Minutes of the 2017 Annual Meeting of the Georgia Entomological Society

Executive Committee Meeting Minutes

April 05, 2017. Villas by the Sea Resort, Jekyll Island, GA

Attending: Will Hudson (Past-President), Mike Toews (President), Stan Diffie (Secretary-Treasurer), Dan Suiter (President-Elect), David Riley (2017 Site Selection), Wayne Gardner (JES), and Nancy Hinkle (Historian).

General Comments (Mike Toews) –Computer speakers will be used this year to overcome the noise in the conference room generated by the air conditioning unit. A pointer/clicker will be available for the speakers. A computer will be available on the registration desk so people can load their talks without disturbing the meeting. Lunch will be in the conference room—the buffet line will be set up in the lobby. People's Choice award will be closed at 11:00 tomorrow morning in order for Lisa to have time to tabulate results.

Scholarship Committee (Will Hudson)—Courtney Brissey was selected as the winner of the \$500 M.S. scholarship. There were no applicants for the Ph. D. scholarship.

Awards Committee (Dan Suiter)—score sheets will be distributed to the judges prior to the competitions. All of the papers will be judged by one committee since there only two Ph. D. papers. Awards will be given to the M.S./B.S. winners and the Ph. D. winners.

Membership Committee (Stan Diffie)—Approximately 283 members are currently on the roll and 28% paid dues or attended the meeting in 2016.

Nominations Committee Report (Mike Toews) – The committee asked Ed Mondor and David Shapiro to run for President-Elect. Ballots will be distributed during the luncheon.

Program Committee (Mike Toews) —One change in the program—Ash Sial requested a paper but missed the deadline. He accepted the invitation to present a poster. ter Lance Durden will present at 4:20 pm on Thursday and the last paper of the day will follow. Wayne Gardner will open the morning session with an update on the Journal of Entomology. The industry panel will be chaired by Keith Rucker and will be very informal. The opening symposium is titled "Protection of U.S. Agriculture and the Environment from Invasive Species: A Georgia Prospective. Six speakers are on the program for the symposium. Dan Suiter will cover 50% of the costs and the GES will cover the other 50%. Registration fees will be waived. A total of 16 student papers were submitted compared to 12 last year. There were 15 student posters compared to 5 last year.

Local Arrangements Report (David Riley) – The meeting will cost more this year than it did in 2015 but the additional expenditure was approved by Mike Toews. The 2015 meeting expenses totaled \$4600 and this year they are projected to be \$5800.

Financial Report (Stan Diffie) – The financial report for 2016 was presented (attached). There was a loss of \$4700 last year.

Journal of Entomological Science Annual Report (Wayne Gardner)—The on-line launch occurred last year. BioOne recently sent a royalty check for \$10,000. The journal is being mailed to 237 members and 97 libraries. The future goal is to reduce and possibly eliminate print copies. However, the journal is not losing money and will make this transition slowly as long as the fiscal trend hold. Additional back copies will be digitized.

Historian (Nancy Hinkle)—Urged the committee to send pictures of past meetings. Hopefully, these can be put on the website in the future.

Site Selection (Mike Toews) – 2018 will be a joint meeting with South Carolina. Since we are hosting this time, it will be held in the spring. We would like to make it convenient for South Carolina members so Mike asked for site suggestions. Savannah (expensive), Augusta (Masters Tournament), and Helen were suggested. Student competitions will be held in one room followed by regular member papers being held in concurrent sessions.

Final Business Meeting Minutes April 07, 2017. Villas by the Sea, Jekyll Island, GA

Mike Toews presided over the Final Business Meeting of the 81st annual GES meeting. Mike acknowledged the work Dan Suiter did as Program Chair. He thanked the local arrangements committee and congratulated Jim Hanula on becoming a GES Founder. He thanked Scott Horn for the Founder's speech.

The reading of the 2016 Minutes was waived by a motion from Will Hudson and seconded by Nancy Hinkle.

Local Arrangements Committee (David Riley) – Reported that only nine poster boards were used this year due to a broken leg on one board.

Secretary/Treasurers Report (Stan Diffie) – The financial report covering activity in 2016 (attached) was distributed and discussed. Stan Diffie reported an operating loss of \$4700 for 2016 due to the higher costs associated with last year's meeting, the lower number of attendees last year, a decrease in industry support last year, and the addition of covering invited speakers' expenses. The society currently has \$62,000 in reserves.

Insect Survey (Mark Abney) – Mark reported on the completion of the 2016 Arthropod Report. The report will be on the webpage in the near future.

Site Selection (Mike Toews) –2018 will be a joint meeting with South Carolina. We are hosting the meeting next year, so it will be held in the spring. A couple of dates were suggested and David Riley motioned to accept April 5-6. Helen, Lake Hartwell, Young Harris, Savannah, Augusta, and Blue ridge were mentioned by various members as possible sites. A site selection committee will be appointed to make the decision.

Snapp Award – The Snapp Award, for best presentation by a regular member, was presented to Stacey Vigil.

President-elect ballots were tabulated and Ed Mondor was declared the winner.

Resolutions (Phillip Roberts) – the resolutions (attached) were read.

Fun Run (John All) – Fifteen people participated in the 3.7 mile Fun Run on the island. Joe Knoll won in a time of 25 minutes and 9 seconds. The last person to cross the finish line did so in 64 minutes and 55 seconds.

Fishing Tournament (David Riley) – Six or seven people participated in this year's tournament. He reported yesterday that Will Hudson had been declared the winner.

Historian (Nancy Hinkle)—Nancy asked for photos from previous meetings as well as old journals to store in her office.

New Business—Annie Rich thanked the society for their support of the students.

Necrologist Report (Stan Diffie)—Herb Womack passed in 2017.

Mike Toews passed the President's gavel to Dan Suiter.

Dan Suiter presented Mike Toews a plaque in gratitude for his service as GES President.

Phillip Roberts motioned to adjourn and Annie Rich seconded the motion.

