



Opinion

MARINE MAMMAL SCIENCE, **(*) : ***_*** (***) 2017)

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DOI: 10.1111/mms.12407

Equity and career-life balance in marine mammal science?

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ABSTRACT

It is widely acknowledged that family and care-giving responsibilities are driving women away from Science, Technology, Engineering, and Mathematics (STEM) fields. Marine mammal science often incurs heavy fieldwork and travel obligations, which make it a challenging career in which to find work-life balance. This opinion piece explores gender equality, equity (the principles of fairness that lead to equality), and work-life balance in science generally and in this field in particular. We aim to (1) raise awareness of these issues among members of the Society for Marine Mammalogy; (2) explore members' attitudes and viewpoints collected from an online survey and further discussion at a biennial conference workshop in 2015; and (3) make suggestions for members to consider for action, or for the Board of Governors to consider in terms of changes to policy or procedures. Leaks in our pipeline—the attrition of women, and others with additional caring responsibilities—represent an intellectual and economic loss. By striving for equity and promoting work-life balance, we will help to ensure a healthy and productive Society better able to succeed in its aims promoting education, high quality research, conservation, and management of marine mammals.

Key words: gender, equality, leadership, work-life balance, STEM.

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Globally, there is increasing recognition of equality and diversity issues in science (Anonymous 2014). It is widely acknowledged that family and care-giving responsibilities are driving women away from Science, Technology, Engineering, and Mathematics (STEM) fields (Pell 1996, Ceci and Williams 2011, McGuire *et al.* 2012, O'Brien and Hapgood 2012). Other minorities also face inequalities (Sakai and Lane 1996), but the compelling evidence for gender inequality throughout science leads us to focus this piece on gender and caregiving. We acknowledge that caregiving may take different forms—caring for children, or for elderly parents (or for the “sandwich generation,” caring for both simultaneously).

The Society for Marine Mammalogy, formed in 1981, aims to promote the global advancement of marine mammal science and contribute to its relevance and impact in education, conservation, and management. Marine mammal science often incurs heavy fieldwork and travel obligations, and is therefore a particularly challenging career in which to find work-life balance. Here we explore gender equality, equity (the principles of fairness that lead to equality), and work-life balance issues in marine mammal science. We document the current demographics and perceptions of these issues within the field using results gathered *via* an online survey and opinions voiced at a workshop held on career-life balance at the Society for Marine Mammalogy's biennial conference in 2015. We write this opinion piece with three aims: (1) to raise awareness of these issues among all Society members; (2) to highlight the current viewpoints of Society members by presenting the results of our survey; and (3) to make suggestions that Society members can consider for action, or that the Society's Board of Governors can consider for changes to policy or procedures.

There is a marked gender bias throughout science and a glacial pace of change in addressing this (Ceci and Williams 2011, Moss-Racusin *et al.* 2012, Adamo 2013). This issue of poor female representation in science, and particularly the attrition of women as they move up the ranks, has been termed “the leaky pipeline” (Pell 1996). In the biological sciences, gender equity is improving (Sakai and Lane 1996, Luckenbill-Edds 2002) but there is a distinct lack of parity within higher ranks of the science (*e.g.*, leaders, professors), with inequities appearing in various components of day-to-day work (*e.g.*, academic publishing, West *et al.* 2013; service roles, Misra *et al.* 2011; hiring, Sheltzer and Smith 2014; prizes, Wagner 2016). This overall lack of representation at higher ranks could mean that some of the best minds are not currently being recruited or retained (Goulden *et al.* 2011). The Society for Marine Mammalogy has a good record of acceptance and promotion of female scientists. It has had 18 presidents since its inception, of whom four have been women. The Society's journal (*Marine Mammal Science*) has a board of 15 associate editors, which includes five women. However, among the journal's one current and five emeritus editors-in-chief, all have been men, and all six of the Ken Norris Lifetime Achievement Awards (presented biennially since 2005) have been awarded to men.

There are a multitude of reasons for the leaky pipeline across science, which have been referred to as a “mixture of free and constrained choices” (Ceci and Williams 2011). Many fields of science suffer from the legacy of previous overt sexism. In marine mammal science this included historic prohibition of women working in the Antarctic or aboard research vessels (Orcutt and Cetinic 2014, Strugnell 2016). This prohibition of women only changed in the mid-to-late 20th century and may be partially responsible for the paucity of senior/retired women available for accolades, such as lifetime achievement awards. However, several other factors continue to cause women to become less represented further up the career ladder. We review some of

these issues in a general context prior to examining them specifically as they relate to the Society for Marine Mammalogy.

