

The **SEDIMENTARY** Record

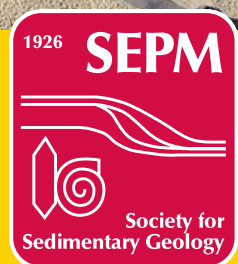
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INSIDE: "ENRICHING LIVES WITHIN SEDIMENTARY GEOLOGY":
ACTIONABLE RECOMMENDATIONS FOR MAKING SEPM A DIVERSE,
EQUITABLE AND INCLUSIVE SOCIETY FOR ALL SEDIMENTARY GEOLOGISTS
PLUS: SGD NEWS, PRESIDENT'S COMMENTS, RESULTS OF THE RECENT SEPM
COMMUNITY SURVEY



SEPM BOOKSTORE

Special Publication #112

Carbonate Pore Systems: New Developments and Case Studies

Edited by: Donald F. McNeil, Paul (Mitch) Harris, Eugene C. Rankey, and Jean C.C. Hsieh

SEPM (Society for Sedimentary Geology) and the CSPG (Canadian Society of Petroleum Geologists) convened the Mountjoy II Carbonate Research Conference in Austin, Texas, from June 25-29, 2017. The conference, honoring Eric Mountjoy and his numerous contributions as a geologist and graduate student supervisor, was attended by ~140 professors, students, and industry geologists and engineers from around the world. The theme for the conference and now SEPM Special Publication 112—Carbonate Pore Systems—follows the general concept to have topics that are relevant to the petroleum industry and therefore blend the best of cutting-edge geoscience research with industry needs by offering a major publication featuring studies with significant new results in the analysis of carbonate pore systems. This new SEPM-CSPG Special Publication is timely given the renewed interest in carbonate reservoirs, including those in carbonate mudrock deposits, as well as the many new technical advances and approaches that are being utilized in diagenetic studies.

Catalog #40112 • Hardcover POD • List Price: \$110.00 • SEPM Member Price: \$66.00



Field Trip Guidebook #15

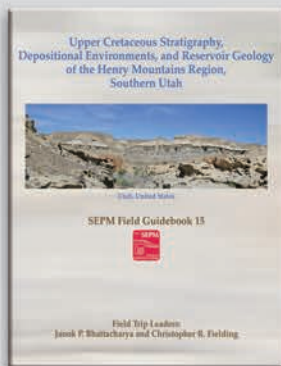
Upper Cretaceous Stratigraphy, Depositional Environments, and Reservoir Geology of the Henry Mountains Region, Southern Utah

By: Janok P. Bhattacharya and Christopher R. Fielding

This field guide describes a geological field excursion focusing on world-class exposures of the Upper Cretaceous succession in the Henry Mountains Syncline of southern Utah. The area is easily accessible via paved and some unpaved roads, and is a little over three hours' drive by road from Salt Lake City. It is adjacent to the world-renowned Capitol Reef National Park and other scenic attractions. There are numerous options for accommodation and eating out in Torrey, UT, which caters to the tourist trade. The stratigraphy comprises the Dakota Formation, Mancos Shale (Tununk Shale, Ferron Sandstone, Blue Gate Shale), Mule Canyon Sandstone, Masuk Formation, and Tarantula Mesa Sandstone, and collectively is equivalent to the well-known succession of the Book Cliffs, 100 km to the north. The succession is spectacularly exposed in three dimensions at scales ranging up to that of entire depositional systems, allowing investigation of stratal stacking patterns at all levels. The guide focuses primarily on the Turonian Ferron Sandstone, which has been extensively investigated by both trip leaders and their students over the past 12 years.

Among the geological features exposed in the Ferron Sandstone are incised valley fills, distributary channel deposits, and growth faulted delta front deposits. Stratal stacking patterns are exposed in both depositional dip-parallel and strike-parallel transects, and have been interpreted to record sediment accumulation under strong forcing from falling sea-level. The Dakota Formation preserves coastal fluvial, estuarine, and marine shoreface deposits. The Tununk and Blue Gate Shales are principally offshore shelf deposits with some mass flow deposits and shelf clinoforms. The Mule Canyon Sandstone comprises alternating coastal fluvial and shoreface deposits similar to the coeval Blackhawk Formation, while the Masuk Formation is a stack of coastal fluvial deposits with a transgressive coal zone near the base of the formation.

Catalog #80015 • Softcover POD • SEPM Member Price: \$42.00



Field Trip Guidebook #16

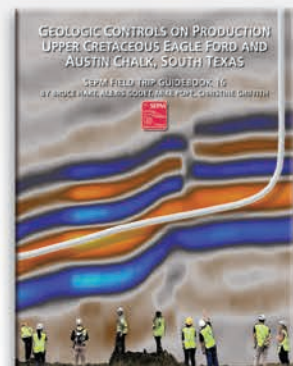
Geologic Controls on Production: Upper Cretaceous Eagle Ford and Austin Chalk, South Texas

By: Bruce S. Hart, Alexis Godet, Michael C. Pope, and Christine Griffith

SEPM Field Trip Guidebook 16 is perhaps best thought of as an exercise in applied stratigraphy and structural geology. The technical goal is to make inter-disciplinary links, to demonstrate how stratigraphic and structural features affect exploration and development activities for unconventional hydrocarbon reservoirs.

The outcrops described in this guidebook should help to stimulate discussion on a series of interrelated topics such as: lithology, stratigraphic controls on hydrocarbons, horizontal drilling target, and geosteering challenges.

Catalog #80016 • Softcover POD • SEPM Member Price: \$48.00



NEW BOOKS COMING SOON!

Late Paleozoic and Early Mesozoic Tectonostratigraphy and Biostratigraphy of Western Pangea

Edited by: Charles M. Henderson, Scott M. Ritter, and Walter S. Snyder

Cenozoic Isolated Carbonate Platforms—Focus Southeast Asia

Edited by: Eugene C. Rankey and Michael C. Pöppelreiter

As papers are finalized, they will be officially published to the SEPM Online First page. SEPM Members can view papers for free, pay-per-download is also available.

<https://sepm.org/Online-First>



Cover image: Students from Denison University, University of New Mexico-Gallup, Georgia Southern University and University of New Orleans work together to trench and sample flood deposits in the Bonnet Carré Spillway, Louisiana, on a field campaign designed to neutralize the social and economic barriers that stifle diversity in geosciences. (November '19)

Image credit: Dr. Anjali M. Fernandes

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“Enriching Lives within Sedimentary Geology”: Actionable Recommendations for Making SEPM a Diverse, Equitable and Inclusive Society for All Sedimentary Geologists

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ABSTRACT

Innovative science benefits from diversity of thought and influence at all waypoints along the scientific journey, from early education to career-length contributions in research and mentorship. Scientific societies, like the Society for Sedimentary Geology (SEPM), steward their innovators and the direction of the science, thereby defining the societal impact and evolution of a discipline. They are uniquely positioned to promote the representation and success of all scientists, including those from minoritized populations, through proactive advocacy, and inclusive mentorship, awards, and leadership. We introspectively review available records of SEPM membership, leadership, awardees, and editorial boards to identify areas for growth and begin a dialogue about how the society and its members can work together to better reflect our community. In the last decade, SEPM has seen a decline in membership, while representation and recognition of scientists from minoritized groups has remained low. Awards and honors have overwhelmingly gone to men, even in the last ten years, and very few women or people of color are in leadership roles. SEPM has recently taken positive steps towards becoming more inclusive (e.g., the Code of Professional Conduct); however, much more work is needed. We provide recommendations for swift actions that SEPM and its members should undertake for the society to become a diverse, inclusive, and equitable environment where all scientists thrive. The systemic changes needed will take continuous effort, which *must be shared by all of us*, to build an enduring legacy that we can be proud of.

INTRODUCTION

The mission of the Society for Sedimentary Geology (SEPM) is to “enrich the lives of professionals and students within sedimentary geology.” Amidst the swell of voices speaking out against discrimination in Science, Technology, Engineering and Mathematics (STEM), and the resultant loss of valuable, diverse talent at all career stages (Bernard & Cooperdock, 2018; Calma, 2020; Dutt, 2019; Goldberg, 2019; Marín-Spiotta et al., 2020; Nature Editorial, 2020; Nature Ecology and Evolution Editorial, 2020; Subbaraman, 2020), it is time for SEPM to assess whose lives the society is truly enriching. What is SEPM doing to increase diversity, equity and inclusion (DEI) in sedimentary geology? Do all scientists who share a love for the sedimentary record feel an *equal* sense of belonging within our scientific society? Are the achievements and contributions of all scientists, irrespective of their socio-economic class, disability status, sexual orientation, race, ethnicity, or gender (for example), being fairly recognized?

Scientists’ contributions are customarily measured by their record of publications, service, mentorship, and awards; likewise, a measure of a scientific society’s professional relevance lies in its record of scientists represented in publications, leadership, membership, and award history. We introspectively review a few key SEPM records to assess how current and past practices impact the scientists within sedimentary geoscience, and we identify areas for improvement. We appeal to our readers

to reflect upon the content of this work with open minds, to consider its implications for the careers of generations of scientists, past, present and future, and to think deeply and strategically about the future that we want for SEPM. It is essential for us to take a careful look at the records of our society; this introspection, while uncomfortable, reinforces the need for immediate and sustained action. We acknowledge the efforts of scientists who invested years or decades of service to SEPM in the past and emphasize that the content of this work is not intended as an indictment of particular individuals or groups. Instead, with this work, the authors call attention to the scientists whose careers have been harmed and are currently being harmed by inequity, and a lack of decisive action against it. To that end, we identify areas where growth or change is urgently needed. We call on SEPM and our colleagues to take on the burden required to change the status quo, as individuals and as a society.

We would ideally synthesize these records to include self-reported gender, racial, ethnic, LGBTQ+, disability, and other legally protected statuses; however, as is the case with a number of other scientific societies, this demographic data has never been collected (Rasmussen et al., 2019). Results reported below, assembled through personal knowledge, website information and personal pronouns used, are the authors' best approximation of demographic trends in SEPM. This approach is fundamentally flawed, as each person that is a part of this synthesis has been categorized according to the authors' perception, rather than their own self-reported identity (Rasmussen et al. 2019); *this risks the further disenfranchisement of individuals who are already marginalized.* For example, this

approach does not include persons with non-binary gender, biracial, ethnic, and intersectional identities (Blevins and Mullen 2015; Harris 2013; Quihuiz 2011; Rasmussen et al. 2019). The existing data used in this study serves only as a starting point to begin a dialogue, and to identify areas where change is needed. The data treatment herein *should not* be used as a template for further demographic research within the society (see detailed critiques in Rasmussen et al. 2019). We emphasize that SEPM and its members *must* prioritize the collection and tracking of anonymous, *self-reported* demographic information that encompasses the diversity of our community and of human society as a whole.

MEMBERSHIP

SEPM is experiencing decreasing membership (Fig. 1). It is unclear

what drives membership attrition, and additional data are needed to uncover the impetus behind the decline in SEPM professional memberships. Collected data are currently limited to gender (only binary options) and age, whereas data on race, ethnicity, LGBTQ+, and disability status has never been collected. Anonymous collection and transparent reporting of demographic information of the SEPM membership must be prioritized. The number of scientists from under-represented minoritized groups in STEM who are joining, remaining with, or leaving SEPM are currently unconstrained. Career stages of professional members, not currently reported through society records, could provide insight into membership trends.