GES Financial Report for period from Dec. 31, 2014 through Dec. 31, 2016

Assets	Dec. 31, 2014	Dec. 31, 2015	Dec. 31, 2016
Checking	45004.39	37434.36	26617.27
Pay Pal	14149.60	22553.21	28596.31
Total	59153.99	59987.57	55213.58
Income			
Registration and Dues	9685.00	9145.00	6720.00
Meeting Sponsors	2000.00	1950.00	800.00
Total	11685.00	11095.00	7520.00
Expenses			
Incorporation Fee	30.00	30.00	30.00
Bank checks	23.25	0.00	0.00
Bank account analysis fee	es 121.44	127.10	127.10
PayPal fees	295.97	281.39	281.39
JES	2500.00	2500.00	2500.00
2015-16 Meeting Expens	es		
Conference Cent	er	3803.66	5921.50
Supplies		972.59	450.64
Plaques		588.20	537.70
T-Shirts		343.20	253.80
Scholarships		1000.00	500.00
Awards		775.00	775.00
Invited Speakers			885.96
Total		10421.14	12263.09
2017 Conference deposit	İ		500.00

Current Assets (03/25/17)

Total	62524.10
PayPal	35641.99
South Georgia Bank	26882.11

Report of the GES Resolutions Committee

7 April 2017

Whereas, the 81st Annual Meeting of the Georgia Entomological Society was convened April 6, 2017 at the Villas by the Sea in Jekyll Island, Georgia; and

Whereas President Michael Toews, through dedicated hard work, organized and directed the Georgia Entomological Society during 2016-17, and provided superb leadership for the 2017 annual meeting; and

Whereas, Scott Horn did make an excellent Founders' Lecturer to honor Jim Hanula as the 2017 GES Founder Honoree; and

Whereas, David Riley and the Local Arrangements Committee organized and managed an excellent foundation for this meeting; and

Whereas, President-Elect Dan Suiter organized an excellent paper and poster session, and coordinated the interesting and informative symposium "Protection of U.S. Agriculture and the Environment from Invasive Species: A Georgia Perspective" with presentations by Gordon Hammer, Lisa Brown, Bill Kaufman, Mike Evans, Michael Toews, and Chip Bates; and

Whereas, the industry sponsors, Amvac Chemical Corporation, BASF, Bayer CropScience, Dow AgroSciences, Dupont, Monsanto, Nichino America, Syngenta, and Valent USA Corporation generously provided refreshments during the 2017 Annual Meeting;

Be it therefore resolved that the Georgia Entomological Society extends its sincere appreciation and thank you to all who have contributed to the success and enjoyment of the 81st Annual Meeting.

Respectfully submitted,	
Phillip Roberts, Chair	Brett Blaauw, Member

JOURNAL OF ENTOMOLOGICAL SCIENCE

2016 ANNUAL REPORT

Volume 51 of the *Journal of Entomological Science* was published in 4 quarterly issues both online and in our customary print. There were 336 total pages in the volume with 25 scientific articles and 10 scientific notes. For those 35 manuscripts published in volume 51, the average time from receipt of the manuscript to action taken on acceptance was 61 days (See Table 1 for summary data by volume from 2002 through 2016). Cover photos for each of the issues were provided by Bethany Harris (no. 1), Alan Harvey (no. 2), Joni Blount (no. 3), and Brent Phelan (no. 4). These were selected from among the entries in the 2015 and 2016 GES Photo Salons.

During 2016, 62 manuscripts were submitted for consideration of publication in the Journal. Forty-two of those submissions were via email to the Editor, while 20 were through the PeerTrack online review system through Allen Press. The online submissions began in February 2016, but most were submitted in November (4) and December (10). The acceptance rate for online and email submissions was 74% (acceptance rate for online submissions, 60%; acceptance rate for email submissions, 81%). A summary by year of total submissions, acceptance rate, and journal account balances and net income for 2002 through 2016 is shown Table 2.

Susan Thornhill, Business Manager, reported a balance of \$25,500.58 in the *Journal* checking account at Regions Bank (Griffin, GA) as of 28 February 2017. Her report of the deposits, disbursements, and balances for the fiscal year is in Table 3.

We have been notified by BioOne that we will receive a check in the amount of \$10,598.00 as a Royalty Payment for Revenue Share and Ancillary Revenue for 2016. We anticipate future royalty payments which should help us pass along reduced costs for publishing in the Journal in the near future.

Respectfully submitted this 1st Day of April 2017,

Wayne A. Gardner, Editor

Table 1. Comparative summary report for *Journal of Entomological Science* of the number of papers published, total number of pages printed, and the average time from receipt of the papers to acceptance for volumes 37 (2002) through volume 51 (2016).

		Scientific	Scientific	Total	Total	Time to
Volume	Year	Articles	Notes	Articles	Pages	Acceptance
37	2002	36	17	53	386	113 d
38	2003	62	17	79	720	141 d
39	2004	56	25	81	686	109 d
40	2005	47	14	61	484	89 d
41	2006	34	20	54	420	79 d
42	2007	51	18	69	622	81 d
43	2008	34	17	51	459	87 d
44	2009	35	11	46	420	79 d
45	2010	33	12	45	402	106 d
46	2011	31	10	41	348	84 d
47	2012	31	13	44	384	90 d
48	2013	32	11	43	364	80 d
49	2014	31	15	46	424	83 d
50	2015	23	10	34	366	91 d
51	2016	25	10	35	336	61 d

Table 2. Comparative summary report for *Journal of Entomological Science* manuscript submissions, acceptance rates, ending account balances, and net income by year for 2002 through 2016.

	Total	Accept	Ending	Net
Year	Submitted	Rate	Balance	Income
2002	87	88%	\$20,518.10	(-) \$9,052.87
2003	89	90%	\$35,642.92	\$15,124.82
2004	67	80%	\$45,294.10	\$9,651.18
2005	68	91%	\$38,985.10	(-) \$6,309.00
2006	85	90%	\$49,758.36	\$10,773.26
2007	61	85%	\$53,353.91	\$3,595.55
2008	43	93%	\$51,853.43	\$1,500.48
2009	54	85%	\$57,339.04	\$5,485.61
2010	47	87%	\$51,416.61	(-) \$5,922.43
2011	53	85%	\$49,629.66	(-) \$1,786.95
2012	58	80%	\$45,789.26	(-) \$3,840.40
2013	45	85%	\$40,461.84	(-) \$5,327.42
2014	41	83%	\$39,982.94	(-) \$478.90
2015	45	81%	\$27,237.43	(-) \$12,745.51
2016	62	74%	\$25,500.58	(-) \$1,736.85

Table 3. Summary report of *Journal of Entomological Science* account with deposits, disbursements, and beginning and ending balances, 1 March 2016 through 28 February 2017.

