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Women in the International Bryozoology Association, 1965 to 2001

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1. Introduction

In 2001, the first International Bryozoology Association (IBA) Young Investigator Award was given to a female scientist, Dr Africa Gomez. At that time, 33% of the conference delegates and 52% of the IBA membership were women. A century earlier, it would have been difficult to find a female scientist working on bryozoans. Recent studies describing the work of bryozoologists before 1900 refer to few or no women.¹

The earliest women in bryozoology included Eliza Jelly (1829–1914), pioneer and author of *The Synonymic Catalogue of the Recent Marine Bryozoa* (1889 and still useful today),² her colleague Margaret Gatty (1809–1873), and Alice Robertson (1859–1922), one of the earliest American women of science.³ In the early 1900s, women active in bryozoology included the Canadian Madeleine Fritz (1896–1990), the Russians Aleksandra Nikiforova (1894–1939), her daughter Lyudmila Nekhorosheva, and Iraida Morozova (1919–2007) and Galina Astrova (1906–1973),⁴ the German Eveline Marcus (1901–1990) who spent most of her professional life in Brazil,⁵ Anna B. Hastings (1902–1977) who worked on Antarctic bryozoans from the voyage of *HMS Discovery*,⁶ Mary Dora Rogick (1906–1964), a professor in New York, Joan Crockford, noted for her monographs on Australian fossil bryozoans,⁷ as well as USGS paleontologist Helen Duncan (1910–1971)⁸ and Frenchwoman Genevieve Bobin (1912–1989).



Figure 1. Participants (bryozoologists' surnames in capital letters) in the meeting on post-Palaeozoic Bryozoa of the North Sea region, Stockholm, Sweden, 24th-27th May 1965. Left to right: Sten SCHAGER, Kei Mori, Alan MEDD, Giampietro BRAGA, Enrico ANNOSCIA, Robert LAGAAIJ, Patricia COOK, Yves GAUTIER, Ole BERTHELSEN, Richard BOARDMAN, Franciczek Adamczak, Monique LABRACHERIE, Harry Mutvei, Nils SPJELDNAES, Janine PRUD'HOMME, Lars SILÉN, Gilbert LARWOOD, Alan CHEETHAM, Ehrhard VOIGT, Ivar Hessland.

By the mid 1900s there were more women working with bryozoans, in America, Europe, Russia and beyond. In 1965 the "Stockholm 16" founded the International Bryozoology Association (IBA); among them were three women: Patricia L. Cook, Monique Labracherie and Janine Prud'homme (1932–1992) (Figure 1).⁹ Pat Cook was the first secretary of the Association and held that office for nine years. At the first IBA conference in 1968, six women appeared in the conference photo (13% of the people there). In the 42-year history of the IBA, women have served as conference hosts, conference volume editors, and, twice, as presidents of the Association (June Ross from 1989 to 1992; Judith Winston is the current President, 2007-2010).

Does this superficial evidence of positive contribution by women to the IBA throughout its history actually bear more careful scrutiny? Have the roles women play in the association changed over time? And why should the Association care?



Figure 2. Delegates at the 12th International Bryozoology Association conference held in Trinity College, Dublin, Ireland between 16th and 21st July 2001

2. Methods

Conference photos and attendance lists from the twelve IBA conferences from 1968 to 2001, along with their corresponding conference volumes,¹⁰ were collected and the women participating were identified. The authorship demographics of the IBA conference volume from 2001 was compared to those of the proceedings of the Millennium Brachiopod Congress held in London in 2000¹¹ and the International Echinoderm Conference held in Dunedin also in 2000.¹² Membership lists from 1986 onwards (published in IBA Newsletters) were also examined. Where possible, older members of the IBA were contacted for information about names which did not lead easily to gender-identification. Various members of the association provided their records and memories to aid analysis.

In an informal survey, women listed in the 2002 Membership list were contacted by mail and asked about their current employment and personal status. These data were compared (as closely as possible) with similar information about the six original attendees of the 1968 conference in Milan, obtained from personal memories, printed obituaries, and profiles.

Table 1. Participation by women in the International Bryozoology Association from 1965 to 2001.

