The SSSA **Representation and Recognition Task Force** was formed and approved by the SSSA Board of Directors in early 2018.

Charge of the Task Force:

"Evaluate ways to increase and enhance retention (i.e., from graduate to active members), representation (i.e., Boards of Directors, Division Reps, Division Chairs), and recognition of women in and by SSSA. Report to the SSSA Board of Directors with recommendations and action items by mid-April 2019 for discussion at the SSSA Board Meeting".

Composition of the Task Force:

Co-chairs: Rita Abi-Ghanem (Senior Director of Research and Development, Bio Huma Netics, Inc.) and Andrew Sharpley (Department of Crop, Soil, and Environmental Sciences, University of Arkansas and immediate Past President of SSSA).

Members: The Task Force is comprised of women and men covering a range of disciplines (research, extension, and teaching), employers (government, university, industry/consulting), and career stages (student, early career, professional).

Organization and division of labor: The Task Force was organized into two subcommittees to more effectively carry out their charge. Susan Chapman is the Headquarters representative on these subcommittees.

Representation Subcommittee:

Chair: Helga van Miegroet

Members: Aaron Daigh, Samira Daroub, Rachel Owen, Stella Salvo, Andrew Sharpley, and Karen Vaughan.

Recognition Subcommittee

Chair: Sabine Goldberg

Members: Rita Abi-Ghanem, Elena Mikhailova, Hero Gollany, Carolyn Olson, Bill Pan (President of SSSA), Heidi Waldrip, and Candiss Williams (Chair of the Diversity Committee).

Synopsis

This document constitutes a preliminary report – Phase 1 – from the Representation and Recognition Task Force to the SSSA Board of Directors. To address the issue of Diversity within SSSA, the Task Force focused on gender as the first step in that process, with other aspects of Diversity and Inclusion to be considered at a later time. This report contains findings as of April 2019, of the current status of SSSA with regards to gender equity, as well as recommendations and action items for discussion at the SSSA Board level (May 2019 conference call) and for subsequent implementation. Data for this analysis were generated for the Task Force by Society Headquarters primarily by Beth Kronwall and Kirstie Yu.

The demographics of the SSSA membership has changed in recent years. While the representation of women among our more senior members is well below expectation based on the historic gender distribution of advanced degree holders, the proportion of women in soil science and number of women who are active and student members in SSSA has increased dramatically in recent years. Growing numbers of women among active and student members attend SSSA meetings, participate in SSSA governance and populate many of the standing committees and editorial positions, commensurate with the gender distribution within the membership. This is a positive trend which SSSA needs to foster further.

There are, however, some areas of concern. Firstly, gender balance in the membership largely stems from student members, who make up as much as 30% of the SSSA membership. Yet, there is a high attrition rate among student members and few transition into active membership. While there is high student attendance during the Annual Meetings, student member participation in elections is low. SSSA should make a concerted effort to retain these young members and actively engage them in all aspects of SSSA activities, so that they consider a long-term affiliation with SSSA as active members. Secondly, women are still underrepresented in leadership positions and on committees that bestow honors. The number of women recognized as SSSA Fellows has increased significantly and is commensurate with membership demographics. However, women are significantly underrepresented among Award recipients, a pattern that is due to a combination lower representation of women as members and chairs on the Award committees, lower nomination rates of women candidates, and lower success rates of women being nominated. SSSA should strive for a more equitable recognition of the accomplishments and contributions of women within SSSA through the Awards process. Furthermore, the Division level is the key locus to increase engagement in SSSA governance, especially among student and early career members, potentially leading to appointments to SSSA leadership positions. It is important for SSSA to have a climate of inclusion. Targeted programs are needed at all career levels with the intent to deliberately and actively reach out to women and underrepresented groups, and increase their engagement in SSSA. Some of the recommendations in the American Geophysical Union Diversity and Inclusion Strategic plan should be considered.

As the Task Force has not reached the stage of a final report (Phase 2), we request that the activities of the Task Force be continued for at least one additional year. Additionally, the Task Force sees the need to broaden the charge from focusing on Women's Recognition and Representation to the addition of Inclusion and Diversity, as women are not the only underrepresented group in the SSSA.

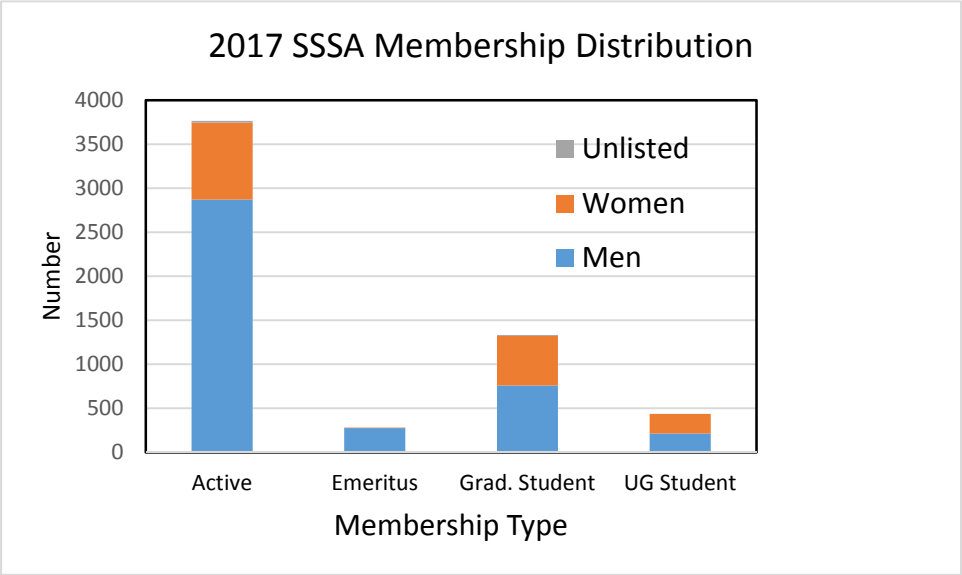
The report is divided into two subsections: (1) Representation, followed by (2) Recognition.

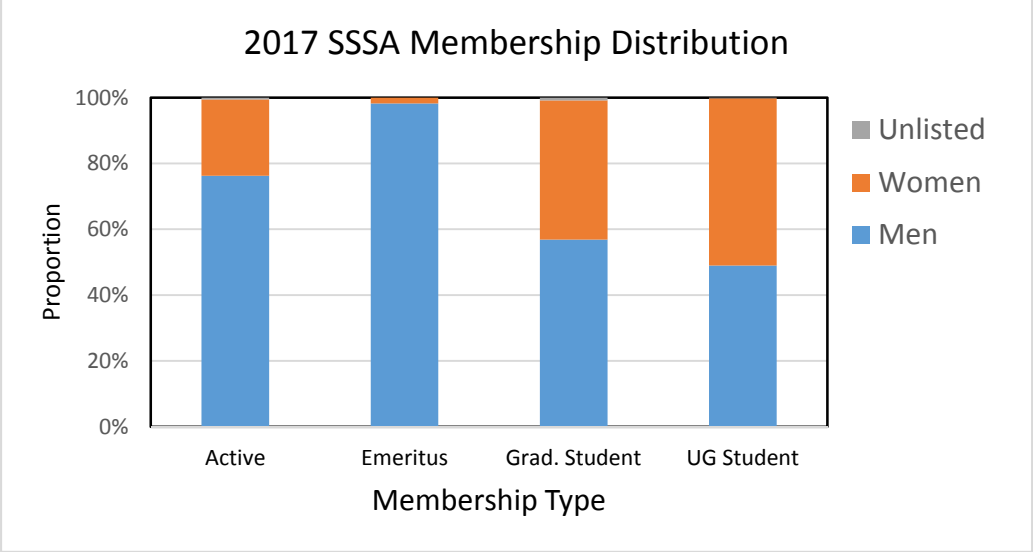
Representation Subcommittee

In phase 1, the Representation subcommittee gathered information on the gender distribution of the SSSA membership across different categories (position type, employment sector, seniority), analyzed recent trends in student membership and retention/attrition, in meeting attendance, and participation in SSSA governance (leadership, voting)