Beginning Balance [3/1/2016] Deposits (+) Disbursements (-) Ending Balance [2/28/2014]		\$27,237.43 27,448.59 29,185.44 \$25,500.58
<u>Deposits</u> Library Subscriptions Publication and Reprint Charges		\$3,160.00 \$22,902.30
Royalties		\$1,386.29
Total Deposits		\$27,448.59
Disbursements		
Allen Press		\$27,696.25
Banking Fees		\$1,294.98
VISA/MC/Discover Fees (Regions Bank)	\$1,046.60	
Checking Account Fees (Regions Bank)	\$36.00	
Check Printing (Regions Bank)	\$212.38	
Miscellaneous Office Supplies		\$194.21
Office Depot (printer supplies)	\$164.21	
Mailing Labels (Professional Printers)	\$30.00	
Total Disbursements		\$29,185.44

Award Winners

Georgia Entomological Society Annual Meeting April 07, 2017. Villas by the Sea, Jekyll Island, GA

The following awards were presented at the 81st GES Annual Meeting:

Founder Honoree: Jim Hanula Founder's Lecture: Scott Horn

Fellow Honoree:

GES PhD Scholarship:

GES MS Scholarship: Courtney Brissey

T.L. Bissell Award (MS and BS oral presentations):

First Place: Thomas Sheehan
Second Place: Charles Braman
Third Place: Allison Johnson

C.M. Beckham Award (PhD oral presentations):

First Place: Yi-An Chen

Second Place: Fredericka Hamilton

Third place:

U.E. Brady Award (Student poster presentation):

First Place: Carson Bowers
Second Place: Emily Knight
Third Place: Courtney Brissey

O.I. Snapp Award (Non-student oral presentation)

Winner: Stacey Vigil

Photo Salon Winners Georgia Entomological Society Annual Meeting April 5-7, 2017, Villas by the Sea, Jekyll Island, Georgia

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First Place: Brett Blaauw
Second Place: Lisa Ames
Third Place: Annie Rich

Microscope Category:

First Place: Nancy Hinkle Second Place: Yi-An Chen

Portrait Category:

First Place: Shereen Xavier
Second Place: Lisa Ames
Third Place: Brett Blaauw

Sequence Category:

First Place: Dan Hagan

Sturgis McKeever Award Best of Show Winner: Brett Blaauw

Peoples' Choice Award: Brett Blaauw

2016 Georgia Entomological Society

Arthropod Survey

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<u>Vegetables</u>	Error! Bookmark not defined.
Wheat	Error! Bookmark not defined.

Contributors: Mark Abney (peanut), G. David Buntin (corn, sorghum, wheat), Nancy Hinkle (livestock, poultry and pets), Brett Blaauw (apple, peach), David Riley (vegetables), Phillip Roberts (cotton, soybean), Ash Sial (blueberry) Alton Sparks (vegetables), Daniel Suiter (urban and structural)

Apple

Apple insect and mite IPM in GA has been and continues to be quite stable. Resistance problems with codling moth (*Cydia pomonella*) and Oriental fruit moth (*Grapholita molesta*), both key fruit-attacking pests, are evident but continue to be seen as slowly unfolding, farm-specific processes. In most GA apple orchards insecticide applications timed by temperature-driven developmental models still provide excellent control of coddling moth, Oriental fruit moth, and tufted apple budmoth (*Platynota idaeusalis*) our key complex of fruit feeding lepidopterans. That said, significant GA apple acreage exhibits signs of resistance to phosmet (Imidan), methoxyfenozide (Intrepid) and/or novaluron (Rimon). Fortunately orchards experiencing declining insecticide performance have gotten good to excellent codling moth and Oriental fruit moth control with pheromonal mating disruption.

The relatively new invasive brown marmorated stink bug (*Halyomorpha halys*) is readily observed in GA's mountain counties, but to date has not been a significant pest in northern apple or peach production.

Wooly apple aphid (*Eriosoma lanigerum*) had been well controlled in GA apples for at least 30 years, but in recent years it became very problematic in isolated blocks. Use of spinetoram (Delegate), especially in early- or mid-season has been closely tied to aphid outbreaks in GA, likely as a result of this compound's non-target impact on the wooly apple aphid parasitoid *Aphelinus mali*. In this case, work by Betsy Beers from Washington State University, translated very well to southeastern apples. As such, the elimination of spinetoram use, or restricting its use to late-season, seems to be allowing re-establishment of wooly apple aphid biocontrol in GA apples, with aphid infestations declining to almost pre-spinetoram levels.

Blueberry

Spotted wing drosophila (SWD) is the key pest of blueberries in Georgia. However, research and extension efforts by UGA Blueberry Entomology program resulted in proactive implementation of monitoring and management strategies for SWD by majority of the blueberry growers during 2016. Consequently, crop losses due to SWD infestation were very low and no major fruit rejections were reported at the packing lines. Overall, SWD presence had a huge economic impact on GA blueberry industry because growers had to invest \$100-150 per acre to prevent SWD infestations in fruit.

Over the last couple of years, we have seen a significant increase in secondary pest problems likely due to multiple applications of broad-spectrum insecticides (OPs and pyrethroids) to control SWD. During 2016, gall midge, thrips, and scales were reported to be the major concerns. Other reports of insect pests during 2016 included bud mites, cherry fruit worm, cranberry fruit worm, leafhoppers, whiteflies, and ground pearls. A significant proportion of the blueberry acreage was treated with 1-3 insecticide applications to control these secondary insect pests.

Corn

Corn acreage in Georgia was 380,000 acres which was greater than 2015 due to good conditions at planting. Average grain yield was 165 bu/acre which was lower than the year before, but many irrigated fields yielded 250-350 bu/acre. Dry conditions may have reduced yield in some areas. The national

yield winner for irrigated corn was Mr. Randy Dowdy near Valdosta, GA with 521 bu/acre. All corn seed is treated with a neonicotinoid insecticide, so soil insect damage was very low. Stink bug infestations were low to moderate in 2016 in most areas, although preventive sprays were still used widely. Fall armyworm populations were large in 2016, and some whorl infestations were treated in southern GA. Fall armyworm whorl infestations were severe in non-Bt corn in later planting. Corn earworm infestations were low to moderate in on-time planted corn, but increased to damaging levels in late-planted corn. Bt corn adoption is about 80% in the state. Cost of Bt technology was about \$16 to \$28 per acre depending on trait package. More unexpected ear/kernel damage by corn earworm was observed in late planted Bt corn than a few years earlier. This suggests field-evolved practical resistance may be occurring in some Bt traits in Georgia.