Per the [membership registration portal](#) and the [society bylaws](#), to acquire voting membership, an

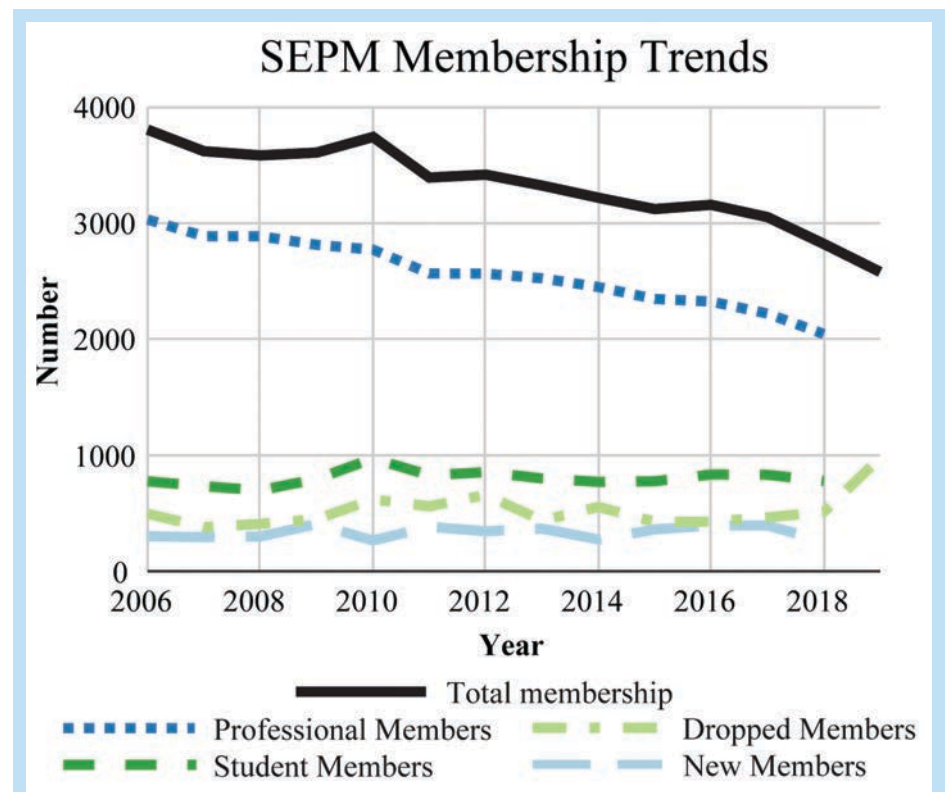


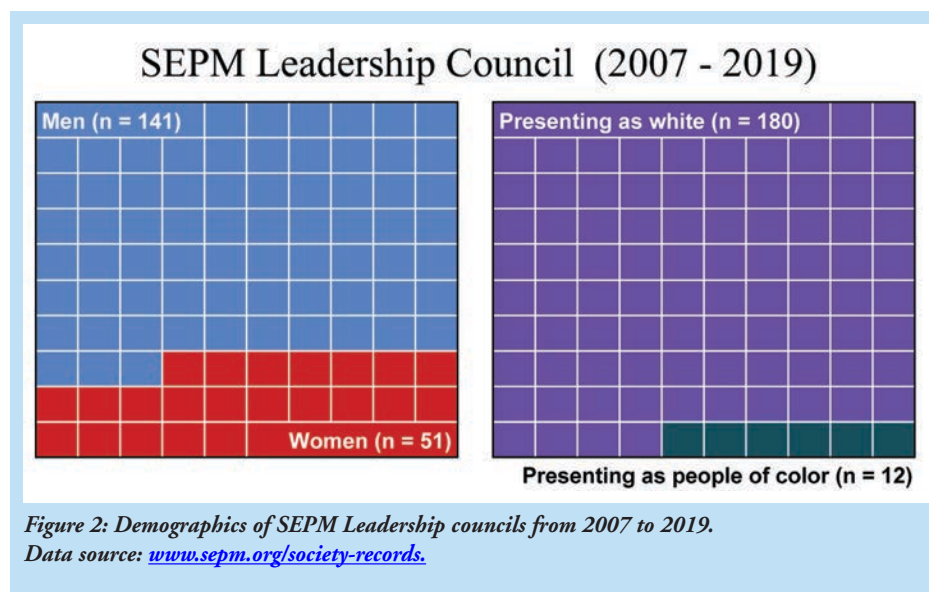
Figure 1: SEPM membership is decreasing, a trend primarily associated with declining professional membership. Dropped, new, and student memberships show a flat decadal trajectory; the number of dropped memberships remain consistently larger than new memberships. This suggests that SEPM is failing to recruit recent graduates at a rate matching dropped professional memberships. Data source: www.sepm.org/society-records.

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applicant must (1) provide two professional references, and (2) have 3 years of experience beyond their bachelors' degree. Dues for voting and non-voting members are the same; the difference lies in applicants' professional networks. To first-generation scholars, scientists from developing nations, scientists not affiliated with top-tier research schools and anyone without a large network of colleagues, the practice of requiring references can be a barrier to participation (Dutt et al., 2016; Madera et al., 2009; Ward et al., 2018). Scientists will be unlikely to invest in a society where they cannot influence decisions. By contrast, the American Geophysical Union, a thriving scientific society, opens voting to *all* members. Furthermore, membership dues for recent graduates and scientists at under-funded institutions could be substantially reduced from current rates or subsidized by donors. Proactive recruitment of students belonging to minoritized groups at SEPM booths at minority-focused conferences (e.g., the Society for Advancement of Chicanos/Hispanics and Native Americans in Science, or SACNAS) and partnerships with organizations like the Geoscience Alliance would help diversify membership.

LEADERSHIP

"Representation matters" across the sciences but especially in positions where decisions may impact communities (Powell, 2018). Per society records, 141 (73%) of 192 seats on the SEPM leadership council from 2007 to 2019 were occupied by men and 51 (27%) were occupied by women (Fig. 2); the ratio of men to women in different years ranged from 1.5 to 6. Councilors who presented as white held 180 (94%) of the council seats and 12 (6%) seats were held by members presenting as people of color;



to our knowledge, a seat on the council has rarely been held by LGBTQ+ or Latinx scientists and has never been held by an Indigenous or Black scientist. We recommend that scientists with diverse identities are proactively recruited into SEPM leadership positions and that leadership opportunities for both students and professionals are expanded. Ensuring that all leadership positions (e.g., councils, committees, editorial boards) are framed in the context of diversity, equity, and inclusion is essential for the future of this society. All leadership teams *must* be educated about issues that limit equity and demonstrate a commitment to removing bias from decision-making that affects SEPM, its members and the larger community of sedimentary geologists (Bumpus, 2020). All humans have biases; the only way to eliminate the effects of these biases is to ensure that people with a range of perspectives are involved in all decision-making processes (Miriti et al., 2020).

SOCIETY PUBLICATIONS

Diversity promotes innovation from hypothesis through peer review and final publication (Hofstra et al., 2020; Powell, 2018). Personal identity impacts how we engage with our

science (Apple et al., 2014; Semken, 2005; Smythe et al., 2020; Unsworth et al., 2012); it impacts how we approach a problem, and what we value, study, and write (Núñez et al., 2020; Ward et al., 2018). It influences how we select reviewers (Ross, 2017), how we review (Kaatz et al., 2014; Sordi & Meireles, 2019), and ultimately what makes its way through to publication (Chawla, 2019; Pico et al., 2020). Diversity in the peer review and publishing process can help to eliminate bias (Fox & Paine, 2019).

SEPM's editorial teams are not diverse (Fig. 3). The team of 46 associate editors for the *Journal of Sedimentary Research* currently includes 39 (85%) men and 7 (15%) women; of these, 41 (89%) associate editors present as white and 5 (11%) present as scientists of color. The PALAOS team of 55 associate editors includes 40 (73%) men and 15 (27%) women; 54 (98%) of the team present as white and 1 (2%) presents as a scientist of color. Of the 58 editors of 20 SEPM special publications from 2009 - 2019, 48 (83%) were men and 10 (17%) were women; 53 (91%) editors present as white, 2 (3%) present as scientists of color. SEPM must take aggressive steps to include diverse identities in its editorial

SEPM Editorial Boards

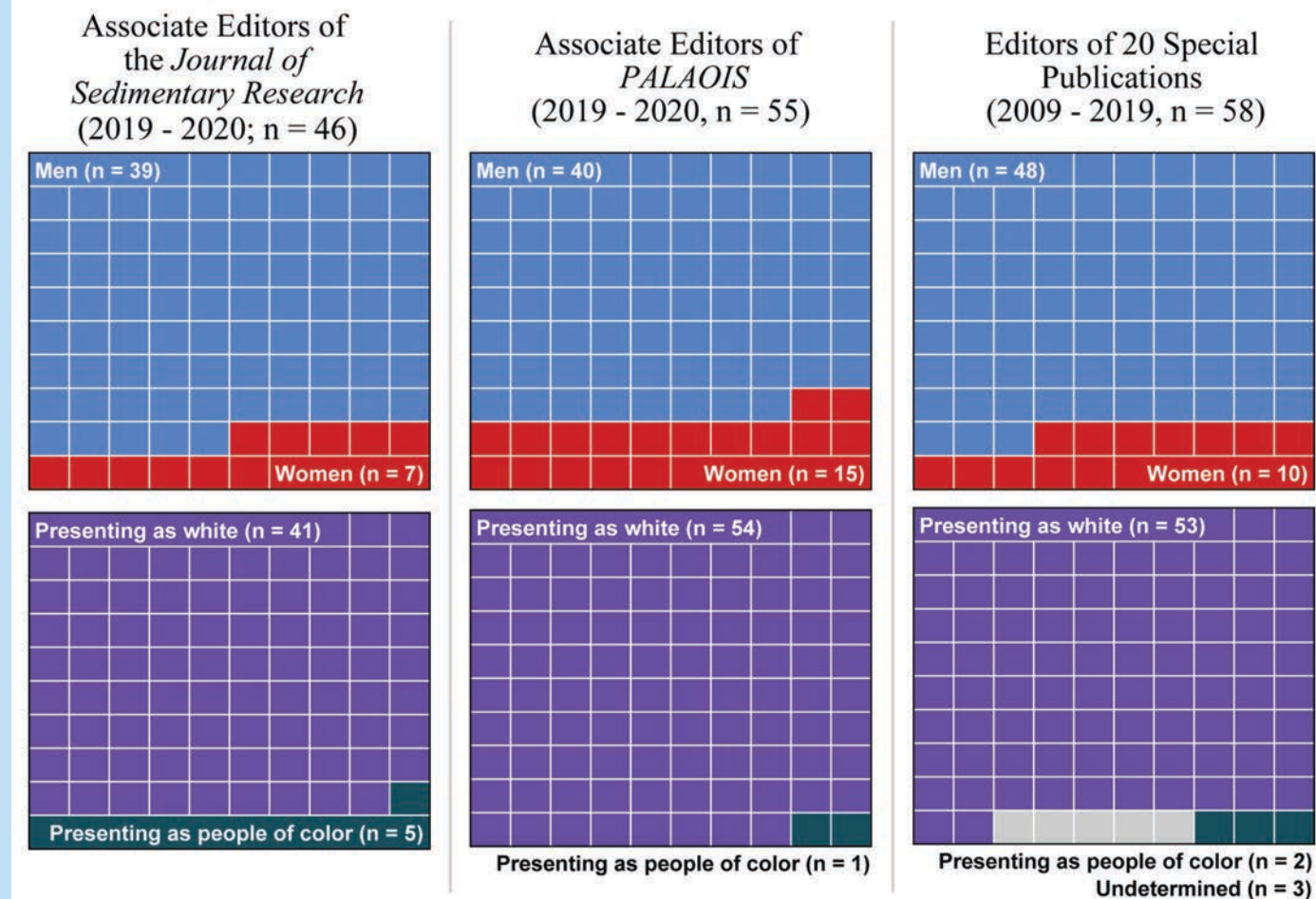


Figure 3: Recent demographics of editors on the two society journals, the *Journal of Sedimentary Research* (www.sepm.org/AE-Board) and *PALAIOIS* (<https://www.sepm.org/PALAIOS-Information>) in 2020, and SEPM Special Publications published between 2009 and 2019.

process to ensure equitable publication standards. Existing leadership must stay informed of and vigilant to sources of potential bias in editorial processes (Bumpus, 2020).