Year	1965	1968	1971	1974	1977	1980
Conference location	Stockholm	Milan	Durham	Lyon	Woods Hole	Durham
Delegates in Attendance List¹						
Total	16	49	*	*	*	*
Female	3	6	*	*	*	*
% female	19%	12%	*	*	*	*
Delegates in conference photo						
Total		45	54	69	58	56
Female		6	17	15	12	15
% female		13%	31%	22%	21%	27%
Conference hosts²						
		Annoscia	Larwood	David Pouyet	Abbott	Larwood
% female		0%	0%	50%	100%	0%
Conference Volumes³						
Editors		Annoscia	Larwood	Pouyet	Larwood Abbott	Larwood Nielsen
% female		0%	0%	100%	50%	0%
Authors of Papers⁴						
Total		49	71	70	54	56
Female		11	13	14	11	13
% female		22%	18%	20%	20%	23%
Composition of authors						
Total papers		45	58	54	38	34
All male authors		35	35	41	28	21
All female authors		9	13	8	7	6
Mixed authorship		1	0	5	3	7
IBA Leadership⁵						
President	Cheetham	Spjeldnaes	Maturo	Ryland	Soule JD	Larwood
Secretary	Cook	Cook	Cook	Nielsen	Nielsen	Nielsen
Treasurer ⁵						
Council members						
Total	5	5	4	5	4	5
Female	1	2	1	3	2	0
% female	20%	40%	25%	60%	50%	0%
IBA Membership						
Total	72	*	*	*	*	*
Female	19	*	*	*	*	*
% female	26%					

* Information not available

1 May include accompanying persons

2 Bold indicates female

3 Abstracts and plenaries not considered here because not present in all volumes

4 If one person wrote 2 papers, that person appears twice

5 Was "travel support fund" 1986-1992

1983	1986	1989	1992	1995	1998	2001
Vienna	Bellingham	Paris	Swansea	Wellington	Panama	Dublin
*	*	*	83	74	69	112
*	*	*	22	22	20	37
*	*	*	27%	30%	29%	33%
66	74	69	80	70	68	89
17	17	19	25	23	24	34
26%	23%	28%	31%	33%	35%	38%
Vavrá	Ross	Bigey d'Hondt	Ryland Rubin Taylor	Gordon Smith	Jackson Herrera	Wyse Jackson Spencer Jones Buttler
0%	100%	50%	0%	50%	50%	67%
Nielsen Larwood	Ross	Bigey d'Hondt	Hayward Ryland Taylor	Gordon Smith Grant Mackie	Herrera Jackson	Wyse Jackson Buttler Spencer Jones
0%	100%	50%	0%	33%	50%	67%
59	57	89	75	86	74	93
15	11	27	19	17	18	25
25%	19%	30%	25%	20%	24%	27%
39	41	55	45	43	35	48
24	29	31	26	28	19	30
8	6	11	8	3	4	4
7	5	13	11	12	12	14
Hillmer Nielsen	Cuffey Blake Hinds	Nielsen Blake Hinds	Ross Blake	Hayward Spencer Jones	McKinney Spencer Jones	Gordon Wood Smith
5	5	5	6	6	6	6
2	0	2	1	0	3	1
40%	0%	40%	17%	0%	50%	17%
*	237	276	217	239	243	158
*	53	82	66	71	76	82
	22%	30%	30%	30%	31%	52%

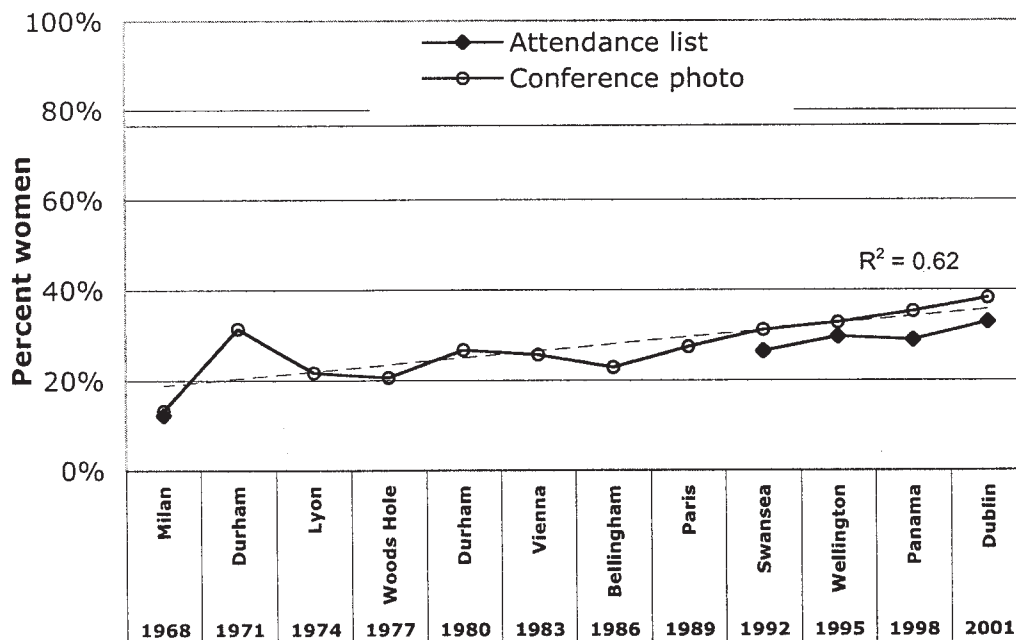


Figure 3. Proportion of women attending conferences of the International Bryozoology Association from 1968 to 2001, as determined by published lists of attendees and conference photos.