Cotton

Stink bugs and thrips continued to be the primary insect pests infesting cotton during 2016. An average yield of 903 lbs. lint per acre was harvested on 1.17 million acres of cotton. Average insecticide applications were 2.5 per acre, average yield loss due to insects was 3.27 percent, and the total costs associated with insect pests (losses plus control costs) were \$78 per acre.

Thrips infestations were relatively normal, moderate to high infestations on April and early May planted cotton and relatively low infestations on plantings after May 10. Although we continue to have concerns of the resistance development to neonicotinoid insecticides in tobacco thrips populations in Georgia and the southeast, field performance of neonicotinoids was somewhat normal. Neonicotinoid seed treatments continue to be the standard at-plant insecticide for thrips, however in furrow liquid applications are becoming more common. Approximately 40 percent of the acres received a supplemental foliar insecticide for thrips control.

Tarnished plant bugs continue to be more common in Georgia cotton and this is a trend we have been observing for the last few years. Fourteen percent of the acres were treated for tarnished plant bug. Insecticide applications targeting plant bugs have the potential to flare secondary pests such as spider mites. Dry conditions also increased the risk of spider mite outbreaks resulting in approximately 6 percent of the acres treated for spider mites. A small percentage of acreage was treated for cotton aphid. Only 1.5 percent of the acreage was treated for corn earworm. Nearly all cotton planted in Georgia is Bt cotton. There are concerns in Georgia and the Cotton Belt as a whole that we are observing decreased efficacy of some Bt technologies in the field. This observation is most obvious in field corn. Stink bugs continue to be the most common insect pest treated in Georgia cotton; approximately 85 percent of the acres were treated for stink bugs.

The 2016 cotton production year will most be remembered by the major outbreak of silverleaf whitefly (SLWF). Initial infestations in cotton were observed in mid-June which was unusually early; historically if we see SLWF infesting cotton in July we may have economic problems. SLWF management was further complicated by the dry conditions during summer months which are conducive for SLWF buildup. During late summer and early fall, SLWF populations had built to very high levels in localized areas and were very difficult to manage. Conservation of natural enemies and the use of insect growth regulators in a timely manner to prevent infield reproduction continued to be our most effective management program.

Livestock, Poultry, and Pets

Among Georgia's Top 10 agricultural commodities, five are animal agriculture – broilers, laying hens, beef cattle, dairy cattle, and horses. The farmgate value of these five commodities totals over half the state's entire agricultural farmgate value. This illustrates the significance of animal agriculture in the state.

Beef cattle

Georgia ranks 30th nationally in cattle production, with about a million head produced annually, amounting to a farm gate value of over a billion dollars. Horn flies are the main pest of pastured cattle, causing irritation and aggravation to cattle because of their blood-feeding habit. Even more significantly, the cow's avoidance behaviors disrupt calf nursing, meaning that calf weaning weights may be reduced by 18 pounds per calf compared with calves on mother cows with good horn fly control. Statewide, annual losses to horn flies on Georgia cow-calf operations are over \$14 million. Horn fly suppression is dependent on insecticides, although there are few options that effectively reduce horn fly numbers for more than a few days. Stable flies, the other bloodsucking fly attacking cattle, account for over \$15 million in losses for Georgia cattle herds. To control horn flies and stable flies (as well as other ectoparasites such as face flies, lice, etc.), Georgia cattlemen invest ca. \$5.7 million annually.

Broilers

Georgia continues to be the nation's number one broiler producing state. Broilers rank at the top of Georgia's agricultural commodities, bringing in \$4.4 billion annually, or 32% of the state's farm gate value.

Worldwide, darkling beetles (*Alphitobius diaperinus*), whose larvae are known as lesser mealworms, are the primary pest of broiler production. These insects burrow into insulation to pupate, damaging facilities and lowering insulative capacity. Costs of keeping heat in the buildings during winter and out in summer significantly increase production costs. When litter is removed and applied to pastures or fields as soil amendment, beetles are distributed and may migrate to nearby homes, creating neighborhood friction. Lesser mealworms feed on dead birds and feces, thereby acquiring numerous pathogens which they can transfer to uninfected birds when consumed. They also maintain Salmonella in their guts during pupation, so that newly emerged adult beetles are infectious to chickens. Chickens are predators and prone to eating insects; filling their digestive tracts with indigestible beetles prevents their consuming nutritious feed and gaining weight, as meat birds are intended to do. *Alphitobius* populations worldwide have been shown resistant to most of the pesticides registered for their suppression, so management strategies are extremely limited. Suppression efforts have some effect on beetle numbers, but there are no tactics that significantly reduce beetle populations.

All 12,000 Georgia broiler houses are infested with darkling beetles and broiler producers spend approximately \$9 million annually for *Alphitobius* suppression. Losses to the beetles are estimated at \$4.5 million annually, for a total cost of lost production and control ca. \$13.5 million annually in the state. Again, even the most conscientious and strategic intervention strategy is ineffective at suppressing *Alphitobius* beetles with current products and technology.

Caged Layers

Table eggs are Georgia's 2nd most lucrative commodity, with an annual value to the state of over \$937 million (ranking Georgia 6th nationally). The principal pest in caged layer houses is the house fly, which causes spotting of eggs, degradation of equipment through fecal contamination, and neighborhood consternation when flies migrate away from the poultry farm to nearby residences. Because of suitable conditions inside layer houses, house flies can be a year-round problem. Producers use manure and water management, trapping, biological control (fly parasitoids and predators), and various pesticides to suppress house flies around caged layer operations. Worldwide, house flies have been shown resistant to most insecticides, so control is seldom adequate. Losses due to flies combined with costs of management are estimated to total \$6.97 million annually.

Northern fowl mites are the second most significant pest in layer flocks. These mites are bloodsuckers that spend their entire life cycle on the chicken host, causing itching, scabbing, anemia, and general bird discomfort and lack of thriftiness. Losses due to reduced feed conversion efficiency and reduced egg production are estimated at \$1.75 million annually, while suppression costs (primarily acaricides) are about \$1.7 million per year, totally \$3.45 million statewide annually.