1. MEMBERSHIP COMPOSITION

Gender distribution of 2017 Membership by membership category



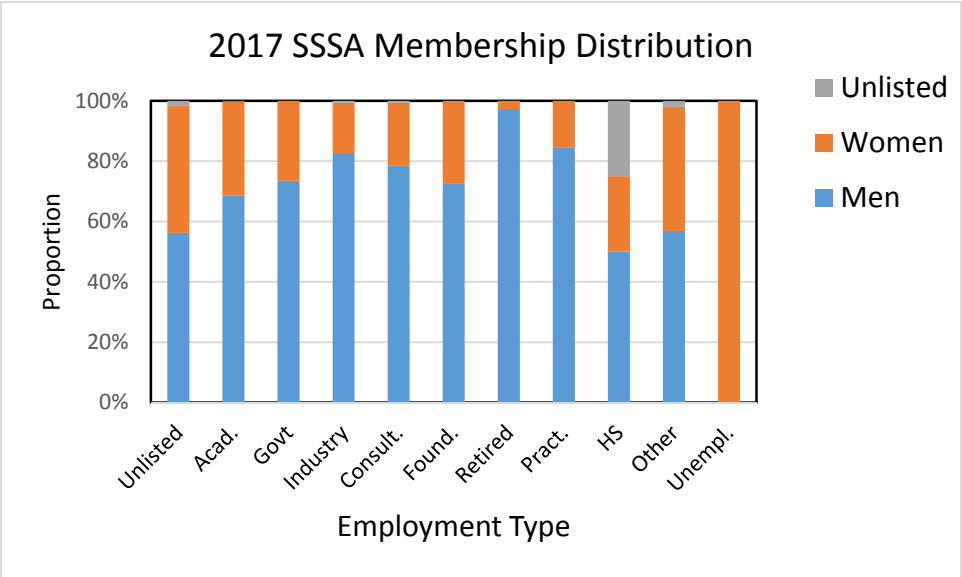


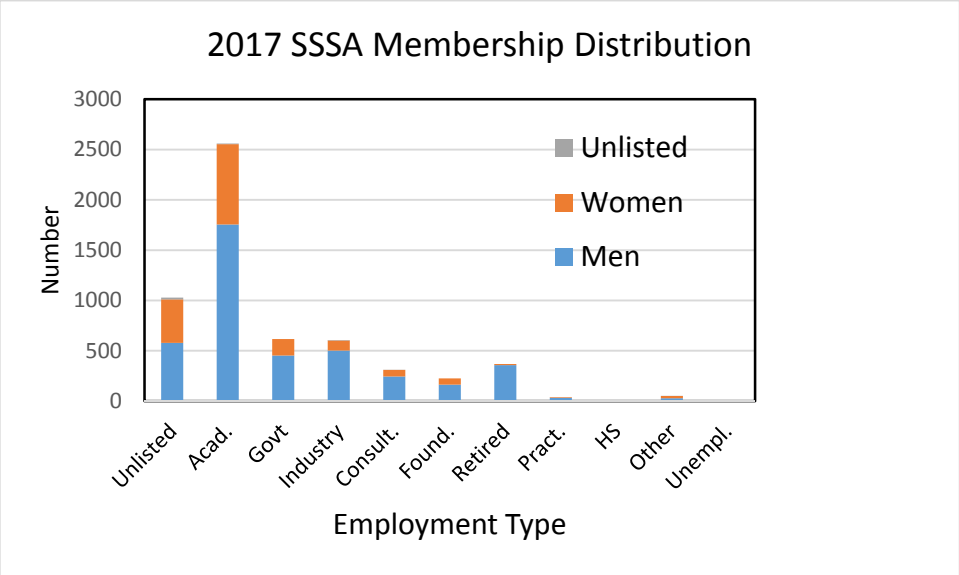
Overall, 29% of the members in 2017 were women; the percentage of women in each membership category is as follows:

Active	23%
Emeritus	2%
Graduate Students	42%
Undergrads	51%

Women are better represented among the student members (51 and 42% of all undergraduate and graduate students, respectively) than among the active members (23%). Students represent 30% of our total membership; but have a different demographics than the rest of the membership.

Gender distribution of 2017 Membership by employment category



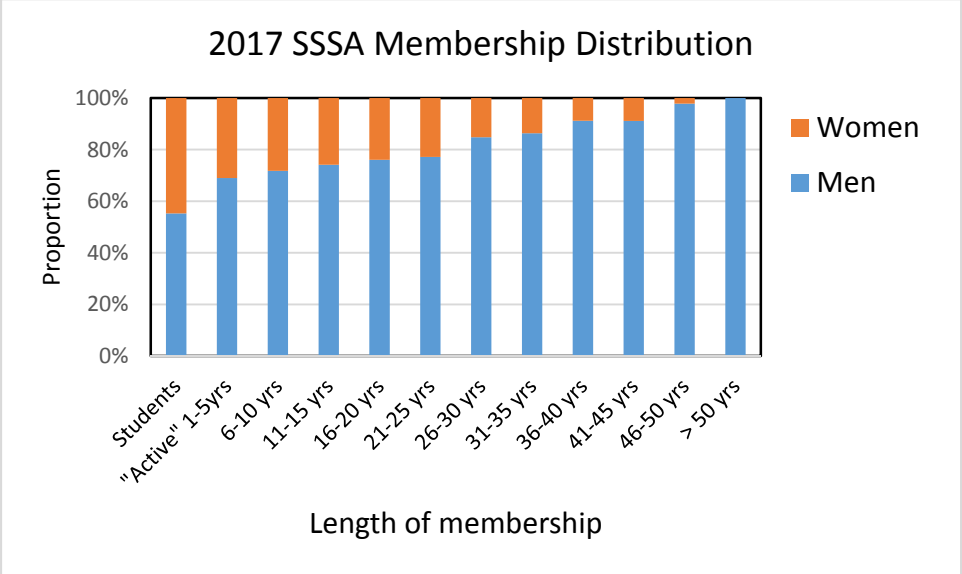


Active members are mostly affiliated with academia (44%); government (11%) or industry (10%); 18% of the members do not list their employment type.

In the top employment categories, the percentage of members who are women is as follows:

Academia	31%
Government	26%
Industry	17%
Unlisted	42%

Gender distribution of 2017 Membership by length of membership

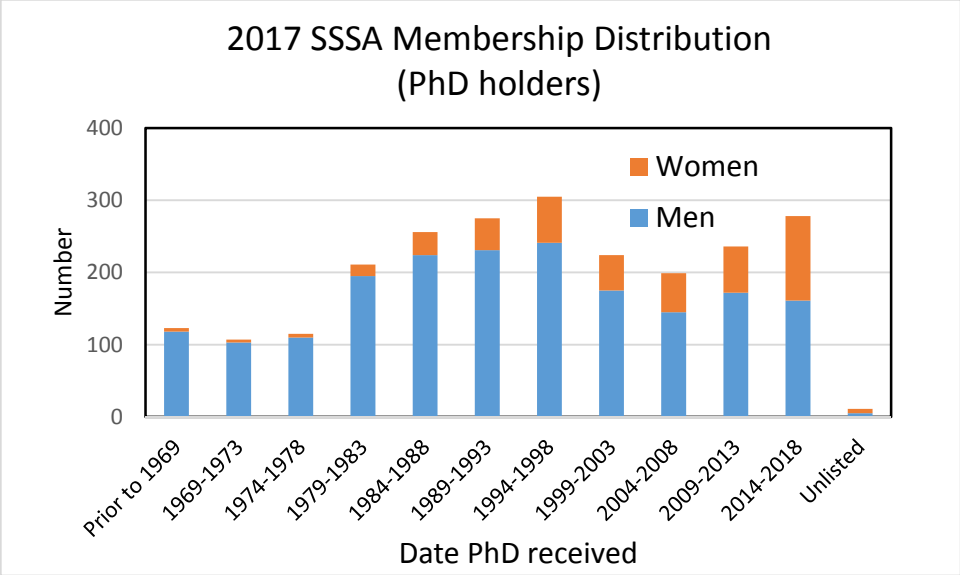


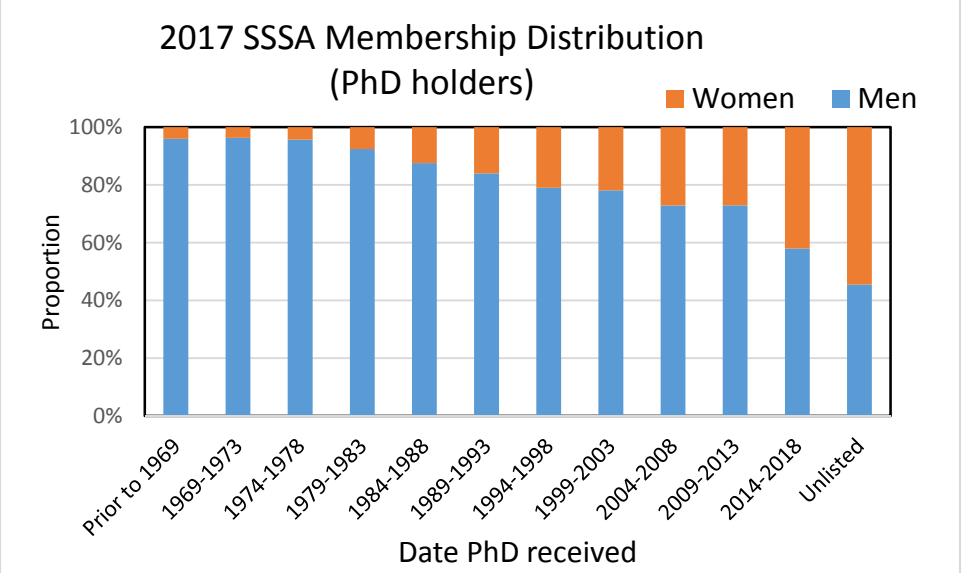
NOTE: The 1-5 yrs member category member was parsed into two categories: students (sum of graduate and undergraduate students) and active members = (total 1-5 yrs) – (# of student members), based on the assumption was that all students were in the 1-5 years category of membership

Student member gender distribution (Grad + Undergrad = 44%) closely approximates national average of higher degree recipients in STEM (NSF, ~42%), but is somewhat lower than the percentage of women obtaining advanced degrees in soil science (54% of MS and 53% of PhDs in 2017, Vaughan *et al* 2019; 46% of SSSA thesis submissions between 2015-2019)

The active membership shows women are underrepresented especially among the older members: 30% of newer active members (membership < 5 years) are women, compared to <10% women among active members who have been members 40 years or longer.

Gender distribution of 2017 Members with PhD by date PhD degree received



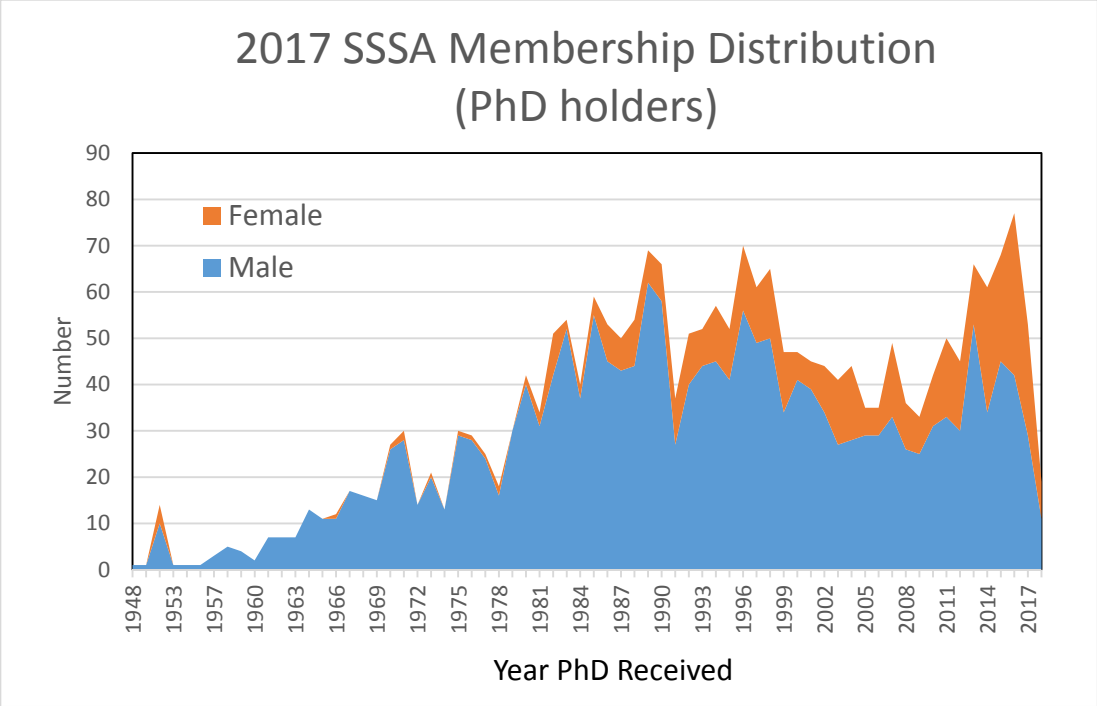


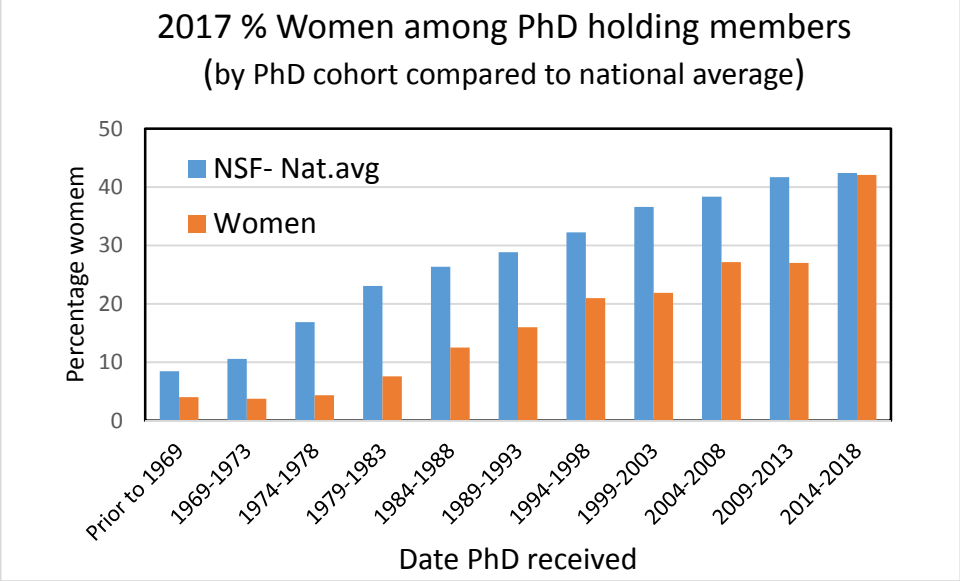
To evaluate temporal trends, gender distribution needs to be compared against degree holders in soil science disciplines.

Members with PhD represent a large fraction of SSSA membership. In 2017, 40 % of our members had a PhD; or 46% of men and 28% of women who are members had doctoral degrees.

The 2017 membership reflects women entering the STEM/soil science fields since the 1980s, and increasing participation of women in soil science since then.

