

25 % indicated inspiration, joy or career/life changing impacts

Q18 - Please provide your name and contact information (optionally) or any additional thoughts

Please provide your name and contact information (optionally) or any additional thoughts

National

International

Keep up the good work!

Mike Wagner 951 6601717 mwagner@riversideca.gov I want to thank you again for all of your dedication to the industry and the investment into teaching and sharing your vast knowledge!!

Jim Downer is the man!

Greg Applegate, greg@arborgate.occoxmail.com

Tim Clancy clancy@treemanagers.com

Frank McDonough @ the Arboretum -How's living in Portal?

Nick@treecarela.com

Adam Heard

Oscar Del Real- Osdreal@gmail.com. He is an outstanding professor, mentor, advisor and human being. Helped me better understand the science being horticulture, plant pathology and much more

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Donald Rodrigues, Horticulture and Arboriculture Consultant 805-795-2209 pachortearthlink.net ,met

Marco Giorgetti

Paul Webb, pwebb@rpwservicesinc.com 714-412-3515- I don't always turn to Jim for answers, but when I do, Jim has had the answer or has been able to get them. Dr. James "Jim" Downer I say Thank You Paul

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Thank you for your continued research and field investigations.

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Thanks for all you do. Helen Stone.

Give more talks! Would it be possible to have a site posted for all you recorded talks to be easily accessed? Possible advertisement revenue or small fee?

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Michael Robinson - sad the OH dept closed at vC

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William Baker, bbaker@wbaconsulting.com - 951-741-0443. Jim's work has been invaluable to me and thousands of others

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