Attrition of women may be caused by personal preferences—for instance women tend to rank work-life balance and parenthood issues more highly than men do—but also societal factors; for example, male postdocs are more likely than female postdocs to expect their spouse to make sacrifices for their career (Martinez *et al.* 2007). A randomized, double-blind study has also shown implicit bias² among science faculty of research intensive universities causing preferential selection of male candidates (Moss-Racusin *et al.* 2012). Male faculty have been found to employ fewer women (Sheltzer and Smith 2014), and appear less likely to accept evidence of gender bias in STEM (Handley *et al.* 2015). In biology specifically, attrition tends to occur during or after graduate school (Martinez *et al.* 2007). One problem is the lack of job security and lack of financial/childcare support that graduate students and postdocs experience, particularly around parenthood (Martinez *et al.* 2007). This affects both men and women, but is usually more acutely felt by women given their often greater role in childcare (O'Brien and Hapgood 2012). Coupled with the early-career demands of geographic mobility, this becomes a challenging period of life for many graduates. The extended period of apprenticeship encompassing graduate school and postdoctoral years is a very uncertain time that is not conducive to starting a family (Adamo 2013). Even when a researcher gains a potentially long-term position (as a research scientist or tenure-track), there often follows a limited time period to show success and gain stability (Adamo 2013).

Choosing family over career at various career stages may be voluntary or as a result of being discouraged, often based on a perception that the academic career and family are not compatible (Ceci and Williams 2011). The choice to prioritize family over career is one that both genders face, but that men seem less likely to make (Mason and Goulden 2004). Male scientists, while desiring a more egalitarian home relationship, often find that it conflicts with expectations in terms of devotion to work (Damaske *et al.* 2014). Women are more likely to seek part-time status for family reasons, whereas men tend to associate part-time status with retirement (Ceci and Williams 2011, Baer 2015). Although many men now take substantial responsibility for the care of children, the reality is that women still assume more responsibility for child-rearing than do men (Mason and Goulden 2004, Damaske *et al.* 2014). In fact, family formation—most importantly marriage and childbirth—appear to account for the largest leaks in the pipeline (Mason and Goulden 2004). An assessment of the National Science Foundation (NSF) Survey of Doctoral Recipients showed that women who were married and had children were 35% less likely to enter a tenure-track position after receipt of their Ph.D. than married men with children (Goulden *et al.* 2011). Women who do advance tend to do so at a high personal price, with faculty women less likely than faculty men to marry and more likely to divorce (Mason and Goulden 2004). Mason and Goulden have gone so far as to describe having children as “a career advantage for men, but a career killer for women.”

²Implicit bias refers to the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner. These biases, which encompass both favorable and unfavorable assessments, are activated involuntarily and without an individual's awareness or intentional control. Residing deep in the subconscious, these biases are different from known biases that individuals may choose to conceal for the purposes of social and/or political correctness. Rather, implicit biases are not accessible through introspection. (Definition from Kirwan Institute for the Study of Race and Ethnicity).

Given the gender issues observed across many STEM fields, we examined the demographics and attitudes found among members of the Society for Marine Mammalogy, using a Google Forms online survey (Appendix S1). The survey was conducted using voluntary participation following recruitment *via* an e-mail sent to the Society's membership e-mail list.

A 25% response rate was achieved from the survey recruitment e-mail, leading to 478 survey respondents, although only 474 specified gender. These came from 38 countries, but 65% were from the United States (reflecting the Society's demographics in which the majority of members are from the United States, but membership is represented by many countries). The survey allowed respondents to leave answers blank if they chose, which has led to slight differences in sample sizes for different questions. The majority of respondents were women (71.8% women *vs.* 27.2% men, 1% unanswered). Of the 478 respondents, 28% were students (and 16% of students were male). For the nonstudents, 193 of 233 females and 94 of 109 males had jobs in marine mammal science. Within these, there was general gender parity across common job types (Fig. 1), with the greatest differences observed in tenure-track university positions (male-biased), industry (female-biased) and contract work (female-biased). Almost half (48%) of respondents not working in the marine mammal field cited "no jobs" as one of the reasons ($n = 58$ nonstudents not working).

Among students, there was near parity between genders in terms of marriage and children (46% of women and 43% of men were married or in a domestic partnership, and 14% of women and 15% of men had children, $n = 109$ female students, 21 male students). However, among nonstudents, a greater proportion of men were married or in a domestic partnership (81% of men, *vs.* 65% of women) and had opted to have children (58% of men *vs.* 37% of women, $n = 233$ women, 109 men).