Double blind peer-review is a mechanism for eliminating bias, by reducing opportunities for nepotism (Cox & Montgomerie, 2019; Sordi & Meireles, 2019) and increasing submissions from female first authors (Budden et al., 2008; Pico et al., 2020). Tomkins et al. (2017) showed that single-blind reviewing, which is what SEPM currently offers, significantly advantaged papers by well-established authors relative to the same papers when reviewed double-blind. Alternatively, open reviewing

can eliminate potential bias, as the reviews are published alongside the manuscript (e.g., *Earth Surface Dynamics*).

Negative and fundamentally unhelpful reviews, lengthy review timelines, and rejections can create barriers to publishing. They slow the trajectory of early-career scientists, damp innovation, and can ultimately drive scholars out of STEM. We urge SEPM journals to consider prioritizing a mentoring approach over negative and unconstructive critique for papers that are first authored by students and early career scientists. Minimizing barriers to publishing is particularly important now, given the unequal impacts of the COVID-19 pandemic

on submissions by men and women (Times Higher Education, 2020; Myers et al., 2020).

AWARDS

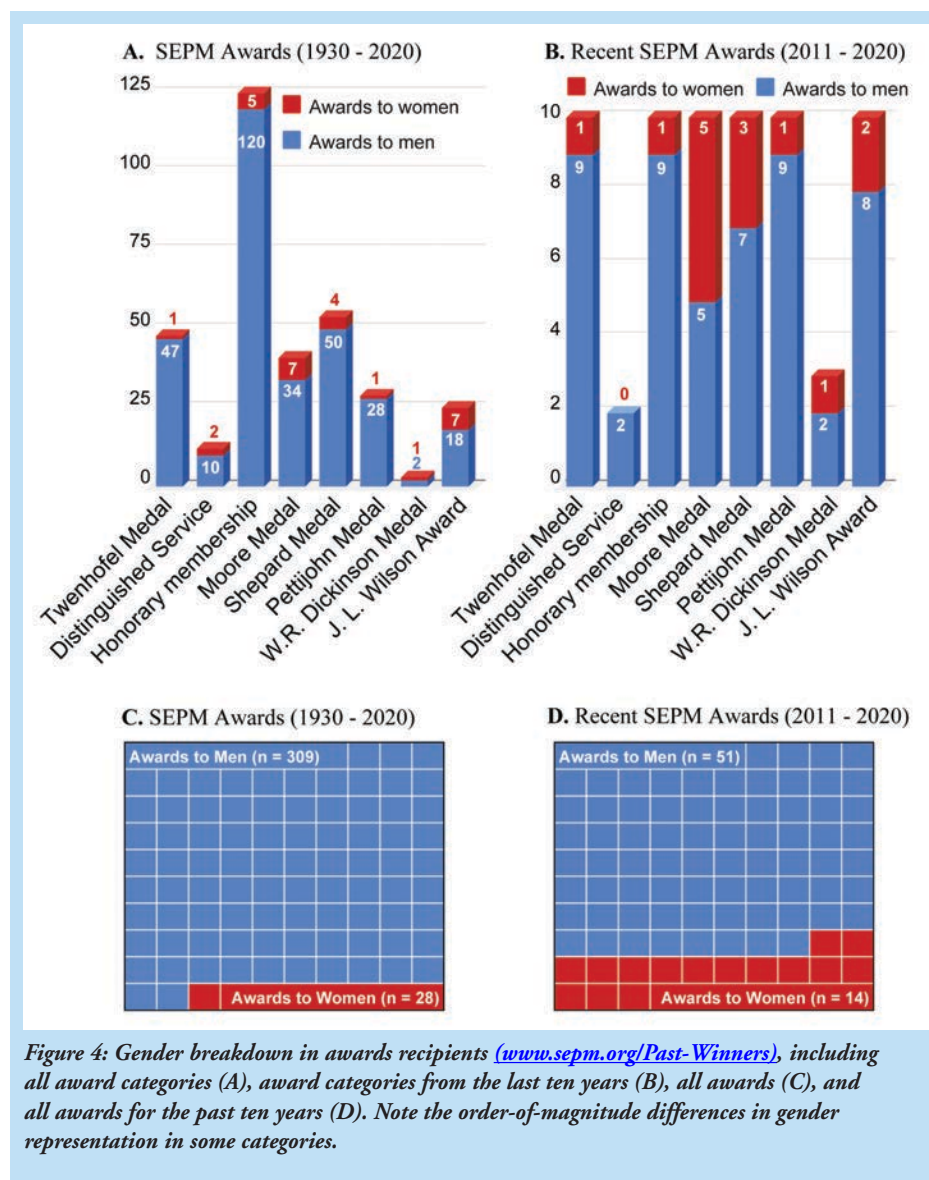
SEPM awards eight distinct honors annually; all named awards honor white, male scientists. Of 337 awards since 1930, 309 (92%) awards recognized men and 28 (8%) recognized women (Fig. 4A, C). Gender ratios of awards in the last decade (2011-2020) improved slightly (Fig. 4 B, D); of 65 awards, 51 (78%) went to men and 14 (22%) went to women. Half of all awards to women were in the last 10 years. The Moore Medal is the only award with equal gender representation in

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the last decade; only 2 of 10 James Lee Wilson Awards to young scientists went to women, even though this is the demographic where female professional scientists are best represented (Bernard & Cooperdock, 2018). This review is not exhaustive; we encourage our readers to review the [list of past award-winners](#) to form their own assessment of diversity.

SEPM's future, and that of sedimentary geology, will be dictated by how and if we choose to remove explicit/implicit bias from our definition and recognition of outstanding contributions to our community. Inspecting the sources of bias in these award outcomes is an essential first step. Fully recognizing the talent and contributions of members who are not white, and male is essential, if SEPM is to avoid becoming professionally irrelevant. Scientists' contributions to our discipline are not limited to their research but include committed mentoring, community service, and outreach; the required content of nomination and supporting letters should be changed to reflect that. Our awards nomination criteria ought to recognize the positive impacts made by individuals or teams on the field of sedimentary geology, especially from marginalized groups or scientists outside of the U.S.

Requiring gender, racial, and ethnic representation on awards committees is a good start, and including students from minoritized groups in committees could help relieve the service load on early- and mid-career minoritized scientists (Gewin, 2020). It is critical that we work together to ensure that minoritized scientists are nominated for awards (Hofstra et al., 2020). To bear out the value of a scientist's contributions as scholar *and* mentor, diversity among letter writers in terms of gender, race, ethnicity, and career-level should be viewed just



as significant as letter content, and nomination letters should include the demographics of nominees' mentees *and* mentees' post-graduate successes. SEPM has adopted the practice of requesting "Professional conduct self-disclosure forms" for all nominees, but more must be done to ensure the top candidates for awards have been above reproach in all aspects of their professional lives over their entire career. We recommend top nominees are vetted by cross-checking code of conduct reports with other societies, and by contacting Title IX offices of current and previous institutions or employers (Wadman, 2017; Bumpus, 2020).

Scientists at all career levels often treat junior colleagues with far less respect than they do their peers or senior scientists. Members of one or more marginalized group(s) (Charleston et al., 2014; Crenshaw, 1990; Doshi, 2020; Miriti et al., 2020; Muhs et al., 2012) are particularly vulnerable to bullying, harassment, discrimination, prejudice, and abuse (Geocognition, 2019). For example, the work-place experience of a female scientist of color might be drastically different from that of her white male or female colleagues (Abedalthagafi, 2018; Doshi 2020; Muhs et al., 2012; NASEM, 2018; Sharon & Cheney, 2020; Skachkova, 2007). It can

take scientists years to recover from bullying and to get their careers on track, if they do not choose to leave their field of study entirely (Goodboy et al., 2015; Martin et al., 2015; NASEM, 2018; Poole, 2016; Twale & De Luca, 2008). By implementing the measures outlined above, SEPM will set the highest standard of ethical professional conduct for its members and ensure that its most vulnerable members know their welfare and long-term success are valued as highly as the research contributions of senior colleagues.

CONFERENCES, WORKSHOPS, AND FIELD TRIPS

Positive conference experiences build community. Quality educational and social events for students are investments in the future of the discipline. Friendships forged, shared adventure, and trust developed at conferences or on field trips engenders a sense of belonging that can last for a lifetime, span disciplines, and nurture creativity. Conversely, exclusion, harassment and exposure to unsafe behavior or spaces can cause scientists and members of their networks to permanently disengage from the community. Emphasizing *inclusivity* at conferences, workshops, and field experiences will foster a culture in which future cohorts of diverse talent are encouraged to thrive; such events attract groups invested in supporting and retaining diverse talent. Invited and accepted speakers at conferences must include scientists with diverse identities (Ford et al., 2019). Need-based rebates on membership and conference registration for faculty and students at two year colleges, small graduate programs, and Minority Serving Institutions will ensure broader participation of students and scientists from minoritized backgrounds, and create a diverse recruitment pool for

institutions and companies present at these conferences.

Ensuring that diverse identities are represented at speaking engagements at all SEPM sponsored events must be a priority (King et al., 2017; Cannon et al., 2018; Ford et al., 2019; Hernandez et al., 2020). Normalizing remote presentations promotes participation of scientists who find travel challenging, including immigrants, parents of young children, people who do not feel safe at a conference venue, and anyone with cultural or religious obligations or special needs which prohibit travel. Even before COVID-19, international travel was colored by uncertainty for immigrant or overseas-based scientists (Reardon, 2017a, 2017b). Potential delays in acquiring a visa can result in scientists choosing not to attend a conference. Scientists on work visas routinely avoid leaving the United States for fear of being barred from re-entry (Reardon, 2017b). U.S. work visas are usually valid for one to three years; while able to work in the U.S. with renewed paperwork, scientists must budget time (six weeks or more) and expense (e.g., consulate fees, travel, room and board) to acquire a visa sticker at a U.S. consulate in order to re-enter the country after international travel. Faced with the possibility of endangering their current job by traveling internationally, most immigrant scientists choose not to travel. This can have measurable impacts on career trajectories (Kelsky, 2019; Morello & Reardon, 2017; Skachkova, 2007). In the wake of the COVID-19 pandemic, when most of us have adapted rapidly to remote conferencing technology, this is a manageable goal.