3. Results

3.1 Women present and accounted for

Of the 16 founding IBA members, three (19%) were women (Table 1). At the first IBA conference in Milan in 1968, 6 women were listed among the delegates (12%) and occur in the conference photo (13%) (Figure 3). Through the 1970s and 1980s, women made up 21–31% of the people in the conference photo. A gradual increase through the 1990s culminated in Dublin 2001, where 33% of the attendees were women, and 38% of people in the conference photo were female (Figures 2 and 3). The first woman to host a conference and edit a conference proceedings volume was Simone Pouyet (Lyon in 1974), and women have played both these roles since then, particularly Marie Abbott and June Ross, who were sole conference hosts in 1977 and 1986 respectively (Table 1).

Although women attending conferences has increased over time from 49 in 1968 to 112 in 2001, the number of female authors in conference proceedings has not varied greatly over the same time (Table 1). Women made up 22% of authors in the 1968 Milan volume, compared with 27% in the 2001 Dublin volume. In general, however, early papers were mostly by women who chose to publish alone; today more women are publishing in

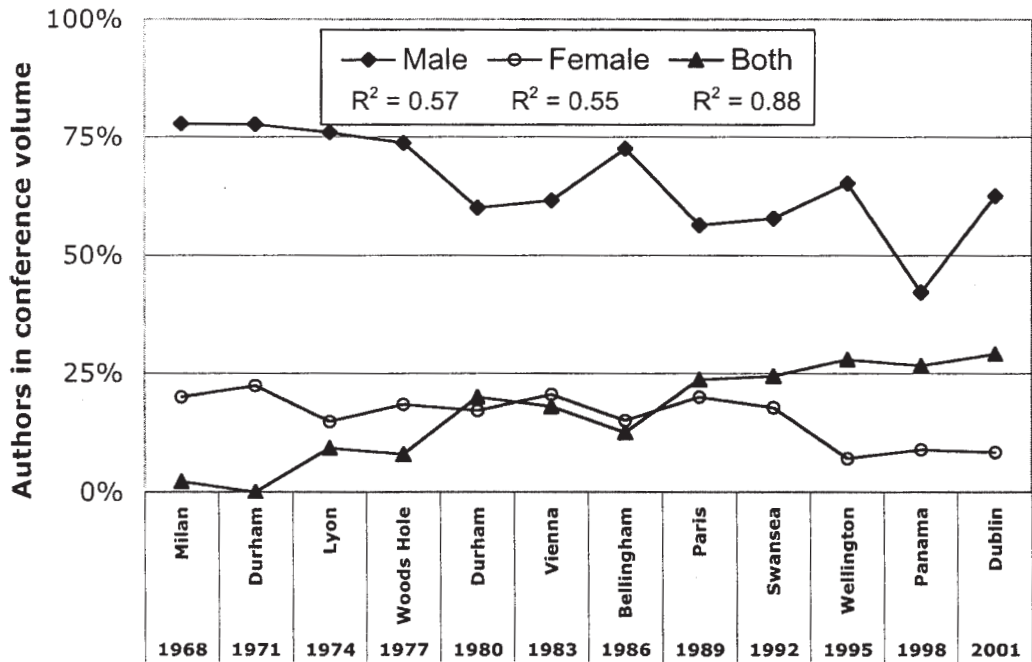


Figure 4. Changes in authorship of International Bryozoology Association conference papers over time. Recently there are fewer papers with all male authors and all female authors and more with mixed-gender authorship.

mixed-gender groups (Figure 4; R^2 for all female is 0.55, R^2 for mixed gender group is 0.88). Over the same period the proportion of papers written only by men has declined from 78% to 63% ($R^2 = 0.57$).

Women have been less active in management and administration of the Association. While they have served as association secretaries, treasurers, and council members since 1965 (Table 1), only one of the 13 presidents of the IBA was a woman (June Ross from 1992 to 1995). In three elections (1980, 1986, and 1995) the five or six council members did not include any women, and in only three years did the number of women elected to council reach or exceed 50%. In 2001, the 12-member council includes 4 women (33%).