Of the whole data set, more men (51%, 66 of 130) than women (30%, 104 of 343) had children, and men tended to have more children (2.0 ± 0.7 for men, $n = 62$; 1.7 ± 0.7 for women, $n = 102$). Of these, many (49% of women, 52% of men) waited until after they had secured a permanent position before starting a family. Of those

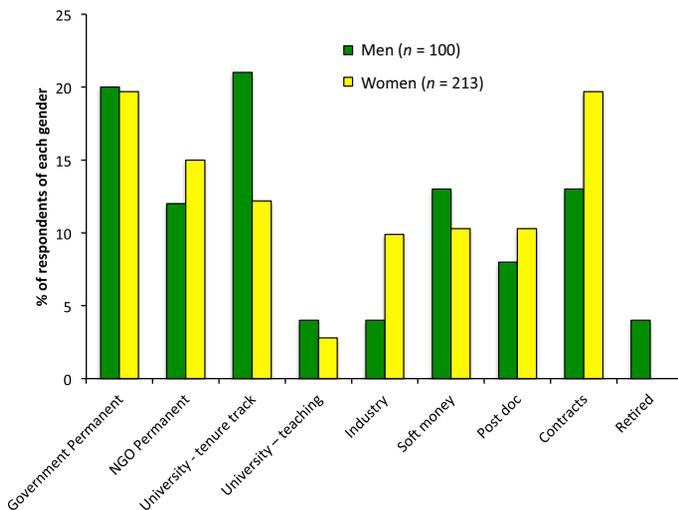


Figure 1. Percentage of men (green) and women (yellow) survey respondents employed in common types of marine mammal science careers.

with children, low numbers (33.6% of women, 9% of men) had taken a break from their career to raise their family. In terms of age of embarking on raising a family, more men had their first child while younger than 30 yr of age (36% of men *vs.* 25% of women), but this reversed by 40 yr of age (94% of women had their first child by this age, *vs.* 85% of men). Women appear to take on the majority of childcare (57% of women *vs.* 7% of men provide >60% of the childcare). However, caregiving responsibilities other than childcare were also relatively common (19.5% of men and 13.4% of women had additional caring responsibilities). Similar proportions (27% of women and 22% of men) chose not to have children in order to focus on their career ($n = 229$ women and 67 men who responded to this question).

Both men and women spent time away from home due to work-related activities (*e.g.*, fieldwork or conferences) each year (Fig. 2), although women tended to be away from home for less time overall. The median for women lay in the 2–4 wk category, whereas that for men lay in the 1–3 mo category.

Overall, levels of contentedness were high (Fig. 3), although men tended to agree more strongly than women with the positive statements in terms of happiness with their position, that they maintained a healthy work-life balance, that they felt respected, and that they were asked for their opinion by their colleagues. Women tended to agree more strongly than men for statements associated with changes needed in STEM fields to improve work-life balance, and the perception that we are losing skilled female scientists due to care-giving responsibilities (Fig. 3).

Although sexual harassment and discrimination were problems for both men and women (see Appendix S1 for phrasing of questions), both were experienced at a higher rate by women. A quarter (25%) of women and 2% of men had experienced harassment, and 52% of women and 25% of men had experienced discrimination ($n = 340$ women, 129 men).

In terms of priorities for change, survey respondents identified three general areas: changing attitudes toward work-life balance in general, and for caregivers in particular; addressing gender and racial inequity in leadership positions; and dealing with discrimination or harassment. Many felt that there are so many demands (teaching, research, administration, mentoring, networking, communication, commuting) that

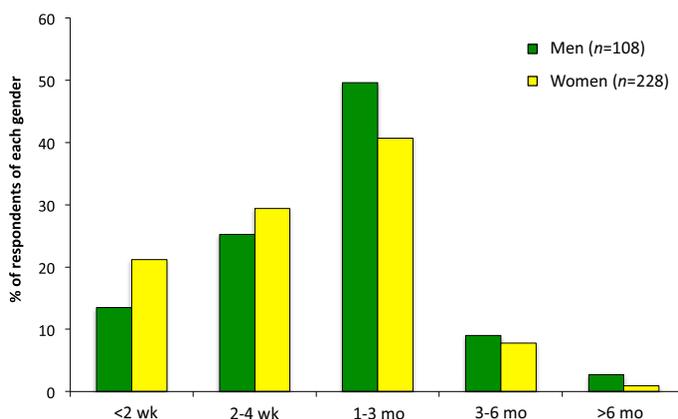


Figure 2. Survey results for the cumulative amount of time spent away from home due to work-related activities (*e.g.*, fieldwork or conferences) in any year for men (green) and women (yellow).