Similarly, field experiences are an integral part of sedimentary geology, yet access to and comfort/safety associated with participation in field opportunities is not equal (Carabajal et al., 2017; Carabajal and Atchison,

2020; Dzombak, 2020; Morales et al., 2011; Prickrell, 2020; Sychala, 2020). A fundamental part of including junior scientists with diverse identities in field-based educational programs is recognizing that LGBTQ+, Black, Latinx, Indigenous, Asian, and Middle Eastern colleagues are less safe in many environments (Clancy et al., 2014, 2017; Nelson et al., 2017). To guard against negative experiences, which can be particularly consequential for scientists from minoritized groups, we must raise awareness of differences in backgrounds and experiences, and *actively reject* hostile behavior, bias, and discrimination. We must develop guidelines for respectful behavior, and use the SEPM reporting and enforcement mechanisms laid down in the [Code of Conduct](#). Field trip protocols must be designed to ensure all participants' safety and the [Code of Conduct](#) must be clearly shared and agreed to before field trips begin (Gries, 2019; St. John et al., 2016; Williams et al., 2017). Furthermore, mitigating the financial burden of these experiences will demolish a fundamental barrier to participation of students with diverse identities and backgrounds.

A CALL TO ACTION

Scientists who belong to racial, ethnic, LGBTQ+, and gender minorities are more likely to encounter negative and traumatic experiences than their majority-identifying colleagues (Clancy et al., 2017). Scientists belonging to minoritized groups in STEM are disproportionately taking on the labor to enact meaningful change to the system, using time that could otherwise be directed towards innovation and career development (Di Roma Howley, 2020; Gewin, 2020; Jimenez et al., 2019). Often, scientists from minoritized groups do this knowing that their careers, the stability of their personal lives, and the contributions of those who come after,

hinge upon changing the system. *They are doing this because they have no choice.*

A pervasive myth, which promotes the idea that the lack of diversity is due to a self-selection process, suggests that this happens because there are relatively few qualified candidates. What is often overlooked by believers of this myth is that scientists from minoritized groups face significant barriers at all stages of their careers; these are barriers to professional advancement that their majority-identifying colleagues do not face. The culture and practices associated with a system of “meritocracy” has been shown to be the real reason for continued lack of diversity (Uhlmann and Cohen, 2005); a system in which the *perception* of merit is imbued with bias is one that efficiently self-selects by excluding marginalized identities (Hugo et al., 2013; Marín-Spiotta et al., 2020; Moss-Racusin et al., 2012; Smythe et al., 2010; Watts and Smythe, 2013). As a result, despite significant efforts to recruit and retain minoritized groups into STEM, these efforts have not translated into representation at faculty and leadership levels (Bernard & Cooperdock, 2018; Carter-Sowel et al., 2019; Dutt, 2019; Dutt et al., 2016; Ford et al., 2019; Hernandez et al., 2020; Mertz, 2011; Rissler et al., 2020; Smith, 2000; Turner et al., 2008).

If SEPM is less diverse than other societies (e.g., AGU), we must ask ourselves *why* this is the case. There is nothing about the *science* of sedimentary geology that makes it less inclusive. Like other sub-disciplines of geoscience, sedimentary geology incorporates fieldwork, data analysis, museum research, laboratory analysis, and numerical or physical experimentation. Scientists of all genders, ethnicities, races, and abilities can be and *are* sedimentary geologists. Therefore, we must acknowledge that *the lack of diversity in membership,*

leadership, editorial teams and awards within SEPM are a direct consequence of culture and practices that exclude scientists belonging to marginalized groups (Marín-Spiotta et al., 2020); we must recognize that, as current and/or prior members of SEPM, *we are all complicit* in this system of exclusion. A close examination of every individual's role in that system is essential for eliminating harmful and exclusionary practices.

Given the data presented here, SEPM must take decisive action to remake this scientific society into one where every sediment- and fossil-loving scientist, regardless of personal identity, can thrive. We envision a society that reflects, supports, and increases the diversity of our field, and that recognizes that diverse identities are the scaffold of innovative science (Hofstra et al., 2020; Schell, 2020). Membership in this society should immediately mark every scientist, irrespective of career stage, as part of a forward-thinking group of individuals eager to use their skills and knowledge in service of Earth's most urgent problems and invest in the foundational research and education initiatives that build capacity for future generations and the problems they must solve. We want educators to be eager to bring students from all backgrounds, especially those belonging to minoritized groups, to conferences and educational programs organized by SEPM, knowing their students are physically safe and protected from discrimination, harassment, and exclusion, and that their ideas and identities are valued in these spaces. We envision an SEPM where all scientists listen to and center historically silenced perspectives, and *share the workload* required for system-wide change.

Scientific societies can be transformative in creating equitable work environments and mitigating cultural injustices (NASEM, 2018).

SEPM has recently implemented a [Code of Professional Conduct](#) and created channels for investigation of code violations; these actions represent significant advances towards protecting the most vulnerable among us, but more work is needed. The list of recommendations below is not exhaustive, nor is it directed at specific committees or councils. Instead, we urge SEPM to consider the list below as starting points in a strategy for change that could be championed by specific committees; it is our hope that the implementation of these suggestions will be coordinated by SEPM and embraced by its membership.

Below are eleven evidence-based, actionable recommendations to improve recruitment, retention, and advancement of minoritized scientists/students within SEPM and sedimentary geology:

1. Establish a continuous, annual survey of self-reported SEPM member demographics, including new and dropped memberships. Understanding who has been recruited and retained must be prioritized in order to characterize SEPM's status with respect to inclusion. Analyze and report these data to the society membership annually.
2. Ensure that all members, including students, have voting rights.
3. Ensure that the recently written [SEPM Professional Code of Conduct](#) is agreed to by members, and all persons attending SEPM sponsored events; ensure that violators of the code are expelled from the society and barred from future events, as is within the society's purview.
4. Support victims of SEPM code of conduct violations (as they desire), by following up and offering to report code violations to the perpetrators' employers and funding agencies.

5. Facilitate need-based rebates in society membership and conference registration.
 6. Ensure diverse identities are represented at speaking engagements at all SEPM sponsored events and facilitate broader participation through remote presentation options.
 7. Ensure all student-focused events are scaffolded upon a principle of proactive inclusion of diverse identities. Actively recruit students belonging to minoritized groups through partnerships with initiatives like the Geoscience Alliance, Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), GeoLatinas, National Association of Black Geoscientists (NABG), American Indian Science and Engineering Society (AISES), Society of Latinxs/Hispanics in Earth and Space Science (SOLESS), The International Association for Geoscience Diversity (IAGD), Association of Women Geoscientists, 500 Women Scientists, and 500 Queer Scientists.
 8. Ensure representation of diverse identities on award nomination lists, named awards, leadership councils, organization committees, awards committees, and editorial boards. To share the workload equitably, volunteers for different types of leadership roles could be identified via survey questions administered during membership renewal and/or meeting registration.
 9. Evaluate sources of bias within the awards nomination and selection process, formalize content requirements and rubrics for nominations, support letters, and selection. Ensure nominees are above reproach in all aspects of their professional lives. Track and continually review the self-reported, anonymous demographic information of nominees, awardees, and nominators to ensure society awards are representative of the demographics of the field.
 10. Appoint one or more DEI Councilor(s) and/or external consultants to hold the society accountable in DEI efforts ***while also emphasizing that DEI labor is not solely their responsibility.*** Moreover, ensure that all leadership and committee work is framed in the context of inclusion and equity. Expand leadership opportunities especially at the student level and proactively recruit scientists with diverse identities into leadership roles.
 11. Collect and continually review data for each society journal, including accepted and rejected manuscripts, and the demographics of associated authors (i.e. first author career stage, gender, LGBTQ+ status, ethnicity, race and disability status), reviewers, and editors. Promote mentorship during the peer-review process, especially for junior scientists. Ensure that all editors are educated and vigilant to implicit bias in the peer review process (e.g., through annual anti-bias training), and proactively work to eliminate it. Administer anonymous surveys after submission, review and publishing to collect author-demographics and feed-back on the review process.
- Implementation of these practices, accountability assessment, and further revision of policy should be a formal, iterative process (NASEM, 2020). ***SEPM must make a commitment to continuously set goals, track changes implemented, measure their success, and transparently report this data to its membership. These recommendations are only the first steps for improving equity, diversity***

and inclusion within SEPM.

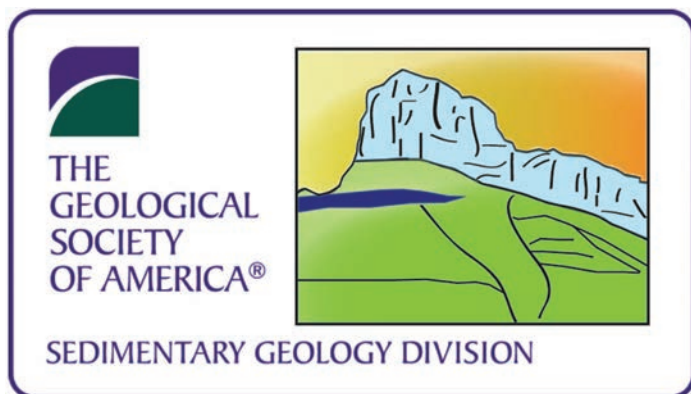
There are many reasons to look back on our history and feel discouraged that so little has changed or be immobilized by the scale of systemic change needed. But we are geoscientists; we work every day to imagine abstract environments and ecosystems that do not exist today. In our imaginations we walk on the ocean floor or on the surface of planets and moons we will never visit. Who better to transcend the bounds of space and time, to imagine and build a different and kinder world in which our history does not dictate our future, and those who come after us do not have to resist inequity in order to practice their craft? We understand the relevance of long-term trends; more importantly, we know how profound an impact human intervention can have. Imagine how rapidly we could change the status quo, if we all committed to doing the work needed to make SEPM a society where all sedimentary geologists belong, are supported to innovate, and are respected and safe. We want this to be SEPM's central, guiding principle; it would be one we could all be proud of.

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SEDIMENTARY GEOLOGY DIVISION

FALL 2020 NEWSLETTER

GREETINGS!



Above: Participants in the GSA-ExxonMobil field school gather to admire the Permian Goose Egg Formation in 2017 when such simple things were possible!

I hope this message finds you all well, managing the challenges of 2020 as best you can, and finding and offering support through these trying times. Since the last newsletter, we all are living in a world we could not have predicted. The Black Lives Matter movement engaged the U.S. in another period of intense reckoning with the ways racial injustice permeates our society and its institutions, amid the chaos resulting from the COVID-19 pandemic, adding anxiety, uncertainty and sorrow to the lives of millions. Like event beds of the stratigraphic record, 2020 will serve as an important marker that separates what has been

in our past from what will be in our future.

As such, our traditional ways of interacting as a community will need to evolve accordingly.

To this end, our division is seeking internal changes to better serve our mission. We will be proposing bylaw changes to add two new positions to our board. One position is a 2nd Vice Chair who will facilitate online interactions with our members. The other position is a Diversity Coordinator, following the lead of the Geochronology Division who recently added this position to its board. The Diversity Coordinator will maintain resources on a division diversity and inclusion web page, work to develop synergy with GSA's On to the Future program, enact changes to diversify membership and promote inclusive practices in division activities. Keep an eye out for the ballot to vote on these changes, then consider volunteering for one of these important roles! We also have planned new ways to bring Sedimentary Geologists together to do what they love: share science and the lessons learned about the Earth, engage in opportunities to advance our field, and develop a strong and diverse network of professionals and students with a shared passion for sedimentary geology. Read on to learn more!