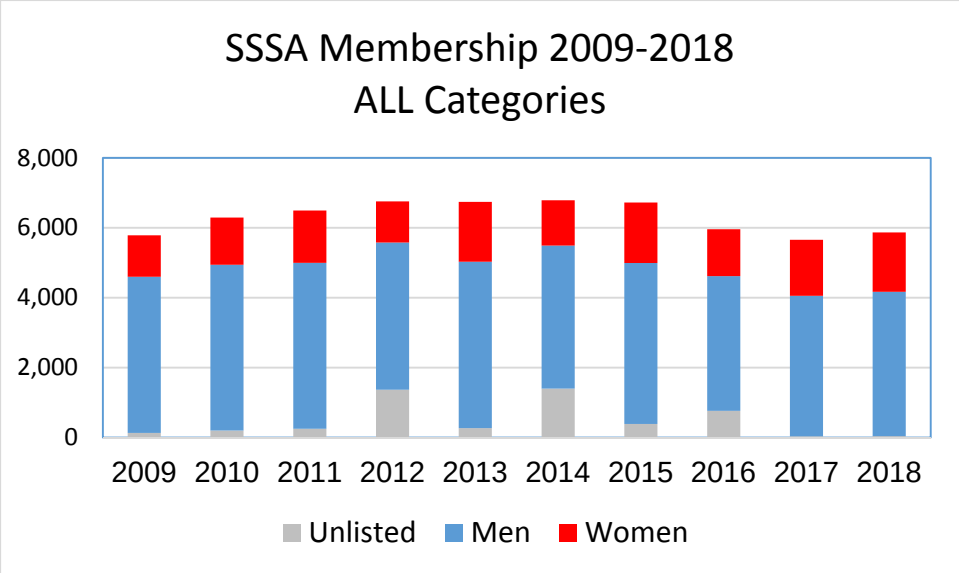
Gender distribution of 2017 Members with PhD by date PhD degree received and compared to the national statistics on gender distribution of PhD recipients in Science and Engineering (NSF data)

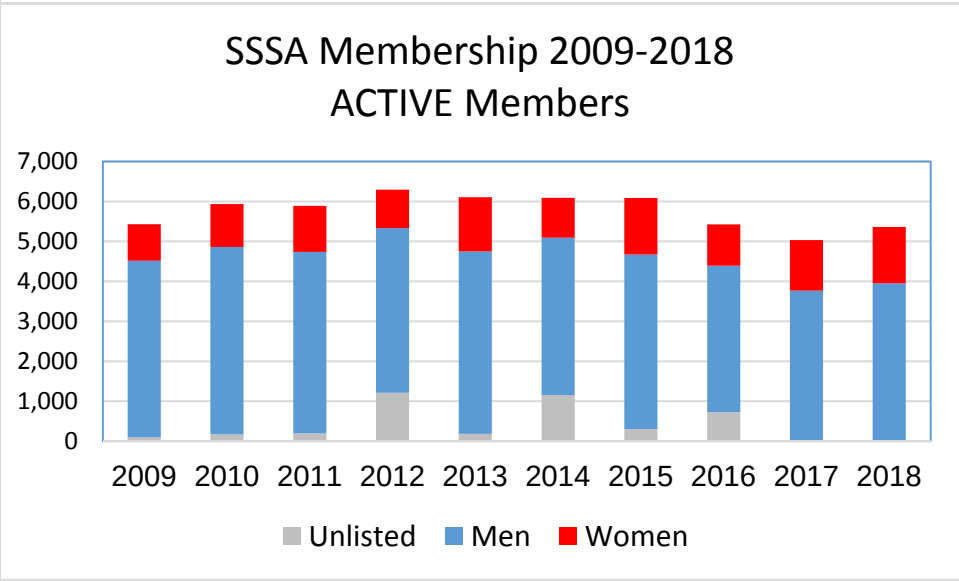




The gender distribution of the 2017 members with PhD degrees (40 % of total membership) shows that women with PhDs are underrepresented in our membership relative to the national average for science and engineering (NSF), except for the most recent PhD cohorts (2014-2018).
The discrepancy between the average proportion of women PhD holders at the national level (NSF) and within SSSA is especially high among more established, senior PhD holding members. Gender distribution is on target for younger professionals.

Gender distribution of SSSA Membership from 2009 to 2018

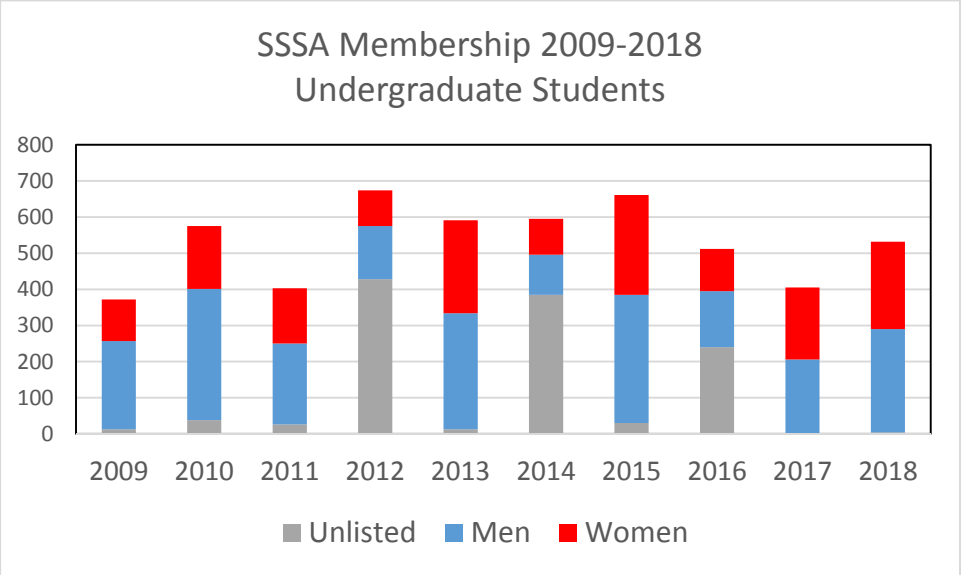


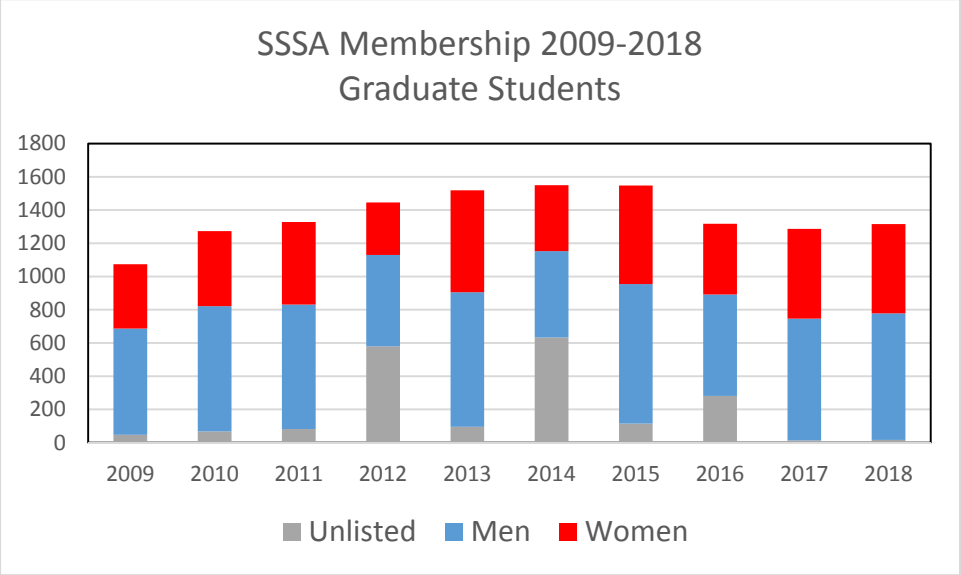


Figures represent data for all categories of membership combined (student, emeritus, active, graduate student) and for active and student membership categories separately.

Total Membership of SSSA has been stagnating. It reached a maximum of ~ 6,700 between 2012 and 2015, but declined to a slightly lower membership within the last three years. This pattern holds for both active members and student membership categories.