Membership lists have been published since 1986, and as the membership of the IBA has declined from 237 in 1986 to 158 in 2001 (mainly due to an attempt in 1999 to remove old and inactive names from the list), the number of women has climbed from 53 to 82 (22% to 52%; Table 1). Why is it that, with an overall membership of 82 women in 2001, only 37 women were able to attend the conference in Dublin? Overall lower income and lower employment status for women scientists in general,¹³ as well as family commitments, may mean that while many can afford to be members, fewer can afford the greater investment of travel and conference attendance.

Table 2. Women's participation in conference proceedings from International Bryozoology Association Conference 2001, Millennium Brachiopod Congress 2000, and International Echinoderms Congress 2000.

Organisation	International Bryozoology Association	Millennium Brachiopod Congress	International Echinoderms Conference
Year	2001	2000	2000
Location	Dublin	London	Dunedin
Total Authors	93	170	344
Female Authors	25	47	100
% Female authors	27%	28%	29%
Total Papers	48	108	151
All male	30	60	82
All female	4	29	25
% All female	8%	27%	17%
Mixed	14	19	44
% Mixed	29%	18%	29%

3.2 The wider picture: women in invertebrate science

Comparison of the IBA conference proceedings volume in 2001 with two similar conference volumes from 2000 (the Millennium Brachiopod Congress (MBC) and the International Echinoderm Conference (IEC)) shows that the status of women in the IBA is typical of multi-disciplinary invertebrate-science research groups (Table 2). Despite the difference in overall membership numbers, the percentage of female authors is remarkably consistent at 27-29%. While the IEC volume contains a similar proportion of mixed-general authorship papers, the MBC still contains many women who publish in all-female groups.

3.3 That was then, this is now

In 1968, the six women attending the IBA's first conference in Milan included none with a doctorate, and only half who were paid to be bryozoologists (Table 3). One was a museum researcher, one a student, and the rest were research assistants or technicians. Three of the six were single, and none had any children (as far as anyone can recall).

A dramatic change has occurred over the intervening 40 years. In 2001, 65% of the women surveyed held PhDs, and a further 18% were PhD students. Three-quarters of these women were paid to do bryozoology: 71% as academics or researchers and only 12% as technicians or assistants. 82% of these women had partners, and six of them had a total of nine children (Table 3).

Table 3. Professional and personal status of women attending International Bryozoology Association conferences in 1968 and 2001.

	1968 (Milan)		2001 (Dublin)	
	Women	Percent	Women	Percent
IBA Members	20		82	
Conference attendees	6		34	
Survey respondents ¹	6		17	
Ph.D.	0	0%	11	65%
Paid bryozoologist	3	50%	13	76%
Museum/Academic	1	17%	12	71%
Research Asst Post-Doc	4	67%	2	12%
Ph.D. Student	1	17%	3	18%
Partner	3	50%	14	82%
Children	0	0%	6	35%

¹For the 1968 survey, memories, profiles and obituaries have provided the information. For 2001, an informal e-mail survey of female members was carried out.

4. Discussion

During the scientific revolution, the idea arose that women were inherently unable to manage the masculine and public activity of science, despite the many discoveries of the “Scientific Ladies” of the 17th century.¹⁴ The professionalisation of science (with a subsequent devaluation of the work of the dedicated amateur), development of national academies of science, and the exclusion of women from universities until the late 1800s, as well as the increasing segregation of women into the domestic and private sphere of life all led to the exclusion of women from professional science. Few women (such as Eliza Jelly) were able to pursue scientific investigations, and of those who did, very few were accorded respect for their work. When Jelly published her valuable book she had to give only her initials and not her full name on the title page. For many fine scientists at that time, “the problem was not the quality of their science, but their gender”.¹⁵

By the early part of the 20th century, strong and exceptional women were beginning to overcome barriers and become professional scientists, often with the help and encouragement of their male relatives and colleagues. These exceptional women achieved a great deal, but they did not serve as role models for “ordinary” young women. The isolation of being the only woman in a class or research group is daunting to many. Below a critical threshold, female participation in an activity is seen as exceptional or abnormal. Only when female participation reaches about 30% is their involvement seen as “normal”.¹⁶

Even after many more women became scientists, and it was no longer a peculiar activity, women faced a major challenge: the choice between a family and a career. Not long ago, women were expected to give up their jobs as soon as they married. Later, it was children that caused them to quit. Even today young women are presented with the illusion that their choice to become a scientist limits their personal choices in a way that young men do not generally consider.