GSA 2020 CONNECTS ONLINE



Instead of a face-to-face conference in Montreal, GSA has reformatted its Annual Meeting to allow for virtual participation and ensure everyone's safety during the COVID-19 pandemic. The **GSA 2020 Connects Online will be held October 26-30**, but activities from September 14 through November 14 will also be a part of this event. The Sedimentary Geology Division is pleased to be sponsoring **54 Topical Sessions** in the program, including our ever-popular student research poster competition session! There will be no shortage of fodder for sed-heads to geek out upon! Topical Sessions run Monday through Friday, October 26-30, along with other GSA events both old and new scheduled for each day. We hope to

The Sedimentary Record

see many of you among the attendees. We will miss the impromptu conversations in the conference corridors and mingling together in the poster hall, but hopefully through an online platform we will learn new ways to make professional networking at conferences accessible to folks in ways that in-person events are not.

Similarly, we have planned other activities during GSA 2020 in lieu of our typical booth giveaways and business meeting/reception. Thanks to our partnership with SEPM, these activities will be available to members even if they are not registered for the GSA 2020 Connects Online meeting! Please plan on attending the **GSA Sedimentary Geology Division & SEPM Awards Celebration at 7:00 PM Eastern Time (4 PM Pacific Time) on Wednesday, October 28**. During this live online event we will present our annual bevy of honors and recognition: the Laurence L. Sloss Award, the Student Research Grant award, the Stephen E. Laubach Structural Diagenesis award, and the student research poster awards. Also, at this event, we will announce plans for additional opportunities to energize and sustain the sedimentary geology community through the end of 2020.

2020 LAWRENCE L. SLOSS AWARD RECIPIENT

Dr. Carlton Brett, a Professor at the University of Cincinnati has been named the recipient of the **2020 Laurence L. Sloss Award for Sedimentary Geology** in honor of his career contributions to sedimentary geology and GSA. Carl's impact on the field of sedimentary geology is truly wide-ranging. He has published more than 300 papers covering topics from sequence stratigraphy to paleontology to paleoecology. In addition, he has advised over 50 graduate students and mentored hundreds of undergraduate students in their projects. His contributions to the GSA are numerous, serving on the North American Commission on Stratigraphic Nomenclature and as an Associate Editor for Geology. He was elected as a GSA Fellow in 1992 and has organized a variety of topical sessions and symposia for regional and national GSA meetings. We thank Carl for his work in the field of sedimentary geology and his service to our community at GSA! Please join us in offering a giant, socially-distanced congratulations to Carl for all his accomplishments and for this well-deserved award! Our formal recognition of Dr. Brett for this award will occur during the live Award Celebration on October 28 during GSA Connects Online.



*Above: Dr. Carlton Brett,
2020 Laurence L. Sloss Award Recipient.*

STUDENT RESEARCH AWARD RECIPIENT

The **Sedimentary Geology Division Student Research Award** is presented annually to an outstanding student research proposal submitted to GSA in the field of sedimentary geology. The 2020 winner of this award is Jessica Raff of Vanderbilt University; Jessica's winning proposal is for her project "*Is variability in the Asian monsoon and Himalayan erosion recorded in the Ganges-Brahmaputra delta?*" Congratulations Jess! Join us in wishing her the best in her pursuit of this work for her Ph.D. thesis. We look forward to formally recognizing her for her outstanding research proposal during our live Award Celebration during GSA 2020 Connects Online.



*Above: Jessica Raff, 2020 GSA Sedimentary Geology
Division Student Research Award Recipient*

CALL FOR APPLICATIONS: LAUBACH STRUCTURAL DIAGENESIS AWARD

The **Stephen E. Laubach Structural Diagenesis Research Award** is administered by our division and the GSA Structural Geology & Tectonics Division and is given in support of research related to fluid-rock interaction in the shallow crust. The award honors the work of Dr. Stephen Laubach, who integrated techniques from structural geology and sedimentary petrology in his scientific work. The 2019 award went to Kayla Smith for her M.S. project at Utah State University, "*Geologic Characterization of the Great Unconformity Injection Interface Region from Field and Drillcore Analog Studies: Implications for Midcontinent Induced Seismicity*". This year we anticipate granting one award of up to \$4,000 to be used in support of research activities, along with GSA membership dues for one year! This award is open to all faculty, postgraduates and students of any level.

Application deadline is 2 October 2020. For more information please see: <https://community.geosociety.org/sgt/awards/laubachaward>

To submit an application, go to: https://docs.google.com/forms/d/e/1FAIpQLSfPTSkyZj5CrWZaafYNZgUlgMqD6Ax12JEAVUv1znwxuu_02g/viewform

IN MEMORIAM: DR. B. CHARLOTTE SCHREIBER



27 June 1931 – 17 July 2020

We regret to inform the Sedimentary Geology Division community of the passing of our esteemed

and beloved colleague, Professor Emerita B. Charlotte Schreiber. Charlotte passed away on 17 July 2020 after a brief illness. Retired from Queens College CUNY since 1993, Dr. Schreiber remained professionally active until her death. She is most widely known for her groundbreaking work on Messinian evaporites in the Mediterranean Basin, on which she continued to work up through recent years. Her other research interests ranged from Martian evaporites to Chinese travertines, from the Miocene of Lake Mead to the Devonian of Canada. Her work involved interdisciplinary and international colleagues, many of whom she personally brought together to address new questions and ideas. We thank Jody Bourgeois for these words commemorating Charlotte's life and work in our field. Charlotte's obituary and an opportunity to share tributes, stories and pictures can be found at:

<https://www.forevermissed.com/charlotte-schreiber/about>

2020 SEDIMENTARY GEOLOGY DIVISION OFFICERS:

Chair: Amy Weislogel

Vice Chair: Brian Hampton

Secretary-Treasurer: Brett McLaurin

Student Representative: Anthony Edgington,

2nd Student Representative: Sharif Mustaque

Past Chair: Gary Gianniny

2020 SEDIMENTARY GEOLOGY DIVISION VOLUNTEERS:

Representative to GSA Council: Manfred Strecker

Webmaster: Stefania Laronga

Ex Officio Management Board Member:
Howard Harper, SEPM

2020 Joint Technical Program Committee:
Ryan Morgan (Tarleton University)

FOLLOW US!



@GSA.SGD

PRESIDENT'S COMMENTS

I would like to follow up on the June column and further address issues of diversity, equity and inclusion (DEI) in our society. I also draw your attention to an article in this edition of the *Sedimentary Record* by *Fernandes et al.* entitled “Enriching Lives within Sedimentary Geology: Actionable Recommendations for Making SEPM a Diverse, Equitable and Inclusive Society for All Sedimentary Geologists”. This paper has compiled data on how we recognize people in the society as measured by who we elect or appoint to positions of leadership and to editorial boards, and who we recognize for their contributions through our awards.

In the June column, I listed several actions the SEPM Council had approved to improve representation in our society, including the creation of an ad hoc committee to evaluate and make recommendations on DEI issues within SEPM. This effort is underway and has now developed a list of potential action items that were in part leveraged from recommendations in the *Fernandes et al.* paper and other scholarly publications. Some of the recommendations are already part of what SEPM does or are covered by the SEPM Code-of-Conduct, but all of the recommendations will be considered by the SEPM council. I return to this topic later.

In mid-late June, I asked SEPM HQ what we knew about membership demographics? The answer was not much – mostly because there are national and international policies that govern the collection and subsequent use of personal data. We do have a 2018 dataset where members that were registering or renewing membership voluntarily identified their gender: there were 1593 respondents, with ~1000 choosing not to respond to the gender check box. Moreover, SEPM HQ has now completed a comprehensive survey that provides a sample of who we are. This survey was emailed to all members in August and made available to sedimentary geologists that follow

SEPM on social media platforms. 709 of the ~2550 active members completed the survey, a response rates of ~27% that is on par with surveys of this kind. An additional 92 individuals that are not members but follow SEPM on social media also completed the survey.

So, who are we? Well, this will come as no surprise to many - we are an aging, dominantly white male international society with a consistent multidecadal decline in membership. Here are some key numbers:

- In the 2020 survey, ~58% of the membership is older than 50, whereas in the 2018 dataset ~77% is over 50.
- In the 2020 survey, ~71.4% of the membership identifies as male, whereas in the 2018 dataset ~85% identified as male. In the >50 cohort, the numbers are 85 and 90%, respectively.
- In the 2020 survey, women comprise 26.5% of the total membership, and are well represented in the younger demographics, comprising 51% and 41% of the under 30 and 30-40 yr old cohort, respectively (**Figure 1**). If measured by self-identified career stage, 46% of the Student and 45% of Early Career members identify as female. ~2% of the membership identified as binary, other, or preferred not to say.
- In the 2020 survey, ~80% of the membership classified themselves as White Caucasian/Europe or White/North America, with 6.8% Asian, 4.2% Latinx, 2% Black or African-American, and small numbers of other ethnic or racial identities (**Figure 2**).
- In the 2020 survey, 56% of the membership identifies the United States as their country of origin, whereas 66% of the membership currently lives in the United States.
- From *Fernandes et al.* we have a net loss of ~1/3rd of our professional members since 2006.

The voluntary nature of survey responses means we do not know if these data are statistically representative, but they likely capture the general outline of our

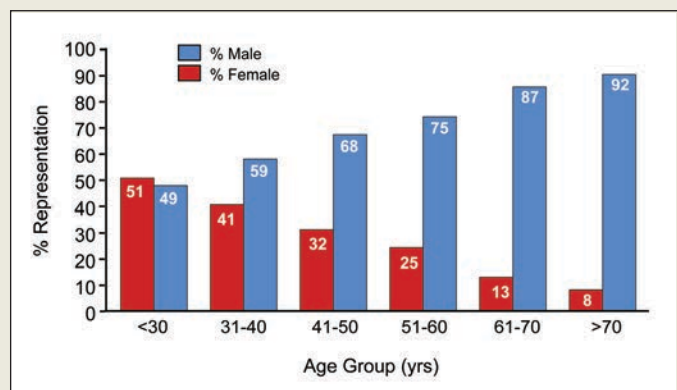


Figure 1: Percent representation of members identifying as male and female by age group from the 2020 Survey.

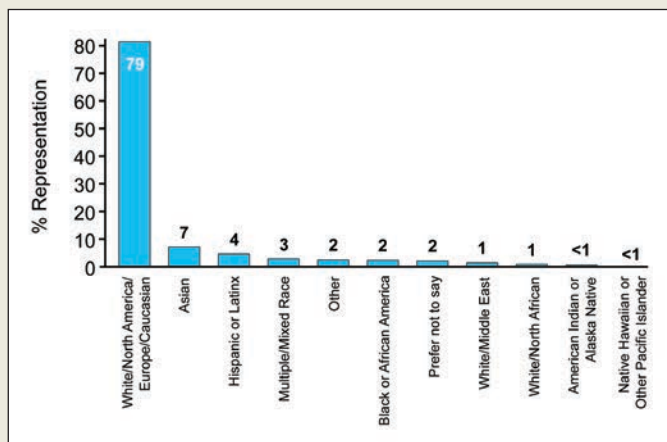


Figure 2: Percent representation of members by race or ethnicity from the 2020 Survey.