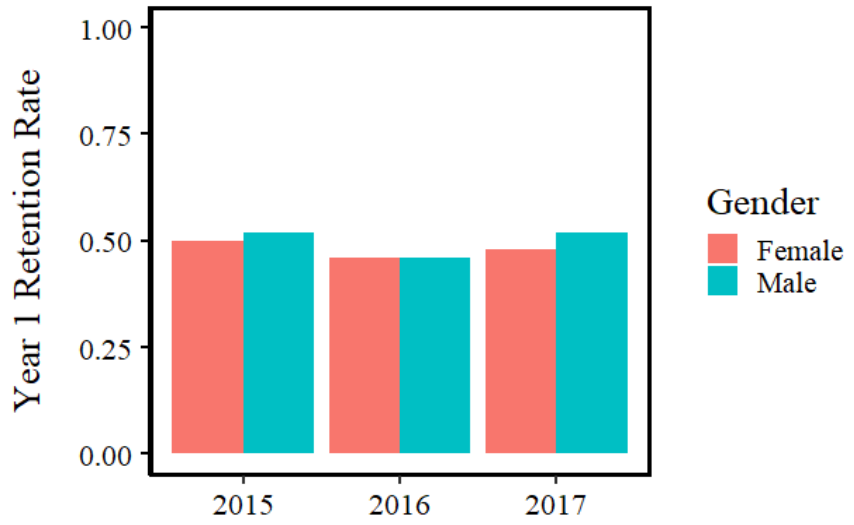
However, the total number of women members steadily increased over time in ***all*** categories [total (+43%), active (+54%), undergraduate students (+110%) and graduate students (+39%)].
By comparison, active membership for men has declined by 11% during that same period; and the number of student members who are men has increased at a slower rate than women (growth rate for men in undergraduate student category, +17%; and for graduate students, +19%).
Student membership represents the largest growth area for SSSA over the last 10 years, especially for women.

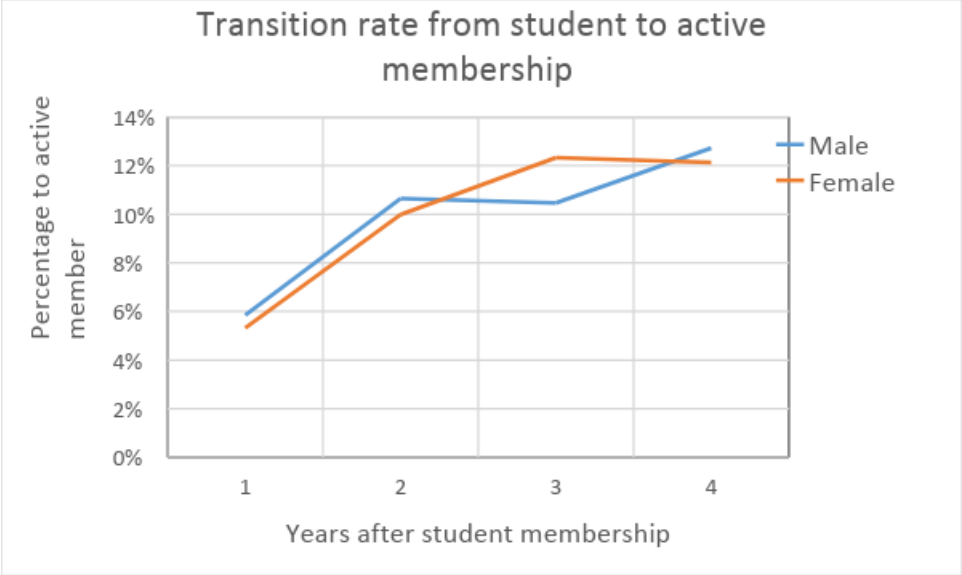




WOMEN	2009		2018		2009-2018
	#	% of total	#	% of total	relative increase
All categories	1185	20%	1697	29%	43%
Active	914	17%	1407	26%	54%
Grad students	387	36%	538	41%	39%
Undergrads	115	31%	242	45%	110%

2. STUDENT MEMBER RETENTION BY GENDER AND TRANSITION FROM STUDENT TO ACTIVE MEMBER STATUS





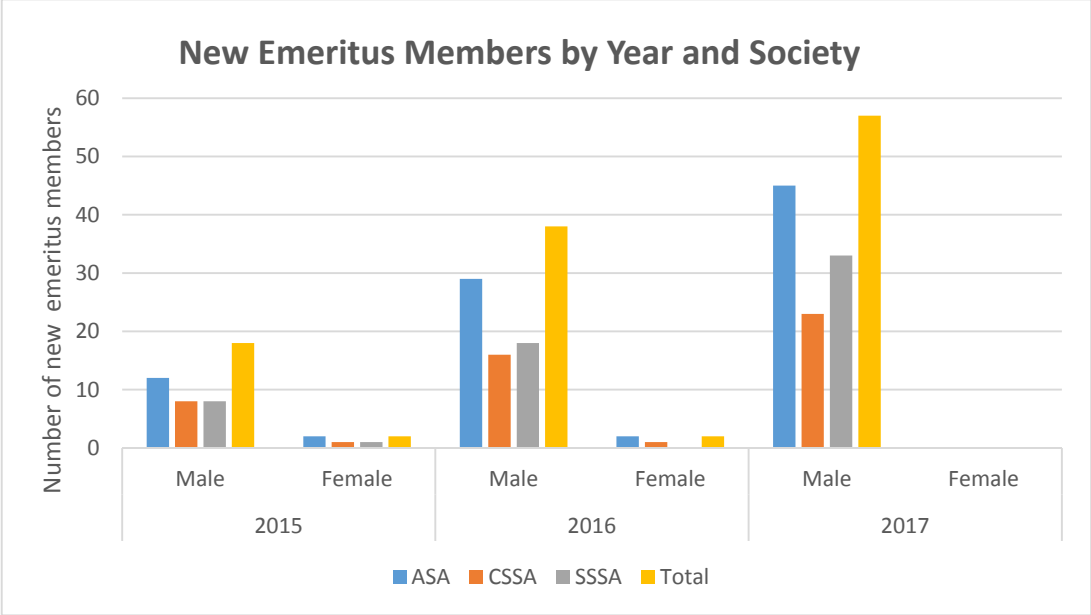
While student membership significantly increased, there is low retention and limited transition to active membership among the student members.

Around half of the student members do not renew their membership the following year (2014 to 2015, 49%; 2015 to 2016, 54%; 2016 to 2017, 50%) with little gender differences in one-year attrition rate.

The overall transition rate from student membership to active membership is low (<10%); 4-6% of students transition to active membership after 1 year; 11% have become active members after 2 years, 10-12% after 3 years, and 12% after 4 years. There are few discernible gender differences in this pattern.

3. RETENTION /ATTRITION OF RETIREES AND NEW EMERITI MEMBERS

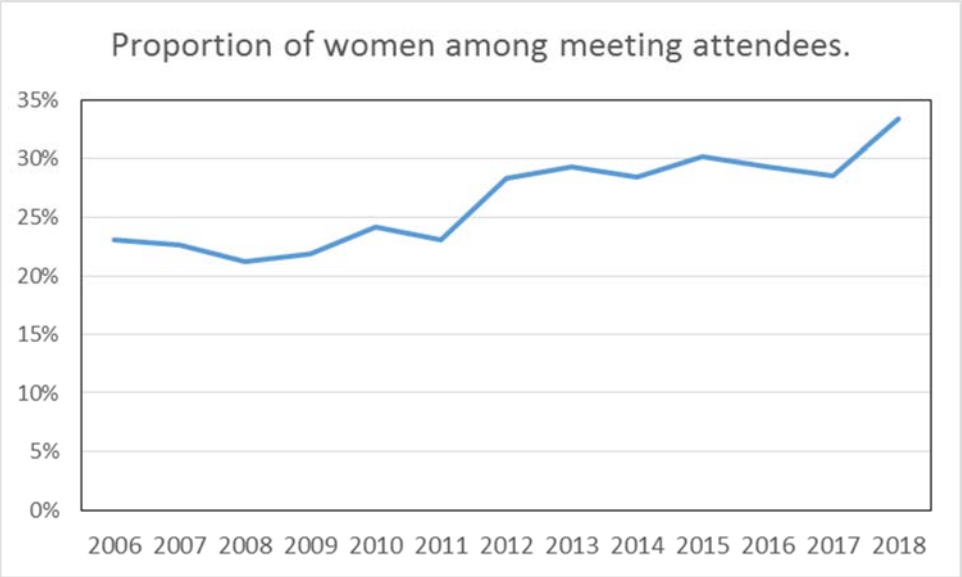
This graph represents "New" Emeritus members for the given year grouped by society. Emeritus members were Active members in the previous year.