Pets

Approximately 3.5 million Georgia households have dogs and cats. The three major arthropod pests affecting pets are fleas, ticks, and mosquitoes. Because fleas transmit tapeworms, ticks transmit pathogens such as Ehrlichia, and mosquitoes carry heartworm, pest suppression is essential for disease prevention and to maintain pet health. In Georgia, expenditures for ectoparasite control on dogs and cats amount to over \$128 million annually.

Peach

Pest pressure from fruit-attacking insect pests, such as plum curculio (*Conotrachelus nenuphar*), Oriental fruit moth (*Grapholita molesta*), assorted stink bugs, and green June beetles in peach orchards across GA & SC was light to moderate in 2016. Premature tree decline associated with scale, lesser peachtree borer and peachtree borer continues to cause serious losses. Cover sprays do little to control/suppress these key tree pests. Scale, such as San Jose scale (*Comstockaspis perniciosus*) in particular are increasingly damaging. Scale control is very demanding but doable with rigorous application of dormant oils, followed by block-specific responses with an insect growth regulator application for scale outbreaks through October. Regardless, every orchard needs to receive two dormant, dilute oil applications (200 gals/acre) applied at a low tractor speed (2-3 mph) each year. Prompt, aggressive, often multi-step follow-ups are required where ever outbreaks are observed.

Lesser peachtree borer (*Synanthedon pictipes*) control is stable where dilute, pre-bloom chlorpyrifos sprays are complimented by in-season cover sprays and a post-harvest application of chlorpyrifos. Peachtree borer (*Synanthedon exitiosa*) infestations are worsening. Peachtree borer populations (univoltine) are now showing the same upward population trends previously seen with the multivoltine lesser peachtree borer. Utilization of safer, but less effective, organophosphate-replacement cover

sprays for the past 15+ years appears to be the key element in the emergence of these previously well-controlled species as primary tree-killing insect pests. Utilizing the female sex pheromone of lesser peachtree borer for mating disruption of lesser peachtree borer and peachtree borer is an effective management strategy in the Mid-Atlantic and Upper Mid-Western peach production areas, but this technology has struggled or failed with our higher pest abundance and longer, warmer growing seasons. Cottrell et al. at the USDA-ARS have worked for years to adapt mating disruption to the southeastern lesser peachtree borer and peachtree borer complex. There is optimism that Shin-Etsu's newest dispensers will last long enough to work under our conditions. Working with Shin-Etsu and CBC America, in 2015 and 2016 Cottrell initiated an 800+ acre, on-farm peachtree borer and lesser peachtree borer mating disruption trial in central GA. Preliminary results of this multi-year, area-wide study are very promising. Additionally, Shapiro-Ilan at the USDA-ARS is investigating curative applications of entomopathogenic nematodes for peachtree borer and lesser peachtree borers, which has shown promise on established infestations when used with an appropriate anti-desiccant to keep the borer wounds moist long enough for the nematodes to find larvae.

A sap beetle (*Carpophilus* spp.) and picnic beetle (*Glischrochilus* spp.) complex has emerged in recent years as an occasional, but where severe, damaging and difficult to control pest of sound, ripening midand late-season peaches. Problems seem to be more severe in wet years. In the fall of 2016, a graduate student began a project to identify the species and phenologies of the beetles attacking peaches and to develop a key to help growers detect, identify, and manage sap/picnic beetles in their orchards.

Peanut

Peanut was planted on more than 710,000 Georgia acres in 2016. Thrips pressure was moderate to heavy in many areas. Most growers used at-plant insecticides to manage thrips infestations. Granular phorate or liquid imidacloprid applied in-furrow were the most commonly used at-plant insecticides. Granular aldicarb was available in limited quantities in 2016, and thiamethoxam seed treatment was also used on some acres. Foliar acephate applications were common on acres where thiamethoxam seed treatment or no at plant insecticide were used.

Lesser cornstalk borer (LCB), *Elasmopalpus lignosellus*, activity was moderate to heavy in many non-irrigated peanut fields in 2016. Pressure was highest in the central and eastern portions of South Georgia where drought stress was most severe. Due in part to higher rainfall, LCB populations were lower than normal in southwest Georgia. Chlorantraniliprole, novaluron, and chlorpyrifos were the most commonly applied insecticide active ingredients for LCB management.

Two spotted spider mite, *Tetranychus urticae*, infestations have become common in non-irrigated peanut fields over the last three growing seasons. Hot, dry conditions in 2016 were ideal for spider mite infestation development. Mite problems were exacerbated in some areas by the application of pyrethroid insecticides. Propargite was the only miticide registered for use in peanut in 2016.

Peanut burrower bug, *Pangeaus bilineatus*, damage was reported in 2016. Overall damage as measured by the proportion of the crop that was downgraded to segregation 2 was lower than previous seasons,

but some growers still experienced significant economic losses. Granular chlorpyrifos was applied in some fields in hopes of reducing burrower bug damage.

Foliage feeding caterpillar abundance and species composition varied from field to field in 2016. No significant statewide outbreaks of foliage feeders were reported. Flubendiamide had become a popular choice for caterpillar management in peanut prior to the cancellation of its registration in 2016. Other active ingredients used to target caterpillars included: chlorantraniliprole, novaluron, methoxyfenozide, diflubenzuron, indoxacarb, and various pyrethroids.

Georgia's state-wide average yield was reported to be slightly less than 4000 pounds per acre in 2016. Quality varied significantly due to high temperatures and drought stress in some growing regions. High percent hull weight resulted in lower than average grades for many producers.

Sorghum

Sorghum acreage in 2016 was 12,000 acres for grain production and 10,000 acres for forage/silage production. Grain yield averaged 54 bu/acre at a price of \$6.30 per 100 lb seed. Acreage was much lower than in 2015 due to lower commodity prices and difficulty and cost of controlling the sugarcane aphid (SCA). SCA infestations were first detected in late April in southern GA and throughout the state by the end of June. SCA occurred on about every acre of sorghum. Virtually all grain sorghum hybrids were pretreated with the neonicotinoid insecticides clothianidin or thiamethoxam which provided good control for SCA for 30-40 days after planting. A Section 18 emergency use exemption was obtained again for use of Transform WG on sorghum for SCA control with a maximum of two applications per season. Almost all acres were treated once and some fields were treated 2 or 3 times with either Sivanto prime 200SL or Transform WG. Estimated cost of insecticide application for sugarcane aphid control was about \$500,000 for product alone which does not include additional application costs. Some fields or portions of fields were severely damaged and abandoned. Sorghum midge infestations were absent or very low. Some later planted fields were treated for fall armyworm in the whorl or headworms (fall armyworm, corn earworm and/or sorghum webworm) on the grain heads. No insecticides are labeled for SCA control on sweet sorghum. Most sweet sorghum fields were completely destroyed by SCA in 2016.