PRESIDENT'S COMMENTS (continued)

demographics. In this context, my aspirations would be to have a geosciences community and scientific society whose membership demographics mirror those of our broader global society, and to have our leaders and awardees mirror the demographic composition of that broader society as well. For the first of these metrics, SEPM is significantly more white and male than the broader society in which we live, but similar to the geosciences as a whole. Consider GSA and AGU:

- GSA's 2019 membership ranges from 50% female and 70% white in their student population to 7% female and 87% white in their late career members (<https://www.geosociety.org/documents/gsa/about/MbrDemographics.pdf>).
- AGU's female membership has grown from 15% in 2000 to 29% female in 2018 (https://honors.agu.org/files/2018/12/2018_Honors_Cycle_Demographics.pdf).
- GSA as a whole, and AGU's Earth and Planetary Surface Processes Section, have a gender distribution by career stage that is similar to SEPM (**Figure 3**) (https://honors.agu.org/files/2018/09/2018-section-membership-by-gender-and-career-stage_Sept12.pdf).

How are we doing on the second metric – how well do our elected or chosen leaders and awardees reflect the demographics of our scientific society and the broader society in which we live? The *Fernandes et al.* paper addresses the facts of who we have elected and/or placed into leadership positions, or chosen as awardees, and the facts do not look good. Data from our 2020 survey was not available for the *Fernandes et al.* paper, so here are some relevant metrics:

- ~18.5% of the >30 age demographic is non-white male. This is the age demographic that generally fills the SEPM Council and editorial boards. From *Fernandes et al.*:
- ~30% of council members from 2007-2019 are female and/or people of color;

- >15% of the *JSR* and *PALAOIS* associate editors (AEs), and editors of SEPM Special Publications, are female, and 10.8% of the *JSR* AEs are people of color.
- ~15% of the >50 age demographic is non-white male. This is the age demographic that is likely to be considered for “career” awards like the Twenhofel, Pettijohn, Moore, and Shepard Medals. From *Fernandes et al.*:
- Up to 2010, there were no non-white males selected as Twenhofel and Pettijohn medalists. Female scientists have won both awards once after 2010;
- Up to 2010, the Moore and Shepard Medalists were 17% and 7% female, respectively. Females have won 50% and 30%, respectively, after 2010.
- The non-white male component of the Early Career demographic is 45%. This is the age demographic that is eligible for the Wilson Award. Up to 2010, 33% of the awardees were female, a number that dropped to 20% after 2010.

To summarize, in no category do we resemble the demographics of the broader society in which we live. I agree with the *Fernandes et al.* assessment that the lack of diversity in SEPM, and in our leadership and awardees, is at least in part due to long-term systemic biases that have discouraged participation in the geosciences in general and therefore SEPM in particular. Within this context, SEPM's elected leaders and awardees are generally representative of the SEPM population as it existed in the past and exists today (the Wilson Award is an exception). We are comparable in this regard to GSA and AGU as well.

SEPM faces demographic challenges because continuing with our current demographics and the multi-decadal net loss of membership may well lead to an existential crisis. On the positive side, SEPM is more diverse than a decade or two ago in the <50 age population and especially in terms of gender. Our gender diversity follows trends in the

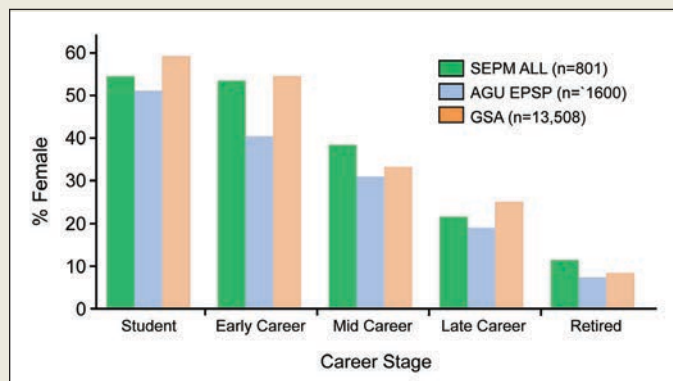


Figure 3: Percent representation of members identifying as female by career stage from the 2020 Survey, AGU Earth and Planetary Surface Processes Section, and GSA (see web page links for GSA and AGU in the text).

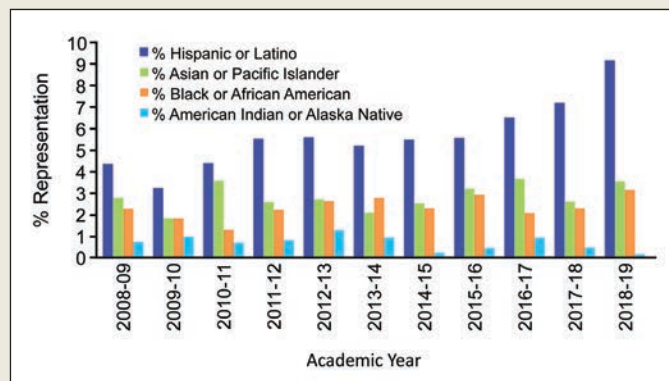


Figure 4: MS degrees in Earth Sciences by year and racial identification (from the US National Science Foundation at <https://ncesdata.nsf.gov/sevel2018/>).

PRESIDENT'S COMMENTS (continued)

geosciences as a whole. For example, US National Science Foundation data shows women have received >40% of the BS, MS, and PhD Earth Science degrees in the United States from 2008-2018, and up to 51% of the Earth Science PhDs since 2012.

Progress on gender diversity is a reason to be hopeful but not satisfied because the geosciences remain one of the least diverse STEM fields in terms of people of color, with minimal changes over four decades. NSF data shows a doubling of Earth Science MS degrees awarded to Hispanic or Latinx scientists from 2008-2018, but gains made by other minorities are not large (**Figure 4**). The number of Earth Science PhD degrees awarded to racial minorities remains very small, with ~88% awarded to white scientists. Clearly, the geosciences, including SEPM, need to find ways to be more welcoming to people of color. I suggest members read the paper by Dutt (2019, *Nature Geoscience*, v. 13, p. 2-3, January 2020) for a perspective on this issue.

As I wrote in the June column, I am pretty sure that SEPM is a scientific society filled with concerned and informed geoscientists who are, like me, trying to

comprehend many things that are going on around us. One of the things I now comprehend more clearly is the demographics of who we are and, along with that, both the progress we have made and the challenges we face. Our path to survival as a viable scientific society must include attracting a broad spectrum of members with common interests in sedimentary geology, and, equally important, retaining them as members because we are known as a society where everyone feels welcome, valued, and safe.

The SEPM council, guided by the ad hoc DEI committee's findings and recommendations, will take a more active role in improving the diversity, equity and inclusivity of our society. We will keep the membership informed along the way when actions are taken.

I thank Marina Suarez and Celina Suarez for their comments on an earlier draft.

Michael Blum, *SEPM President*



SEPM Society for Sedimentary Geology
"Bringing the Sedimentary Geology Community Together"
www.sepm.org

DEI Discussion

Are you interested in the conversation surrounding Diversity, Race, Equity and Inclusion at SEPM? Have thoughts about the *Fernandes et. al* paper (pg. 4), or Mike Blum's *President's Comments*?

We direct your attention to the SEPM Blog to read more about these ideas from SEPM, as well as discuss and provide your own feedback as an SEPM member.

Log in to respond with constructive thoughts and share direction on how you'd like to see our organization grow.

Visit www.sepm.org/blog today!

Questions? Contact digitalmedia@sepm.org.

Results of the recent SEPM Community Survey

Rebekah Grmela (Right and Good Consulting) and Howard Harper (SEPM)

INTRODUCTION

This year, SEPM Society for Sedimentary Geology decided to initiate a series of surveys to better understand the make-up and needs of the society's members. In an effort to appropriately engage the SEPM and sedimentary geological communities, SEPM launched a 2020 Community Survey to assess some basic demographics, and personal involvement in aspects of SEPM and the sedimentary geology community. This survey took place from June 29, 2020 to July 20, 2020, for a total of 21 days. Survey responses were collected 24/7 via SurveyMonkey. Individuals could respond anonymously or could identify themselves and participate for one of four \$50 Visa Cash Gift Card incentives. The 2020 Community Survey was distributed via our organization's membership database by email, as well as marketed and promoted across social channels including Facebook, Twitter, LinkedIn and Instagram. SEPM plans to continue regular surveying of our community to improve and grow our support of the members and the community.

DEMOGRAPHICS

Prior to 2020, basic demographic information was not considered a priority by the organization to collect or maintain, due to concerns over anonymity and privacy laws. In our 2020 Community Survey, we requested basic demographic information and we have since released a follow-up survey to our community specifically requesting information to enhance the demographic profiles of membership and the community to help our diversity and inclusion efforts as an organization. This DEI survey is entirely anonymous.

As of August 31, 2020, SEPM had 2,552 members with a basic breakdown of 69% professionals and 31% students (Figure 1A) with 71% residing in North America (Figure 1B).

Figure 1A. SEPM August Membership

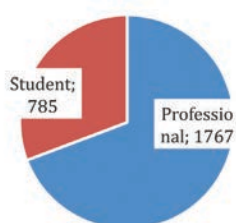
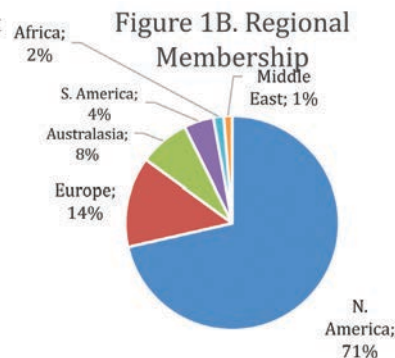
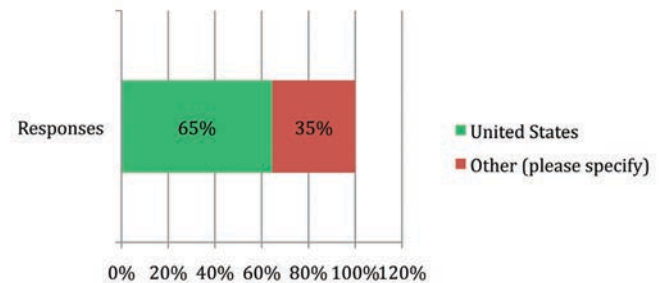


Figure 1B. Regional Membership



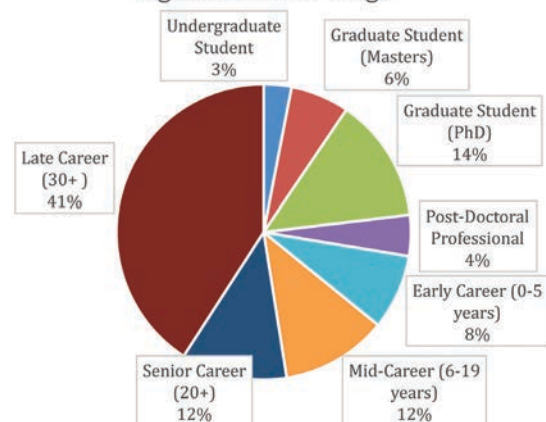
65% of survey respondents live in the United States but overall it is important to consider global economies, activities, and concerns as more than a third of respondents (35%) live outside North America, dominated by Canada, South America, and Southeast Asia regions.