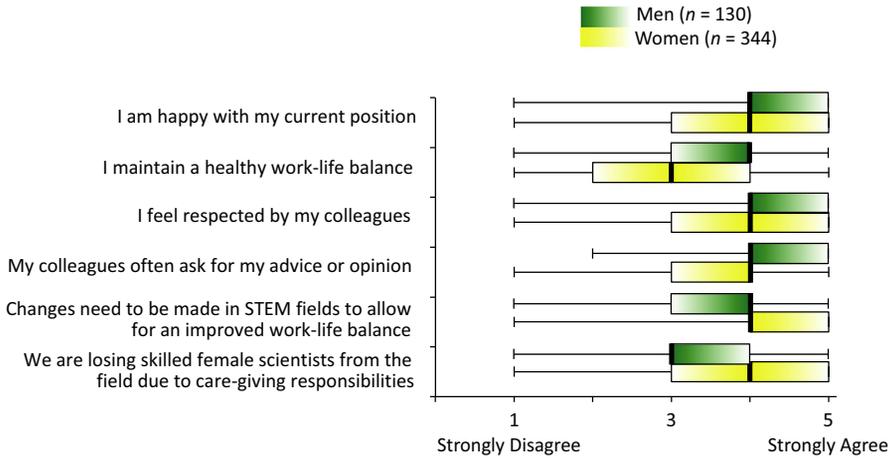


Figure 3. Survey responses from women (yellow) and men (green) in the Society of Marine Mammalogy (including students) showing reactions to the listed statements (from 1 = strongly disagree to 5 = strongly agree). Box plots are shown for median (heaviest color shading and stronger line) and interquartile range with whiskers for minimum and maximum values.

time management has become problematic, and it is difficult to take time for healthy activities. High competition for limited jobs leads to the common perception that commitment is synonymous with working long hours.

To further explore and promote discussion of these issues, we followed the survey with a workshop held at the Society for Marine Mammalogy's biennial conference in San Francisco in December 2015. The workshop had 48 participants, and there were more requests to participate than seats available at the conference, showing a high level of interest in this issue by the Society's membership. However, only eight attendees were men. The workshop included a plenary talk about equity in science and a discussion panel comprised of Society members from a variety of backgrounds (two men, six women), and finished with discussion amongst the audience and panel about concerns particular to the field of marine mammalogy.

Workshop participants offered several suggestions for priorities for change to alleviate work-life balance challenges in marine mammalogy. These included increased attention to mentorship, intentional gender equalization in job recruitment and plenary talks, developing a Society position on discrimination and harassment, and methods to make conferences and fieldwork more family-friendly. During the discussion at the workshop, the issue of what defines a "healthy" work-life balance was raised several times. Panelists had differing viewpoints but overall recommended the importance of being passionate about one's work, while keeping some perspective about goals for work and life. There was disagreement about the need to set time aside outside of work (particularly if work is fulfilling). However, all agreed that regular reevaluation of goals is vital since institutional and family constraints are highly likely to vary over time. In general participants agreed that this concept is a personal issue with no "one-fits-all" answer.

So what can the Society for Marine Mammalogy do? The 2015 Biennial Conference on the Biology of Marine Mammals achieved far more than any previous marine mammal conference in addressing gender inequity. In terms of both plenary speakers

and session chairs the conference organizers achieved gender parity (four of the seven plenary presenters, and 27 of the 55 session chairs were women). In addition to this, the conference posted a clear code of conduct policy (<https://www.marinemammalscience.org/conference/code-of-conduct-for-smm-meetings/>) detailing expected behavior, unacceptable behavior and how to report it, and the consequences of reported unacceptable behavior. The conference was also the first for the Society for Marine Mammalogy to offer childcare opportunities for a cost (although prohibitive costs resulted in a lack of uptake and subsequent cancellation of this option). However, some issues were not addressed, such as the provision of infant changing facilities near the conference meeting rooms, or designated quiet locations for breast-feeding or pumping, such that conference participants who were not staying in the conference hotel had little recourse for either of these childcare needs.