Soybean

Insect pest problems in soybean were relatively minor during 2016. Foliage feeding caterpillars, including soybean looper and velvetbean caterpillar, and stink bugs were the most common pests infesting fields and requiring treatment. We continue to have concerns with soybean looper susceptibility to Diamide insecticides; laboratory bioassays suggest less susceptibility during recent years. As in 2015, kudzu bug infestations were very low in soybean. When kudzu bugs were observed in soybean or kudzu, egg parasitism by *Paratelenomus saccharalis* and infection by *Beauvaria bassiana* were present and are believed to be responsible for the demise of kudzu bug in Georgia and the southeast.

Urban and Structural

The tawny crazy ant, *Nylanderia fulva*, has shown up in Dougherty county (Albany, GA) in August 2013, Camden and Glynn counties along I-95 exits coming from Florida (August 2014), and Chatham

(Garden City, GA), Lowndes (Valdosta, GA), and Brooks (Quitman, GA) Counties in 2015. There have been no detections in Georgia since. Our belief is that this major nuisance ant pest will be restricted to the lower half to one-third of GA and coastal GA. In our studies in Chatham County, at the Port of Savannah, we are seeing the rapid displacement of the red imported fire ant, *Solenopsis invicta*, by *N. fulva*. Control of *N. fulva* is much like that for the Argentine ant, *Linepithema humile*. Fipronil (Termidor SC) used close to the structure only and applied directly to trailing ants is the best method to date, to control *N. fulva*. Elimination of excessive trash and debris is also critical, as it eliminates nesting sites.

Several changes to insecticide labels (pyrethroids and neonicotinoids) have occurred over the past several years. For pyrethroids, changes (in OTC and professional markets) restrict where products can be applied. To prevent water contamination, for instance, they cannot be applied to hard surfaces, cannot be applied more than 3 feet high, must be applied crack and crevice, and must be applied over overhangs when applied to soil. For neonicotinoids, new labels have a pollinator protection box with language mandating that products not be applied to plants with flowers on them.

Although bed bug problems continue to be common in Georgia (mainly in commercial accounts), many companies (including some large ones) not equipped to handle them (multiple visits and labor intensive), or averse to the liability, are not pursuing bed bug work. Although bed bugs garner lots of attention, termites and ants are still more profitable for most companies, especially those small to mid-sized companies which make up more than three-fourths of the industry (Suiter's estimate). On the pest control side, ants (Argentine ants) are arguably the number one pest encountered by companies who conduct residential pest control (most of them) in GA. A major problem that has emerged for those people who have been unfortunate enough to have found themselves with a bed bug infestation is the cost to remedy the problem. The cost of a bed bug treatment, over the past decade, has reached the cost of a residential termite treatment. And many residents, especially those living in low-income environments, are simply not fortunate enough to be able to afford to hire a pest management company to solve their problem. This, coupled with virtually no over-the-counter remedies, is fueling the search for low-cost, effective remedies available to homeowners.

Attractants for bed bug traps is an active area of research. The "ClimbUp" pitfall trap continues to be the industry standard for traps as monitors. Traps are not used as a pest control tool, but are good monitors. Heat continues to be used to control bed bugs, mainly as an alternative to pyrethroid resistant populations; pyrethroid resistance in bed bugs is severe and widespread. There are few chemicals on the horizon that will alleviate this situation; however, chlorfenapyr (Phantom, BASF) is a fairly widely incorporated residual, as is diatomaceous earth (Cimexa dust and Mother Earth dust). Essential oils are being looked at, but are not promising. Heat, when used improperly, can worsen bed bug problems by driving bugs from heated premises. Dogs as inspection tools are variable when it comes to efficiency; the handler has proven to be a key to the success of dogs as inspectors. Information about bed bugs, in the form of webinar archives, can be viewed at www.gtbopc.com. Viewing is free.

Vegetables

As in every year with vegetables, some crops experienced minor problems with insect pests, while others were severely impacted by unmanageable pest problems. Three pests dominated the list of severe issues: diamondback moth, cowpea curculio and silverleaf whitefly.

Diamondback moth populations were relatively high in the winter/spring crop and insecticide resistance issues exacerbated this problem. While we do have multiple modes of action with which to control diamondback moth, we have experienced resistance to all of them. Research and extension efforts have focused on rotation of MOAs to try and maintain susceptibility in populations; however, recent activities to aid growers in identifying efficacious alternatives have highlighted the problem in that some populations show a single MOA still efficacious. The potential for a host free period in the summer has been emphasized with little impact on production habits.

The cowpea curculio threatens to eliminate commercial cowpea production in Georgia. This pest is widespread and insecticide resistance levels are high enough to preclude efficacious control. Research efforts have not been able to identify any efficacious insecticides for foliar use. Research on post-harvest soil applications to target the grubs and pupae in the soil has been inconsistent and would require a complete change in management of this pest. Host plant resistance in commercial varieties is inadequate for management needs. While crop rotation and movement into previously non-production areas should prove useful (the curculio is reported to rarely fly), this has not been the case.

Silverleaf whitefly populations were extremely high in the fall of 2016. This appeared to start in cotton and other summer crops and was aided by very favorable environmental conditions (hot and dry) for this pest. Populations of whiteflies were extremely high and more broadly distributed than normal for South Georgia. This impacted most vegetable crops grown in the fall; even pepper (which is not a favored host) was stunted and required multiple insecticide applications to produce. Cucurbit crops and snap beans were particularly hard hit as cucurbit leaf crumple virus, transmitted by the whitefly, decimated these crops. Fields which produced some harvestable yield were the exception. Finally, tomato yellow leaf curl virus, also transmitted by whitefly, was also present in the fall tomato crop. This problem was not a severe as the leaf crumple in cucurbits and snap beans but did have significant negative impact.

On the bright side, thrips pest pressure in onions was very light in 2016. We also did not experience issues with broad mites in fall peppers and eggplant, which was somewhat surprising as we normally see this pest when whitefly populations are high and broad mite has been a more consistent pest in recent years. Tarnished plant bugs were of concern in spring watermelons, as high populations were encountered in fields with high densities of pigweed and they were present on the melon plants; however, this pest appears to have little or no impact on watermelons. Spider mites also occurred in high populations in early summer in a wide variety of vegetable crops but were controlled with registered acaricides.