Figure 2. Survey Respondents Resident Country



In general, more than 41% of respondents in this survey self-identified as being "late" in their career, with more than 30+ years of experience (Figure 3), total students were about 23%, early career 12% with mid to senior career people about 24%. While heavier with input from the senior to late career (53%), there is significant input from the less experienced community (47%).

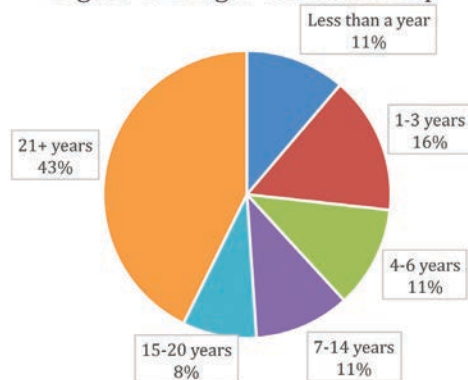
Figure 3. Career Stage



SEPM MEMBERSHIP

Correlating with the survey participation by the more experienced career stage participants, the majority of survey respondents have also been a part of SEPM for more than 20+ years. It is worth noting, however, that almost half of membership responders (49%) have been members for 14 years or less with fairly equal percentages across those lower numbers (Figure 4).

Figure 4. Length of Membership

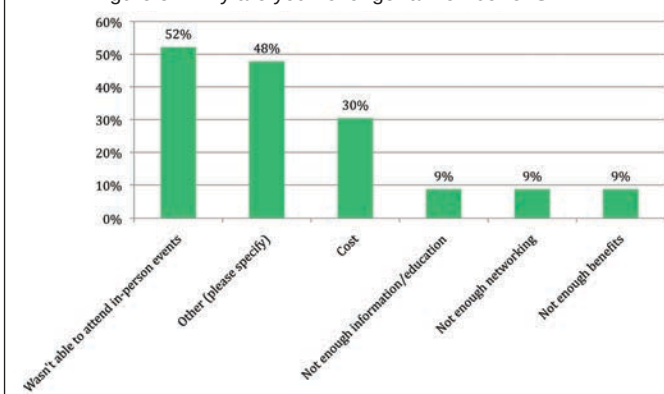


Specifically past members that had chosen to not renew their SEP membership (5%), gave these reasons for not renewing (Figure 5):

1. The most cited reasons were cost and inability to participate in in-person events as a deterrent to membership.
2. Many cited retirement and/or unemployment as their primary reason for leaving the organization (Other).
3. Change in cost and improvement of our online resources and presence were noted as improvements that would have some former members reconsider renewing their membership.

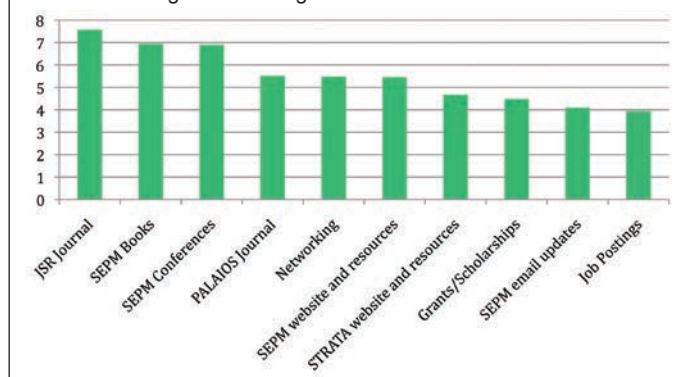
Many members maintained their membership thinking that it is a requirement for nomination for our primary organization awards, but this is generally not true as the science medals are for members or non-members and nominations can be made by anyone. Student grants however are for members only.

Figure 5. Why are you no longer a member of SEP?



We also evaluated the importance of different features and benefits available to SEP membership so as to improve our organizational offering (Figure 6). Overall, when ranked, SEP's JSR - *Journal for Sedimentary Research*, books/publications, and conferences were considered the top benefits of membership. The journal *PALAIOS*, Networking as well as resources related to the website were also considered high priorities of membership.

Figure 6. Rating Scores for SEP Benefits



Participants also requested several additional features of membership. Some of these features are already provided by our organization, but may need to be communicated better as offerings due to lack of awareness. Suggestions for SEP include:

- Providing more improved access to resources and information, such as online meetings, live webinars, virtual field trips and research guidance and mentorship.
- In particular, our student membership spoke up about the need for additional opportunities to connect and network,
- Students also want to see SEP offer enhanced, equitable, opportunities to people of color, as well as maintaining a voice in the diversity and inclusion conversation at large.

A little more than half of our survey respondents also shared what they enjoyed most about their SEP membership. Highlights include:

- Benefits such as our robust journal, publications, conferences and community network.
- SEP efforts to maintain our independent journals and publication processes that continue to attract verified science and talent in our community.

Overall, our membership rated our organization 4.0/5.0 in their satisfaction, as well as scored SEP with a Net Promoter Score of 31. (NPS ranges from -100 to +100 and the higher the score the better – anything above 0 is considered 'good'). While membership enjoys their experience, there is room for improvement for SEP to create passionate advocates for our organization.

Figure 7. Rating

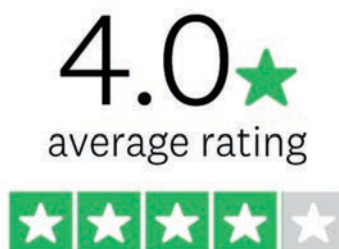
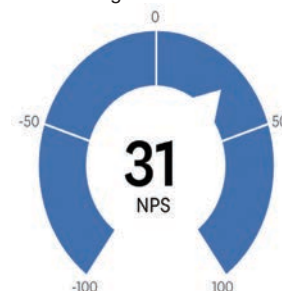


Figure 8. NPS



SATISFACTION

We assessed several variables related to overall and specific satisfaction with SEPM activities. In addition to general positive sentiment as indicated above, we inquired about:

1. overall current program activities (Figure 9) – agree to strongly agree 79%;
2. opportunities to connect and network (Figure 10) – agree to strongly agree 77%;

3. continuing education and career opportunities (Figure 11) – agree to strongly agree 55%;
4. diversity and inclusiveness (Figure 12) – agree to strongly agree 57% but with a 9% disagreeing; and
5. overall SEPM culture (Figure 13) – 64% agree/strongly agree with 9% disagreeing.

Figure 9. Overall Satisfaction

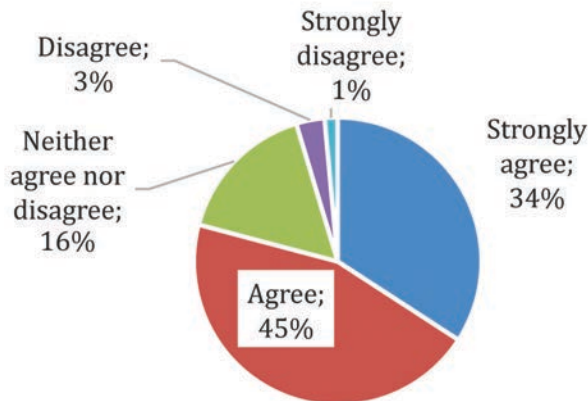


Figure 10. Network Satisfaction

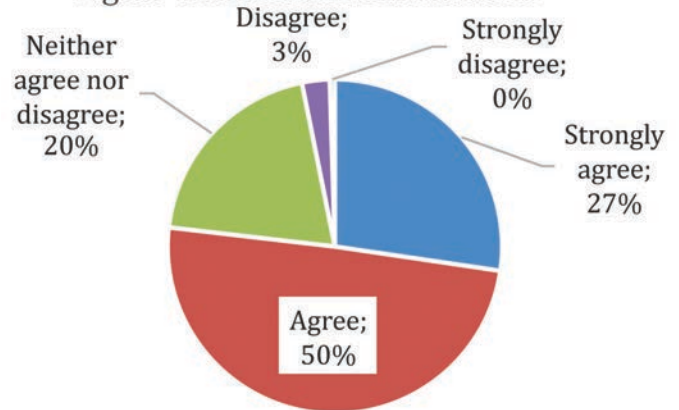


Figure 11. Training Satisfaction

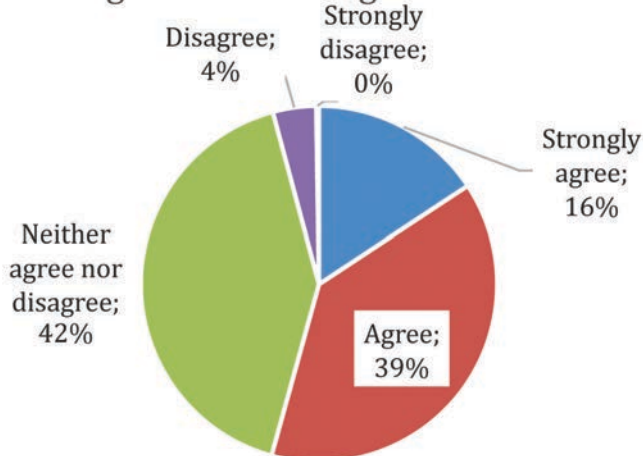


Figure 12. DEI Dedication

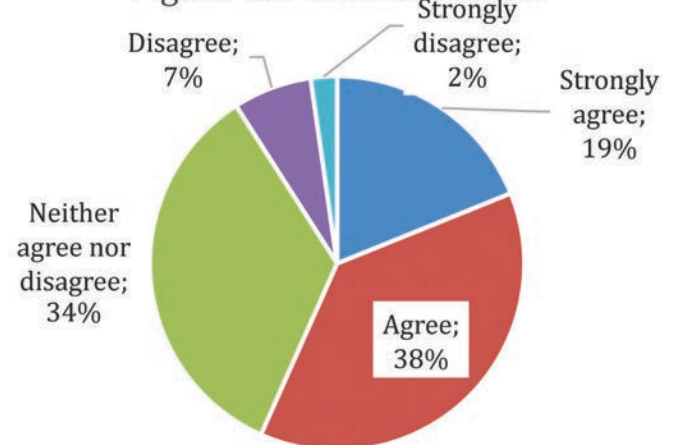
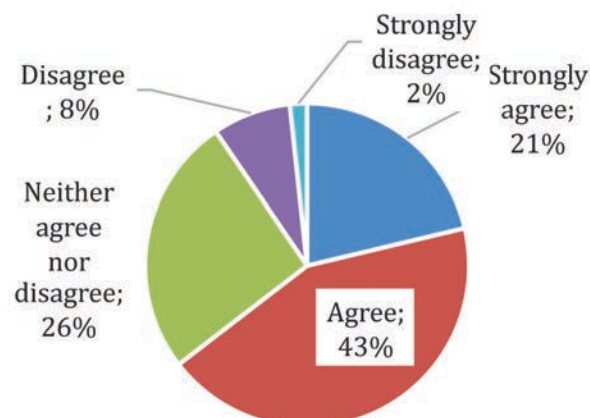


Figure 13. Culture Satisfaction



COMMUNITY INVOLVEMENT

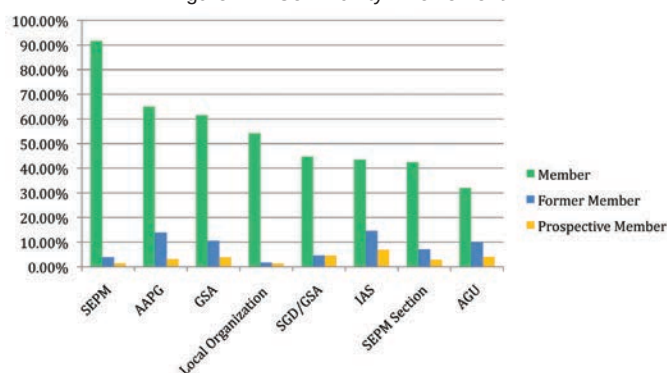
In addition to assessing our respondent's involvement with SEPM, we also dug into the overall participation in the sedimentary geology community.