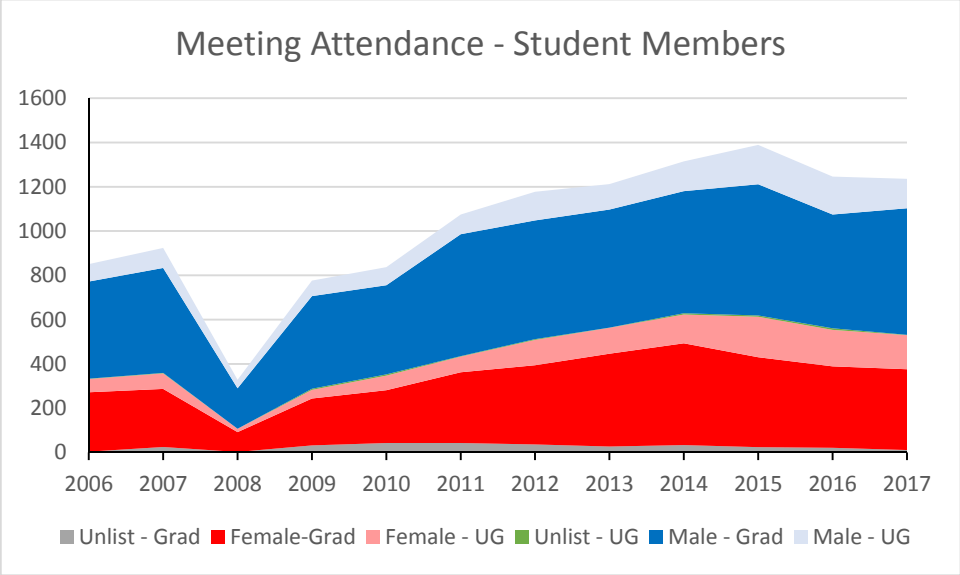


To address the question what proportion of membership is retained post-retirement, and whether gender differences exist in these demographics, we tracked new emeritus members as a proxy. However, this represents and incomplete picture as it only tracks those members who switch to Emeritus status upon retirement. Indeed, many retain Active member status upon retiring.

Very few women transition to emeritus status, and for men less than 1% of the previous year's Active membership transitions to Emeritus membership (0.2% in 2015; 0.4% in 2016 and 0.9% in 2017).

4. MEETING ATTENDANCE



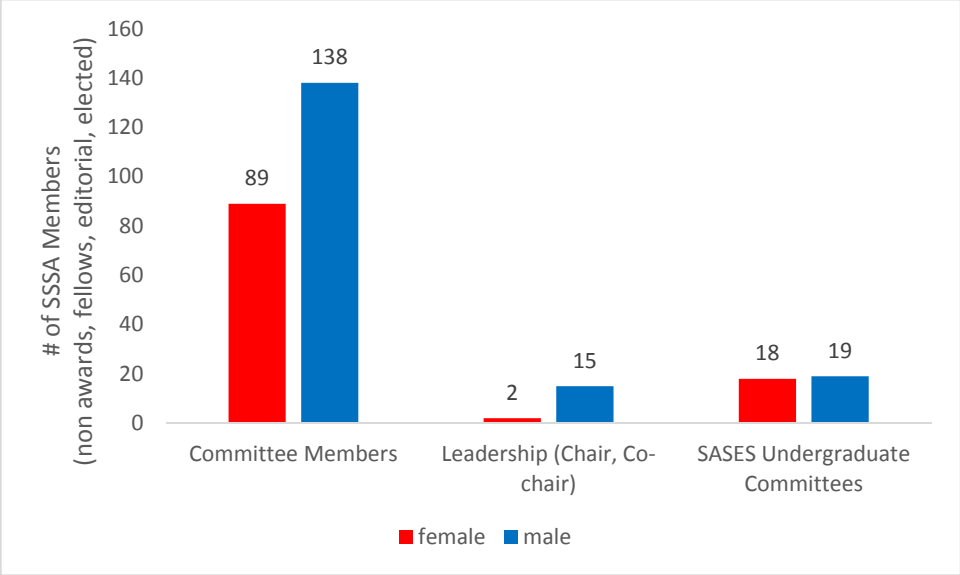


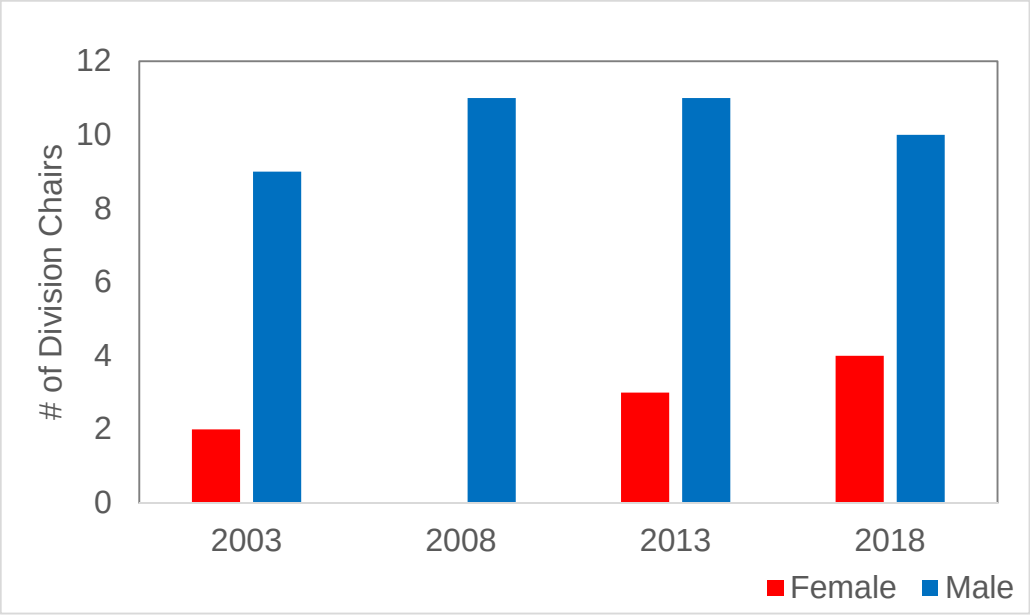
Relative meeting attendance by women has increased from 2006 to 2018, likely reflecting changes in membership demographics over time. The percentage of women attending SSSA meetings in 2018 was around 30%.

Around 39% of the graduate student attendees and 53% of the undergraduate student attendees are women, closely reflecting demographics of student members (42% of graduate student and 51% of undergraduate student members are women).
This indicate that students (and women) are participating in the discipline, not only through membership in SSSA, but also as participants in and presenters at the Annual Meetings.

5. GOVERNANCE – SSSA COMMITTEE COMPOSITION & LEADERSHIP

NOTE: Gender Composition of committees does NOT include awards, fellows, editorial and elected positions; for ACS committees, only the SSSA appointments are included in these data.





Approximately 40% of the SSSA standing committees are composed of women, suggesting that women participate in society service at higher rates than their membership representation (~29%).