Wheat

Harvested wheat acreage in 2016 was about 110,000 acres with average statewide yield of 46 bu/acre at \$4.25/bu. Acreage was lower than previous years due to poor conditions at planting time and low commodity prices. Resistant varieties continue to be the main line of defense against the Hessian fly. Some fields of susceptible varieties had significant Hessian fly damage in the spring. Aphids and barley/cereal yellow dwarf disease levels were generally low in the coastal plain region but caused significant damage in northern Georgia. Scab disease was extensive and severe again in 2016 causing serious losses and elevated levels of DON mycotoxin in the grain. Accidental contamination of wheat flour from Georgia by peanut debris presumably in transport vehicles caused cases of peanut allergy reactions in some people which required the recall of contaminated wheat products. It is unclear how this event will affect wheat production in Georgia in the future.

2017 Annual Me	eting Registrati	1 1		T		
Regular member	egular members:		Regular Members (walk-up):		Student:	
Abney	Mark	Barding	Erin	Anderson	Matthew	
Ames	Lisa	Guillebeau	Paul	Barwick	Sydni	
Blaauw	Brett	Pitts	Dan	Bostick	Nan	
Braman	Kris	Smith	Meg	Bowers	Carson	
Buntin	David			Braman	Charles	
Cottrell	Ted			Brissey	Courtney	
Croxton	Scott			Burns	Taylor	
Diffie	Stan			Chen	Yi-An	
Harris-Schultz	Karen			Hamilton	Fredericka	
Hinkle	Nancy			Haar	Phillip	
Holbrook	Tate			Kitching	Harley	
Horn	Scott			Johnson	Allison	
Hudson	Will			Johnston	Samuel	
Kay	Sasha	Emeritus/Fe	llows/Retired:	Knight	Emily	
Knoll	Mondor	All	John	Lai	Pin-Chu	
Mondor	Ed	French	Frank	Liu	Jean	
Newell	Sandy	Gardner	Wayne	McCollum	Jaclyn	
Niland	Erika	Hagan	Dan	Ogunleke	Titilupe	
Owens	Clay	Hanula	Jim	Reeves	Benjamin	
Richburg	John	Horton	Dan	Rich	Annie	
Riley	David			Ruffa	Alyssa	
Roberts	Phillip			Russell	Katherine	
Rucker	Keith			Sheehan	Tom	
Russell	Scott			Sutherland	Bryce	
Sanders	Hunt			Thompson	Austin	
Schmidt	Jason			Torrance	Phillip	
Shapiro-Ilan	David			West	Wyatt	
Sial	Ashfaq			Whitehouse	Tyler	
Sparks	Stormy	Spouses:		Xavier	Shereen	
Suiter	Dan	French	Ileen			
Tietjen	Bill	Hanula	Gail			
Tillman	Glynn	Riley	Angie			
Toews	Mike	Tremblay	Michelle	Invited Speaker	rs:	
Vigil	Stacey			Bates	Chip	
Yang	Yunqui			Brown	Lisa	
Yellin	Anna			Evans	Mike	
				Hammer	Gordon	
				Kauffman	Bill	

Georgia Entomological Society 2017 Annual Meeting Financial Report

The 81st Annual Meeting held at Villas by the Sea, Jekyll Island, Georgia.

GES Meeting Financial Report:

Income		
	Industry Support	\$3,100.00
	Registration	
	Full (38 at \$150)	5,700.00
	Emeritus (6 at \$50)	300.00
	Student (27 at \$25)	675.00
	Spouses (4 at \$25)	100.00
	Total Income	\$9,875.00
<u>Expenses</u>		
	Villas by the Sea	\$5530.40
	Programs	513.53
	Plaques	606.70
	Awards	725.00
	Scholarships	500.00
	Fun Run	233.80
	Meeting supplies	220.72
	Total Expenses	\$8330.15
Income - expenses		\$1544.85