- 54% of our community members were also members of a geological organization in their local community, while
- 43% were also involved in a local SEPM section organization.

In order of additional involvement,

- 65% of our survey are also members of AAPG.
- 62% GSA at large.
- 45% in GSA's Sedimentary Division, specifically.
- 44% is also currently involved in IAS, it is also the organization polled with the highest number of former and prospective members.
- 32% is also involved with AGU.

Figure 14. Community Involvement



CHALLENGES

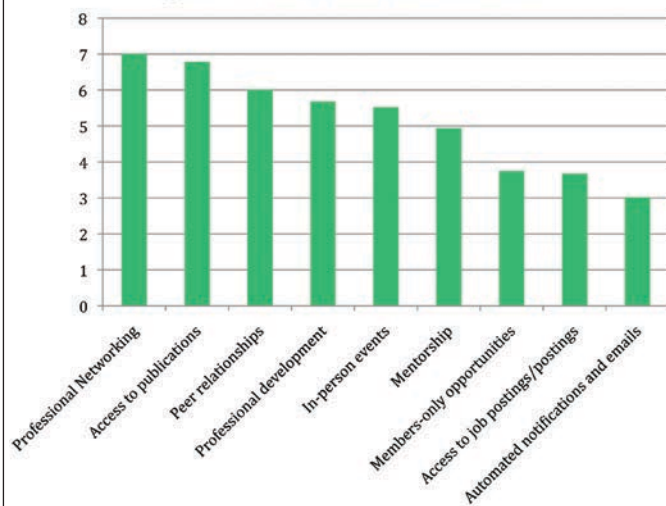
No matter the membership level, our membership identified consistent trends in geoscience challenges. While the majority of our membership respondents identified themselves as later stage in their career, early and mid-stage career challenges were listed as a major area of concern.

For the students, early and mid-career people, access to mentorship and "connections" in the sedimentary geology community were listed as one of the top challenges. Many respondents felt that they had limited academic and career opportunities due to their inability or lack of access to connections, grants, research and field engagements, thereby reducing their desirability for hire and future career advancement. Financial accessibility was also listed as a major burden to geoscience advancement - limited funds, scholarships, grants and research opportunities led to intentional and unintentional gatekeeping that often prioritizes a select group of researchers instead of expanding the field to women, minorities and scientists with less traditional backgrounds. Lastly, the emerging trends in open access and open data were considered major challenges to keep up with across the community.

SOCIETY AND SEPM BENEFITS

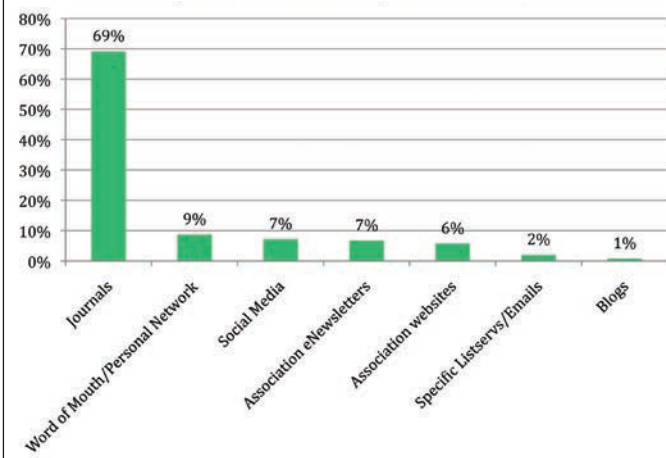
The survey respondents also identified the primary reasons to join a scientific society such as SEPM (Figure 15). Access to publications, professional development, in-person events and professional networking, now with public health considered, we hope to continue to provide important resources to our sedimentary geology community that warrant continued SEPM membership.

Figure 15. Most Valued Benefit Scores



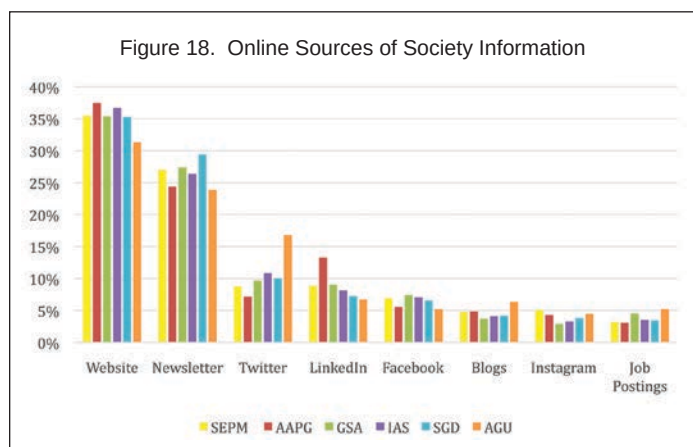
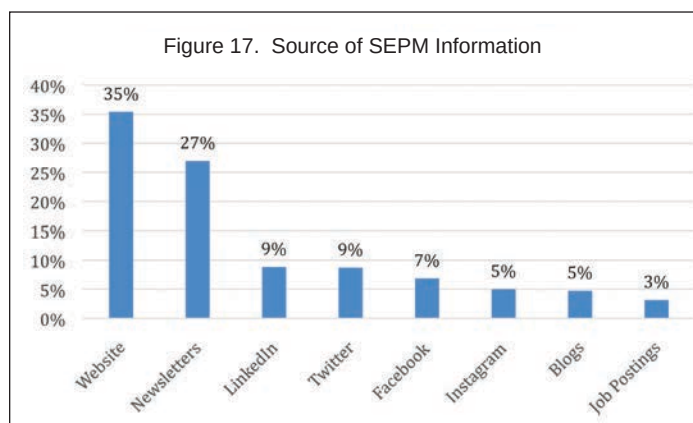
While it is obvious that peer reviewed journals are the overwhelming source of technical geoscience information (Figure 16), it will be important to continue holding networking events and updating our websites and social media platforms as these were also identified as information sources.

Figure 16. Sources of geo-information



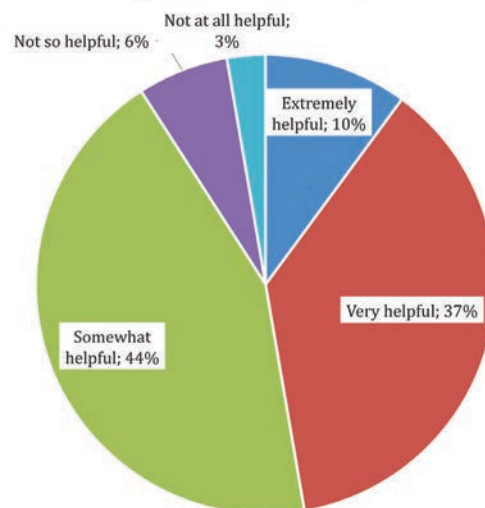
MARKETING

Last but not least, SEPM tapped into our surveyed network to identify the best ways to market, engage and communicate with our community (Figure 17). While there is some variation in the type of participation and marketing between the associations in the community, the majority relies most heavily on membership websites to provide their critical organization information. In addition to web content, members look closely to association newsletters. Twitter and LinkedIn were also specifically identified for current information. While used, Facebook, Instagram and Blogs hold a small percentage of audience attention. We also assessed satisfaction and opportunity within our own web and social media content as we work to improve our online presence for membership and the community. This hierarchy of online informational platforms is similar for several other geoscience organizations (Figure 18).



SEPM's current website (www.sepm.org) was considered 'helpful' by 91% of the respondents but 9% did not find it helpful. The website is currently undergoing some significant redesign and we are hopeful that this will increase its helpfulness.

Figure 19. SEPM's Website



CONCLUSIONS

We received more than 560 total survey responses, with almost 500 self-reporting as current SEPM members. With this response rate, we can infer that around 20% of the membership participated in this community survey. This rate creates a 99% confidence in our survey with a statistically significant margin of error at $\pm 5\%$. But this one, like all surveys, relies on the input from those members that take the time to become involved and it only took about 9 1/2 minutes.

NEXT STEPS

SEPM will be building from this and other input on how to best continue to enhance the Society and maintain its core mission to disseminate information about sedimentary geology, its research and application. We encourage all SEPM members and the community to participate in any input gathering to make sure that your voice is heard and considered. More planned activity will include:

- A DEI Survey – just recently completed – to capture the diversity our community
- Web Focus Group – gathering input from a small group of 'users' to enhance the website.
- Plans to continue to capture input from the membership and community on a regular basis.

If you have any questions about this article please contact Rebekah Grmela (rgrmela@sepm.org) or Howard Harper (hharper@sepm.org).

SEPM Events at the SEPM Annual Meeting - in conjunction with AAPG Virtual ACE
29 September - 1 October

Online Registration at <https://ace.aapg.org/2020>

Details about SEPM Events at <https://www.sepm.org/SEPM-Annual-Meeting>

SEPM Research Symposium

***Addressing the three-dimensionality of the stratigraphic record:
Implications for sequence stratigraphy***

Date: Wednesday, September 30

Time: 8:00 a.m.-3:00 p.m. - See schedule below

Location: Virtual - Attendees must be registered for the ACE meeting to attend.

Co-Chairs: Ashley Harris, Andrew Madof, Wen Lin, Victorien Paumard, and Jinyu Zhang

- 8:05 a.m. - John Holbrook - The Diachronous Sequence
- 8:45 a.m. - Christopher Fielding - Sequence Stratigraphy of Late Paleozoic Cyclothems; A Signal of Sediment Undersupply, Large-Magnitude Sea-Level Changes and Low Accommodation
- 1:20 p.m. - Charles Kerans - Temporal and Lateral Variability in Permian Shelf to Basin Systems of the Permian Basin
- 2:00 p.m. - Tetsuji Muto - Recent Progress in Autostratigraphy: Autogenic Grade in the Context of Shelf Growth

SEPM Luncheon Talk

“Tackling the Challenge of an Imperfect Stratigraphic Record” - Dr. Kyle Staub

Date: Wednesday, 30 September 2020

Time: 12:15 p.m.-1:00 p.m. CDT

Location: Virtual -- Attendees must be registered for the ACE meeting to attend.

SEPM Research Group Meetings

Date: Various - see schedule below

Time: 5:00 p.m.-8:00 p.m. CDT

Location: Virtual - Attendees do not have to be registered for the ACE meeting to attend but must register via GoToWebinar.

Research Group Meetings – via free GoToWebinar registration

- [Carbonates Research Group](#) - Tuesday, September 29 | 5-8 pm CDT [\[REGISTER HERE\]](#)
- [Clastics Research Group](#) - Wednesday, September 30 | 5-8 pm CDT [\[REGISTER HERE\]](#)
- [Deepwater Research Group](#) – Thursday, November 5, 2020 | Time TBA

SEPM President's Awards Ceremony

Date: Wednesday, October 7, 2020

Time: 2:00 p.m. CDT

Location: Virtual

Session: Attendees do not have to be registered for ACE to attend