Overall, our survey of Society members illustrated many issues similar to other surveys within the ecological sciences (McGuire *et al.* 2012). While we were surprised at the number of members citing issues with discrimination and harassment, these were similar to other studies (Clancy *et al.* 2014). In this respect, we suggest that development of a Society harassment policy is needed (Table 1). This could be added to the currently available ethics policies for the Society (professional ethics, treatment of animals, and humane killing policies; <https://www.marinemammalscience.org/about-us/ethics/>).

Both survey respondents and workshop participants had several common suggestions for ways that the Society could take positive action to increase leadership for women and/or caregivers (Table 1). These included suggestions for the Board of Governors of the Society, such as increasing the visibility of women throughout the Society and encouraging women to nominate themselves for leadership roles, and ensuring gender-balanced shortlists for accolades, awards, and conference plenaries; suggestions for conference organizers, such as facilitating mentorship opportunities for early-career scientists perhaps *via* breakfast meetings; and suggestions for the general membership of the Society, such as the need to increase awareness of implicit bias and consideration of career-life balance issues when involved in recruitment in their day-to-day employment. However, we should note that attitudes around the provision of support for members with caregiving responsibilities varied between suggestions for specific conference provision for dependents and the opinion that this was not the remit of the Society.

The following considerations were points discussed by our members, but that fall outside the purview of our Society. Survey responses, workshop discussions, and previously published literature proposed solutions based around giving women some form of time allowance after having children. Flexible (and paid) parental leave certainly helps, and is available to differing extents in different countries and/or by different employers. Offering equal maternity and paternity leave is available in few countries, but encouraging men to take such leave could also offset the likelihood of discrimination in hiring practices (employers would be faced with candidates equally likely to take leave). Similarly, workplace flexibility should be offered for both new mothers and fathers, including part-time options for working parents (with a right to return to full time). The ability to stop or slow the tenure clock under part-time work arrangements would offset the cost of reducing hours for childcare (Goulden *et al.* 2011). Making such time costs apparent would assist in fair evaluation of achievements (Table 1). However, part-time workers also suffer from the nonlinear relationship between time and output and the inherent “success to the successful” structure of research, so metrics and assessment of track record need to adequately take any part-time status into account (O’Brien and Hapgood 2012).

Table 1. Recommended positive actions suggested by survey respondents and workshop participants that can be considered by the Society for Marine Mammalogy. Suggestions are separated into actions for consideration by the Board, the conference organizers, and for the general membership to consider within their individual institutions or in their potential role as employers.

Area	Action
Board of Society	
Society leadership	Encouragement of women (increase awareness that women are less likely to self-nominate). Ensure open advertising of positions.
Scholarships/awards	Ensure gender-balanced short-lists and/or redaction of names on applications (<i>i.e.</i> , double-blind review).
Harassment and discrimination	Develop guidelines or code of practice posted on the Society website.
Student chapters	Involve the student chapters to bring issues to the surface in the early career.
Conference organizers	
Esteem indicators	Ensure gender balanced plenary speakers, session chairs, conference speakers.
Conference childcare options	Baby-change facilities and private breast-feeding/breast-pumping space. Provision of a shared space (<i>e.g.</i> , family room with DVD player, books and toys), for cooperative child-minding. Provision of affordable childcare.
Support	Set-up “dependent care subsidies” to provide financial assistance for those with caring commitments to help alleviate additional costs associated with their travel.
Provision for nonattendees	Consider enabling remote attendance or online provisions.
Mentoring	Look into an early-career mentorship program such as a conference breakfast meeting.
General membership	
Intentional recruitment/retention	Eliminate implicit bias by more thoughtful assessment based on criteria determined in advance (Jackson <i>et al.</i> 2014, Smith <i>et al.</i> 2015).
Work-life balance	Enable reduction in workload without loss of status. Make life challenges visible (for example on CV, such as listing maternity leave and part-time status) and promote fair evaluation.
Mentoring	Be frank about the challenges of becoming a marine mammal scientist, including travel requirements.

Another problem felt by many Society members is termed the “two-body” issue, when both partners work in similar jobs. The two-body problem is felt more acutely by female scientists than by male scientists, since female scientists are more likely to have another scientist as a spouse (Mason and Goulden 2004). In a survey of postdoctoral fellows at the National Institute of Health, among dual-career couples, 30%–35% of respondents from both genders felt the need for either they or their spouse to make career concessions. More married women (31%) said they would make changes to accommodate their husband’s job, whereas only 21% of men reported the same (Martinez *et al.* 2007). Of married female graduates, 65% acknowledged that

spousal-career concerns affected their search for a permanent job, whereas only 38% of married male graduates said the same (Mason *et al.* 2013). Effective dual-career policies can therefore be highly beneficial to the retention of female scientists (Lubchenco and Menge 1993). While the Society for Marine Mammalogy can do little to promote dual careers, we highlight this so that any Society members serving on recruitment panels are aware of this issue, and understand that encouragement of dual-appointments may help recruit and retain female scientists.