MEMBERSHIP OF THE GEORGIA ENTOMOLOGICAL SOCIETY

Abney	Mark	regular	Carnagey	Daniel	regular
Abraham	Cheri	student	Champagne	Don	regular
Ahn	Kee-Jeong	regular	Chandler	Laurence	regular
All	John	regular	Chen	Yi-an	student
Allen	Clint	regular	Conway	Hugh	regular
Allen	Margaret	regular	Cook	Don	regular
Allen	Daniel	student	Cooper	William R	regular
Ames	Lisa	regular	Cottrell	Ted	regular
Amis	Ann	regular	Crossley	Dac	regular
Anderson	Alyson	student	Croxton	Scott	regular
Anderson	Matthew	student	Dickson	Jenny	student
Anes	Christian	student	Diffie	Stan	regular
Armstrong	Scott	regular	Diffie	Auburn	student
Arrington	Brittany	student	Disi	Joseph	student
Arthurs	Steven	regular	Dorfzaun	Alexandra	student
Avery	Pasco Bruce	regular	Douce	Keith	regular
Avgin	Sakine Serap	regular	Dunford	James	regular
Babb	Megan	student	Durden	Lance	regular
Balogh	Botond	regular	Durrence	Jessica	student
Barding	Erin	regular	Dutcher	Jim	regular
Barnes	Brittany	regular	Eaton	Tyler	regular
Barwick	Sydni	student	Eger	Joe	regular
Beati-Ziegler	Lorenza	regular	Ekbom	Barbara	regular
Beaton	Giff	regular	Eremeeva	Marina	regular
Benedict	Mark	regular	Evans	Mike	regular
Benton	Elizabeth	regular	Evans	Richard	student
Beyer	Brendan	student	Fair	Conner	student
Blaauw	Brett	regular	Faircloth	Wilson	regular
Blackmore	Mark	regular	Fang	Quentin	regular
Blount	Joni	regular	Farrar	Robert	regular
Booker	Oliver	student	Fettig	Christopher	regular
Bostick	Nan	student	Flanders	Kathy	regular
Braman	Kris	regular	Frank	Daniel	regular
Braman	Charles	student	French	Frank	emeritus
Braswell	Sarah	student	French	Ned	regular
Brinkman	Mark	regular	Gadhave	Kiran	regular
Brissey	Courtney	student	Gandhi	Kamal	regular
Brown	Ian	regular	Gardner	Wayne	regular
Buckman	Michael	regular	Gochnour	Benjamin	student
Bundy	Scott	regular	Googe	Katie	student
Buntin	G. David	regular	Grant	Joshua	student
Burns	Shuntele	regular	Gray	Elmer	regular
Burns	Taylor	student	Greene	Jeremy	regular
Bush	Bryana	student	Griffith	Keith	regular
Callcott	Anne-Marie	regular	Haar	Phillip	student
Capps	Helaina	student	Hadden	James	regular
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Hadden	Whitney	student	Kitching	Harley	student
Haelewaters	Danny	student	Knight	lan	student
Hagan	Daniel	emeritu	Knight	Emily	student
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Hain	Fred	regular	Knoll	Joe	regular
Hamilton	Fredericka	student	Kucuk	Roy	student
Hammes	Glenn	regular	Kuhar	Tom	regular
Hanula	Jim	regular	Lado	Paula	student
Harper	Stephanie	student	Lago	Paul	regular
Harris	Bethany	student	Lai	PinChu	student
Harrison	Gerald	regular	Lampert	Evan	regular
Harrison	John	regular	Layton	Blake	regular
Harris-Schultz	Karen	regular	Lee	Cathy	regular
Harty	Tom	student	Lee	Tae-Young	student
Harvey	Alan	regular	Legarrea	Saioa	student
Hazir	Selcuk	regular	Leite	Luis	regular
Headings	Mark	regular	Li	Ming	regular
Heim	Craig	regular	Li	Zhaolong	regular
Herbert	John	regular	Liang	Ai-Ping	regular
Highland	Brett	regular	Lim	Su Yee	regular
Hinkle	Nancy	regular	Little	Brian	student
Hirose	Yoshimi	regular	Liu	Tzu-Chin	student
Hix	Raymond	regular	Lohmeyer	Kimberly	regular
Hobby	Sarah	regular	Lowman	Alan	regular
Holbrook	Tate	regular	Ludwig	Scott	regular
Holloway	Jacob	student	Ludwig	John	student
Holt	Courtney	student	Luttrell	Randy	regular
Horn	Scott	regular	Maner	Luke	student
Horton	Dan	regular	Mangini	Alex	regular
Hudson	William	regular	Marasigan	Kathleen	student
Hughston	Melanie	regular	Marchant	Wendy	student
Hutchison	William	regular	Mayfield	Albert	regular
Iburg	Joseph	regular	McCravy	Kenneth	regular
Irby	William	regular	McElrath	Tommy	student
Jenkins	Tracie	regular	McHugh	Joseph	regular
Johnson	Lkeira	regular	McPherson	Robert	emeritus
Johnson	Allison	student	Mech	Angela	student
Johnson	DeAndre	student	Merrifield	Jimmy	student
Johnson	Erica	student	Miller	Dan	regular
Johnston	Samuel	student	Miorelli	Nancy	student
Joseph	Shimat	regular	Mitchell	Henry	regular
Karcs	Cassandra	student	Mitchell	Paula	regular
Kard	Brad	regular	Mizell	Russ	regular
Kay	Sasha	regular	Mondor	Edward	regular
Kelly	Rosmarie	regular	Munro	Holly	student
Kim	Sang Soo	regular	Muzyk	Ken	regular

Nalepa Christine regular Ruberson John regular Nesbitt Keonka student Rucker Keith regular Newell Sanford regular Russell Scott regular Newsom Larry regular Sanders Hunt regular Newsom Larry regular Sanders Hunt regular Nguyen Thuy-Vi student Santana Fred regular Nims Todd regular Scheffrahn Rudolf regular Noblet Ray regular Schmidt Jason regular Noblet Ray regular Schuster David emeritus Odom C. Brian regular Schuster David emeritus Odom C. Brian regular Scocco-Niland Erika regular Oetting Ronald emeritus Seabolt Matthew student Ogunleke Titilupe student Sedlacek John regular Oi David regular Seiter Nicholas student Oliver James emeritus Semtner Paul emeritus Oliver Jason regular Shapiro-Ilan David regular Oilver Kerry regular Sheehan Tom student Orellana Luis regular Shockley Mariann regular Shockley Mariann regular Shockley Mariann regular Shockley Sial Ashfaq regular Owens Clay regular Simmons Alvin regular Parks Melissa student Smith David emeritus Perkins Gretchen student Smith David emeritus Perry Kayla student Smith David emeritus Perry Kayla student Smith David emeritus Perry Kayla student Smith David emeritus Perry Robert regular Smith Linda emeritus Philips Christophe regular Smyth Linda emeritus
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Philips Christophe regular Smyth Linda emeritus
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Pilkay Grant student Sparks Beverly emeritus
Pitts Daniel regular Sparks Alton, Jr. regular
Podgwaite John regular Spurgeon Dale regular
Portier Trey student Srinivasan Babu regular
Quisenberry Sharron regular Stewart Colin regular
Ramoutar Darryl regular Stewart Julia regular
Reding Michael regular Studer Liz student
Reeves Benjamin student Suiter Dan regular
Reid Ashlin student Sullivan Brian regular
Rich Annie student Sutherland Bryce student
Richburg John regular Swain Hilary regular
Richman Dina regular Taylor Dennis regular
Riffle Michael regular Taylor Mickey regular
Riley David regular Taylor Shine regular
Ringler-Lanzy Matthew student Thomas Donald regular
Robbins Paul regular Thompson Lynne emeritus
Roberts Phillip regular Thompson Austin student

Rodenberger	Kathryn	student	Thompson	Melissa	student
Rosensteel	Danielle	student	Tietjen	William	emeritus
Royal	Stanley	regular	Tillman	Glynn	regular
Timer	Jody	regular		,	J
Toews	Michael	regular			
Torrance	Phillip	student			
Townsend	Monica	regular			
Tremblay	Michelle	spouse			
Turnbow	Robert H	regular			
Ulyshen	Michael	regular			
Vigil	Stacey	regular			
Walker	Max	emeritus			
Walters	Miranda	student			
Wei	Xing	regular			
Westberry	Lisa	regular			
Whitehouse	Tyler	student			
Williams	Elizabeth	regular			
Wimmer	Jessica	student			
Xavier	Shereen	student			
Yellin	Anna	regular			
Young	Orrey	emeritus			
Zhang	Yanzhuo	regular			
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