We have seen over the last 40 years a real change in women's scientific careers. Women have progressed from "amateur" scientists through a series of semi-professional and technical appointments to now holding senior research posts and professorships. Among IBA members today are many who balance their full-time professional careers with one or more children. The presence of these older women acting as role models and mentors can help young women to understand the choices they face, and encourage them as they grow and learn.

The degree of involvement of women in the International Bryozoology Association may seem an abstruse and irrelevant series of statistics. For a young woman who is making decisions about her career, however, it is an important consideration. The degree to which women have been able to succeed in bryozoology up to now must be a significant factor influencing the decisions of young women considering future study directions.

Good scientists do good science, and bryozoology will need good thoughtful minds as it moves into the future. It makes no sense to allow irrelevant barriers to prevent participation by potentially excellent scientists, whether male or female. Increasingly it is becoming clear that the diversification of scientists and their associated values, beliefs, experiences and cultures leads to better and more robust science.¹⁷ Just as diversity is strength in populations of organisms faced with environmental change, diversity can only add to the ability of a group of scientists to adapt to change and persist into the future.

5. Conclusions

Overall the International Bryozoology Association has an admirable record of including and promoting woman scientists, which has added much to the strength and relevance of the Association. Between 1965 and 2001, more and more women have become bryozoologists, active in conferences, publishing, and governance of the IBA. At the same time, they have been able to gain higher degrees and maintain professional careers while making real choices about their personal lives. The presence of women adds diversity and strength to a scientific group, both in approach and standpoint. Many key contributors to bryozoological science over the years have been women. These senior women act as role models and mentors for younger women, ensuring that women will always occupy an important place at the IBA.

6. Acknowledgements

I am grateful to Pat Cook, Roger Cuffey, Dennis Gordon, Mary Spencer Jones, Robin

Wass and others who provided material and memories. I also record my gratitude to the conference volume and newsletter editors who had the foresight to include membership information in their publications, allowing a study like this to be done.

Notes

- 1 e.g., Cadée, G.C. 2002. Early bryozoan studies in the Netherlands. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 31-44. Dublin, International Bryozoology Association; Cuffey, R.J., Davis, R.A. and Utgaard, J.E. 2002. The Cincinnati paleobryozoologists. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 59-80. Dublin, International Bryozoology Association; d'Hondt, J.L. 2002. The French Pre-Lamarckian bryozoologists. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 81-96. Dublin, International Bryozoology Association; Wyse Jackson, P.N. and Spencer Jones, M.E. 2002. From Rondelet to Stockholm: four centuries of bryozoological research. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 363-381. Dublin, International Bryozoology Association.
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- 3 For a detailed assessment of Robertson's life and work see the paper by Woolacott and Sears in this volume. See also Soule, D.F. 2002. Northeastern Pacific bryozoology and the American bryozoologists. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 251-274. Dublin, International Bryozoology Association.
- 4 See papers by Nekhorosheva and by Gilmour and Yarinpil in this volume.
- 5 See Winston, J.E. 2002. Ernst Gustav Gotthelf Marcus (1983-1968) and Eveline Agnes du Bois-Reymond Marcus (1901-1990). In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 339-362. Dublin, International Bryozoology Association.
- 6 M.E. Spencer Jones, J. Sanner and C.S. Thomas, this volume.
- 7 S. Turner, this volume.
- 8 Wyse Jackson and Spencer Jones, note 1.
- 9 Cheetham, A.H. 2002. The founding and early history of the International Bryozoology Association, 1965-1974. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 45-58. Dublin, International Bryozoology Association.
- 10 For details about the IBA conferences, see Reguant, S. 2002. Thirty-four years (1968-2001) of bryozoology – the IBA international conferences. In P.N. Wyse Jackson & M.E. Spencer Jones (eds), *Annals of Bryozoology*: 233-242. Dublin, International Bryozoology Association.
- 11 Brunton, C.H.C., Cocks, L.R.M., and Long, S. (eds) 2000. Millennium Brachiopod Congress Proceedings. Taylor and Francis, London.
- 12 Barker, M.F. (ed.) 2001. *Echinoderms 2000*. Proceedings of the 10th International Conference, Dunedin. A A Balkema, Lisse, 590 pp.
- 13 See for example Noordenbos, G. 2002. Women in academies of science: from exclusion to exception. *Women's Studies International Forum* 25: 127-137.
- 14 Noordenbos, note 13.
- 15 Noordenbos, note 13, p. 131.
- 16 Byrne, E. 1993. Women, science, and the Snark syndrome: myths out, policy strategies in. In: Cresswell, M. (ed), *Celebrating Women in Science*, Proceedings of the Women's Suffrage

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- 17 Rosser, S.V. 1988. Good science: can it ever be gender free? *Women's Studies International Forum* 11: 13-19.