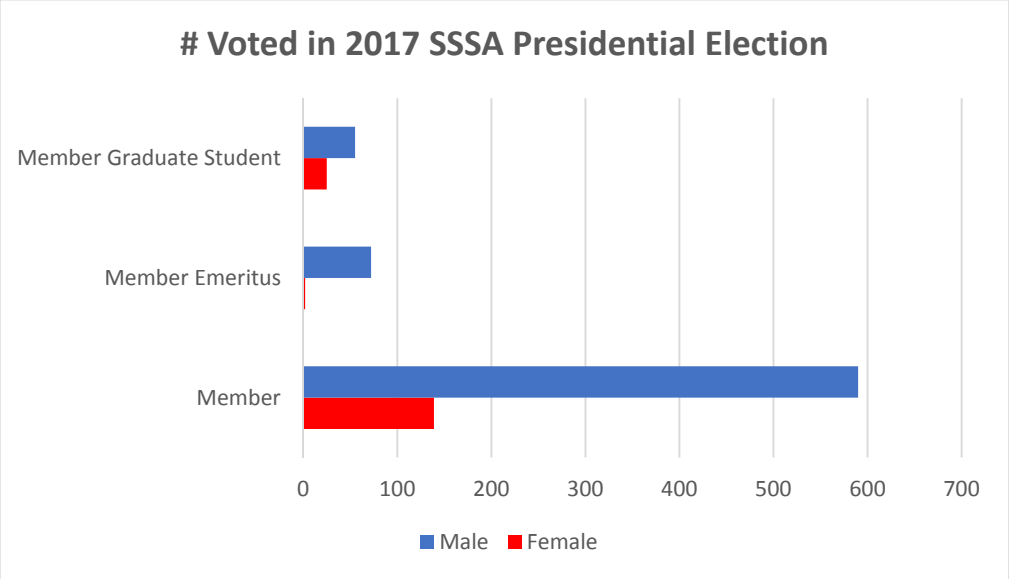
A lower percentage of women are members of committees that bestow honors or recognition. In 2018, 3 out of 13 (23%) members of the Fellows Selection Committee and 29 out of 88 members (32%) of other Award Committees are women.

The relative proportion of division chairs who are women has increased over the years from 18% in 2003 to 21% in 2013 and 29% in 2018. This closely reflects the gender composition of the Active membership (22% in 2013 and 29% in 2018).

Women remain underrepresented in upper leadership of SSSA. Notably, only two SSSA presidents have been women in 2005 and 2015, respectively.

6. VOTING RECORD

Primarily Active members participated in SSSA governance by voting in leadership elections



Overall, 1 out of 5 members (19%) voted in the 2017 SSSA Elections, with women voting at slightly lower rates than men (16% of women vs 21% of men who are SSSA members).
Voting was particularly low among our graduate student members (<10%).
There is no evidence of strong gender differences in voting participation in 2017.

Percentage voting in 2017	Women	Men	Total
Member	16%	21%	19%
Member Emeritus	40%	26%	26%
Member Graduate Student	4%	7%	6%
Total	12%	18%	16%

Recognition

1. COMMITTEE MEMBERSHIP AND LEADERSHIP

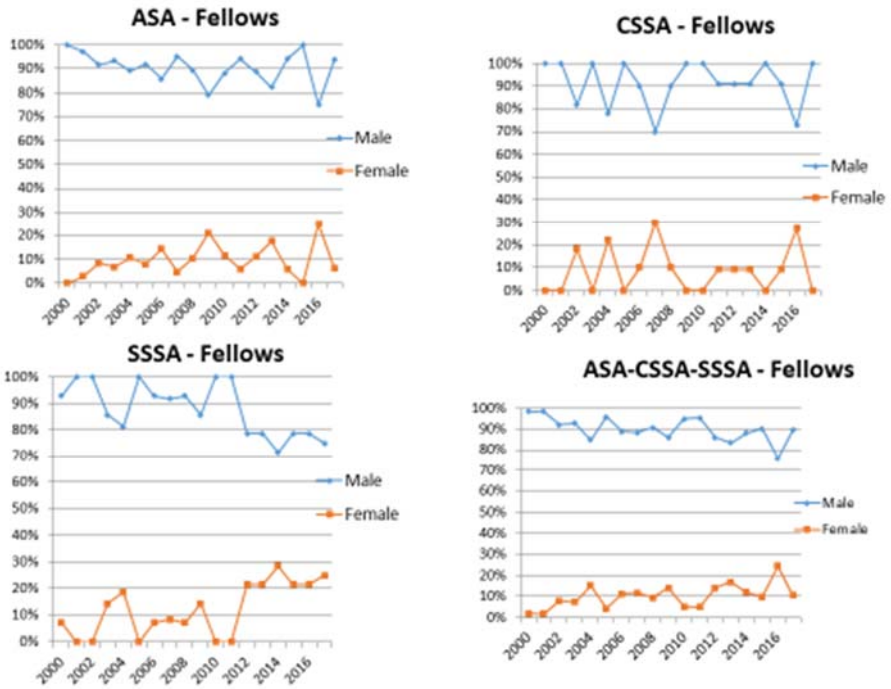
As established by the Representation subcommittee, overall 29% of the SSSA membership are women. An analysis of the 2018 composition of the leadership revealed that 39% of SSSA Committee Members were women, and women held 12% of the SSSA Committee Chairs. Thus, women are well represented as members on the various SSSA Committees, but less so in leadership positions. The lower number of women Committee Chairs may be partially due to the fact that the demographics show the greatest dominance of women at the student level (45-50%) vs active members (23% women). Nevertheless, attention should be paid to improving the representation of women as members and Chairs of SSSA Committees. In regards to Award Committees, women make up 23% of the Fellows Award Committee and 32% of other SSSA Awards Committees. Thus, representation of women on Awards Committees is in line with SSSA membership numbers. Women constitute 27% of Invited Speakers at symposia, named lecturers and keynote speakers. Here again, the representation of women is appropriate with the gender distribution of the active membership.

In regards to other leaderships positions, representation of women on the SSSA Board of Directors is 27%, which is consistent with the percentage women in the membership. However, currently the Executive Committee, which consists of the SSSA Past President, President, and Incoming President, is entirely comprised of men. Throughout the history of the SSSA (1937-2018), 82 individuals have been elected President, but only 2 have been women. In the years 2000-2018 women made up 21% of the candidates for President. Only 25% of these women candidates were elected. However, 57% of the 30 men were elected. Currently, 2 women are on the ballot for Incoming President-Elect, thereby ensuring that SSSA will have another woman President in 2020.

Additional important leadership positions are the Division Chairs. In this area, steady progress has been made. In 2003, 18% of the Division Chairs were women. The year 2008 showed a drop to 0% of Division Chairs who were women. This was likely an anomaly because after that, a steady increase was observed, with 21% women Division Chairs in 2013 and 29% women Division Chairs in 2018. Thus, the current status would indicate appropriate representation based on the gender composition of the membership.

Representation of women on the Soil Science Society of America Journal (SSSAJ) Editorial Board currently has 20% women among Associate Editors, 25% among Technical Editors, while the Editor is a woman. A partial explanation for the fact that the representation of women is lower than the percentage of women among the SSSA membership can be partially explained by the fact that Editors are usually chosen based on experience and years in service post-PhD. The fact that the Editor is currently a woman, is most likely an anomaly.

2. RECOGNITION AS FELLOWS



The previous graph shows the percentage of men and women who become Fellows in ASA, CSSA, and SSSA separately and combined among the three societies (CSA). Especially for SSSA, there has been a pronounced upswing since 2012 in the percentage Fellows who are women. The numbers have remained above 20% since then. This is in line with the demographics and the seniority of our active members.

SSSA Fellows Success Rates

Year	Success Rate Females (%)	Success Rate Males (%)	Success Rate Overall (%)
2018	20	30	28
2017	50	24	27
2016	60	29	33
2015	67	23	28
2014	57	32	37
2013	38	31	32
2012	38	23	25
2011	0	29	28
2010	0	27	25
2009	67	26	28
Average	39.5%	27.2%	29.1%

SSSA Fellow nomination records were retrieved by Headquarters for the period 2009-2018, and from those, success rates were calculated by dividing the number of Fellow recipients by the sum of the total nominees, overall and by gender. During that time the success rate for women for SSSA Fellow Awards was very good. The success rate of women was greater than that of men in 2009 and again in 2012-2017. It was only in the years 2010, 2011, and 2018 that the success rate of women was lower than the success rate of men. These results would indicate that SSSA recognizes research excellence in stature by bestowing the Fellow Award in an equitable manner to both women and men, but that it is critical to continue to include both men and women as nominees.