The need for deliberate consideration and alleviation of implicit bias is becoming increasingly clear and was raised multiple times in the survey responses and during the workshop. Implicit assumptions, stereotyping, and stereotype threat lead to inequitable hiring and retention policies (O'Brien *et al.* 2015). Stereotypes are the belief that most members of a group have some characteristic. Stereotypes may be explicit (that one deliberately thinks about and reports) or implicit (occurring outside of conscious awareness and control). For example, even if you say that men and women are equally good at math, it is possible that you associate math with men without knowing it. Stereotype threat is the pressure caused when negative stereotypes place people from the stereotyped groups under cognitive and physiological stress that then interferes with their performance. Stereotyping and implicit biases can lead to discriminatory behavior (Jackson *et al.* 2014, Smith *et al.* 2015). Male leaders who have female support in terms of childcare might have such implicit bias in terms of who they think will succeed. This bias can be minimized by taking practical and cognitive approaches: basing decisions on robust criteria determined in advance and monitoring outcomes for patterns that might suggest unintentional bias (Jackson *et al.* 2014, Smith *et al.* 2015).

Lastly, many countries have legal requirements to ensure equitable practice. We highlight examples from the European Union and United States since the majority of Society membership, and the majority of those participating in our survey were from these regions (65% USA, 12% EU). Within the European Union several pieces of legislation and European Directives commit member countries to gender equality, equal pay for equal work, and ban discrimination. Member states have national equality bodies to monitor the application of gender equality laws. Within the United Kingdom, institutions and departments are encouraged to be proactive in tracking gender inequality, using an award-based approach. The Athena SWAN Charter (established in 2005) enables organizations to apply for an Athena SWAN Award recognizing their commitment to, and progress on, equality and diversity. Such awards are becoming increasingly required for grant applications (*e.g.*, the National Institute for Health research funding requires a minimum silver Athena SWAN Award). Within the United States, Title IX prohibits sex discrimination in education or any federally funded program. It states (in part) that “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance.” Given its status as a registered charitable organization in the United States, the Society for Marine Mammalogy is not required to adhere to Title IX, but many of the Society’s US members are employed by the US Federal Government or US universities, or receive funding from federal funding agencies, which require adherence to Title IX. For example, any federally funded program is in violation of Title IX if it fails to allow pregnant mothers a reasonable period of leave for childbirth or fails to guarantee that graduate students can return to their former positions as teaching assistants or postdoctoral fellows after maternity leave.

In conclusion, the Society for Marine Mammalogy has much to be proud of in its acceptance and promotion of equity and career-life balance. However, our survey results and further discussion suggest that several issues are in need of additional attention. Leaks in our pipeline—the attrition from marine mammal science of women, and others with additional caring responsibilities—represent a huge intellectual and economic loss (Goulden *et al.* 2011). By striving for equity and promoting work-life balance within our Society, we will help to ensure a healthy and productive community likely to achieve greater success in its aims promoting education, high quality research, conservation and management of marine mammals.

ACKNOWLEDGMENTS

Many thanks to Dr. Colette Patt, UC Berkeley, who provided a broad introduction to these issues, laying the foundation for analysis of our survey results and discussion at the workshop; and to our panelists: L. Ballance, A. Hall, R. Lent, C. Reeve, J. Straley, P. Tyack and S. Villegas-Amtmann for sharing their ideas and experiences. Many thanks also to the sponsors of the workshop: Women in Acoustics Committee of the Acoustical Society of America, Loggerhead Instruments, Teledyne-Reson, and Wildlife Computers. Ethical approval for the online survey was granted through the University of St Andrews. The manuscript benefitted from helpful reviews from Alana Phillips and an anonymous reviewer. Further resources (compiled for the workshop held as part of the Society for Marine Mammalogy Conference, 2015) can be found at: <http://www.st-andrews.ac.uk/~sh43/CLBworkshop/>.

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Received: 13 September 2016

Accepted: 11 February 2017

SUPPORTING INFORMATION

The following supporting information is available for this article online at <http://onlinelibrary.wiley.com/doi/10.1111/mms.12407/supinfo>.

Appendix S1. Questions used in career-life balance survey. The potential responses available are shown in square brackets.