The question arose about the role of gender of the nominator, specifically whether nominations by men were more successful than nominations by women? Calculations indicated that Fellow nominations from women nominators were more successful in all of the years 2009-2018. Thus, the likelihood of a successful Fellow nomination is not dependent on the gender of the nominator.

Another question is whether women receive Fellow recognition at a later point in their careers then men? The Fellow recipients were grouped into various time intervals post-PhD, see Table below. The most significant benchmarks to focus on are the percentages who obtained their Fellow Awards at ≤ 20 years and ≤ 25 years. For both time frames, 46% of women received their Fellow Awards within 20 years as opposed to 41% of male Fellow recipients, while 71% of women received their Fellow Awards within 25 years as opposed to 63% of male Fellow recipients. Overall, women who are Fellow Award recipients, received this Award at an earlier stage in their careers than men, as measured by years post-PhD. Along with the prior table on Fellows Success Rates, this result would indicate that the Fellows are allocated in an equitable manner.

SSSA Fellow Recipients Post-PhD

Years Post PhD	% of Total Females	% of Total Males	% of Total Overall
11-15	8.3	9.0	8.9
16-20	38	32	33
21-25	25	23	23
26-30	21	23	22
31-38	4.2	14	12
≤ 20	46	41	41
≤ 25	71	63	64
≤ 30	92	86	87
≤ 38	96	99	99

3. RECOGNITION THROUGH AWARDS

In contrast to the Fellows, women were noticeably underrepresented among SSSA Award winners, with only 6% of all SSSA Awards bestowed since 2000 going to women. Most of these Awards have been in recognition of mentoring and/or educational activities, and only 4 Awards that specifically recognize scientific achievement have gone to women. (Truog Soil Science Outstanding Dissertation Award in 2008 and 2016; Jackson Soil Chemistry Award in 2007; Kirkham Soil Physics Award in 2015). Nomination records were retrieved by Headquarters for the period 2009-2018, and from those, success rates for these SSSA Award nominations were calculated by dividing the number of award recipients by the sum of the total nominees, overall and by gender. The calculations show that the success rate for women for these SSSA Awards is less than half the success rate for men who are nominated. Overall, this analysis suggests that that the low number of women receiving SSSA awards largely originates from low nomination rates in addition to lower success rates once nominated. This is clearly an area where additional efforts are needed.

SSSA Awards Success Rates

Year	Success Rate Females (%)	Success Rate Males (%)	Success Rate Overall (%)
2018	16	19	18
2017	12	24	20
2016	17	27	24
2015	9	29	22
2014	8	28	22
2013	15	25	21
2012	14	31	28
2011	7	35	27
2010	13	40	35
2009	0	26	23
Average	11.1%	28.5%	23.9%

As to whether gender of nominator affected the outcome of Awards nomination and success, data for the years 2009-2018 indicated that Award nominations from men were more successful in 6 of those years and Award nominations from women were more successful in 4 of those years. Thus, if there is a penalty for being nominated by a woman, it is slight.

4. RECOGNITION THROUGH EDITORSHIP

Appointment as Associate Editor is considered a sign of scientific recognition. To address the question as to whether women are appointed to serve as Associate Editors for SSSAJ at a later point in their careers than men. Associate Editors were grouped into various cohorts post-PhD when their appointment commenced, see Table below.

The most significant benchmarks to focus on are the percentages who obtained their Editorial appointments at ≤ 15 years. For these time frames, women were appointed at an earlier stage in their careers than men, as measured by years post-PhD. Appointment to an Associate Editor position is often contingent on having established a reputation as a conscientious and reliable reviewer. Perhaps, manuscript review is a task that is taken more seriously and given higher priority by a greater percentage of women soil scientists. However, this is only a conjecture. Additionally, the selection process for Associate Editors is based on the recommendation of Technical Editors, who are in turn recommended by the prior Technical Editors. Thus, it is important for scientists, whether men or women, to establish a presence in the review process as a stepping-stone to later appointment as Associate Editor.

SSSAJ Associate Editor Appointment Post-PhD

Years Post PhD	% of Total Females	% of Total Males
1-5	8.3	6.4
6-10	25	17
11-15	29	24
16-20	15	20
21-25	17	13
26-30	0	4.5
31-42	0	5.0

Representation and Recognition Task Force findings and recommendations to date:

1. The representation of women among SSSA members, and their participation in SSSA activities and governance has shown a steady increase over time, in line with the growing numbers of women scientists nationwide. Growth rates among student members is especially notable and encouraging for the future of SSSA. SSSA should focus on sustaining these positive trends and encouraging women to more actively participate in governance and seek leadership positions.

2. Focus of the SSSA should be on stemming the attrition of student members and solidifying their affiliation with SSSA. Students represent almost one third of the SSSA membership, and are active participants in the Annual Meetings. However few transition into active membership or participate in governance of SSSA (e.g., through voting). This needs further exploration in collaboration with the SSSA Membership Task Force.

3. Based on the relative success rates, women members generally have the credentials to make them eligible for leadership positions and recognition. The underrepresentation of women in some leadership positions and as Award recipients is most likely due to low nomination rates. Hence, the SSSA should make a concerted effort to increase the proportion of women among the nominees by more proactively seeking out potential candidates.

4. The poor representation of women among SSSA Award winners, other than Fellow, needs due attention. This should be addressed by more widespread publicity about the importance of these rewards, and more effort should be placed on involving the membership in the nomination process. It would appear that the membership is well aware of the scientific distinction of being named SSSA Fellow, but other Awards may be somewhat neglected. Additionally, the pool of nominations for these awards has traditionally been much smaller than the pool of nominations for Fellow. SSSA might need to look into streamlining the nomination procedures to increase overall participation of members as nominators, nominees and selection committee members. SSSA should evaluate the burden of putting port-folios together (by nominators/nominees) and what resources are available to facilitate this process.

5. Division involvement is key to future appointment in SSSA leadership positions. Therefore, SSSA should continue to encourage the Divisions to provide Best Paper awards and Early Career awards to encourage the participation of graduate students and early career members in the divisions. Additionally, presenting the Division-level awards at the Division Business Meetings might result in early career members (and student members) becoming more familiar with the working of SSSA and actively participating in their Divisions. The candidates for Division Chair, Board Representatives, and President are chosen at the Business Meetings from floor nominations as well as nominations from the

Division list servers. It is vital for young scientists to establish a presence to facilitate their consideration for leadership positions such as Division Chair and Associate Editor. These in turn may lead to nomination for SSSA President. SSSA should focus on encouraging student and early career members to more actively participate in governance and seek leadership positions.

Additional Recommendations

6. Expand SSSA mentoring programs at all career levels. These should be widely available and publicized to all members. However, special emphasis should be placed on reaching out to women and other under-represented groups. This could include workshops focusing on preparing nomination port-folios for awards and other recognition. However, mentoring may prove insufficient if not accompanied by active sponsorship (i.e., routinely and sustainably create opportunities for participation, extend invitations keynote speakers, nominate for leadership positions and awards).

7. Focus in SSSA should not only be on creating diversity in membership, but also on creating a climate of inclusion and participation by all at all levels of society activities.

8. The American Geophysical Union has already developed a Diversity and Inclusion Strategic Plan which contains many good ideas that AGU is considering and implementing. These recommendations should be evaluated to see which ones are also appropriate for recommendation and implementation by SSSA.

9. The Task Force sees the need to continue into at least another year so that Inclusion and Diversity can be added. Conclusions from the Taskforce need to be translated into changes in policy and procedures. This includes, but is not limited to, greater transparency in eligibility criteria for members and chairs of committees and honors, and in the nomination and decision-making processes, for example by making that information easily accessible on the SSSA website. Furthermore, gender equity in outcomes can be fostered through greater standardization and formalization of procedures, criteria, and responsibilities that underlie decision making in the nomination and selection of members to committees, boards and for honors and awards. Especially mechanisms to populate important committees and their leadership should receive greater scrutiny.