

100 Years of Science under ICES

Introduction

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Convener and Editor

The ICES Symposium on "100 Years of Science under ICES" was held 1–4 August 2000 at the Marina Congress Center in Helsinki, Finland. The Symposium was hosted by the Finnish Institute of Marine Research (FIMR) and was co-sponsored by FIMR, the Finnish Game and Fisheries Research Institute, the Nordic Council, the Norwegian Research Council, the International Whaling Commission, the US National Science Foundation, and the North Atlantic Marine Mammal Conservation Organization.

The Symposium was one of several events and activities held to celebrate and commemorate the Centenary of the International Council for the Exploration of the Sea. Although the Council's official birthday was not until 2002, various observances, including the Symposium, were held in the preceding several years, beginning in 1999 in Stockholm. The Symposium was officially authorized by the Council at the 1996 Annual Science Conference (ASC) held in Reykjavik, Iceland, with Emory D. Anderson (USA) appointed as the



Figure 1. Scientific Steering Committee, local organizers, and Symposium Secretariat. Front row (l-r): Margaret Moody, Kaija Pönni-Susiluoto, Emory Anderson, Maiju Koivula, and Pentti Mälikki. Back row (l-r): Robert Dickson, Walter Lenz, Tim Smith, Orestes Cendrero, Jakob Jakobsson, Eric Mills, Jari Helminen, and David Griffith. Not shown: Bodil Chemnitz, Matti Maunumaa, and Päivi Siltanen.



Figure 2. Symposium participants.

Convener. A Scientific Steering Committee (Figure 1) was appointed, including Orestes Cendrero (Spain), Robert R. Dickson (UK), David de G. Griffith (Ireland), Jakob Jakobsson (Iceland), Walter Lenz (Germany), Eric L. Mills (Canada), and Tim D. Smith (USA). Initial plans for the Symposium were drawn up by the Convener and Steering Committee at the 1996 ASC and developed more fully over the succeeding several years via correspondence and meetings held in conjunction with the 1997–1999 ASCs. It was decided that the Symposium should furnish a retrospective synthesis of the major developments in marine fisheries, hydrography, and marine environmental quality, the three broad disciplines in which the Council's scientific work has been centered. The primary aim would be to highlight, explain, and provide fresh insight into the principal historical events associated with those developments. From the many important thematic areas in which ICES played a leading scientific role during its first 100 years, twelve main developments were selected as session themes. It was decided that the themes would feature keynote papers, contributed papers, and contributed posters, with the keynote presentations providing a broad synthesis and explanation of each development and the contributed papers and posters focusing on key

accomplishments, researchers, important events, and controversies.

A preliminary announcement for the Symposium was circulated at the 1997 ASC in Baltimore, Maryland, USA, with the formal call for papers issued a year later. The response was overwhelming; in order to accommodate the large number of submitted contributed papers, the Symposium was expanded from three to four days. Regrettably, a number of submissions still had to be rejected because of insufficient time in the program for their presentation, while others were assigned to be presented as posters.

At the opening of the Symposium, the approximately 100 participants from 19 countries (Figure 2) were welcomed by the Director of the Finnish Institute of Marine Research and First Vice-President of ICES, Pentti Mälikki. The President of ICES, Scott Parsons (Canada), gave a welcome address, and the Convener provided some background and introductory remarks. The Symposium was honored to have in attendance all eight living Presidents of ICES (Figure 3), many of whom authored presentations, as well as the widow (Hilda Parrish) of another President (Basil Parrish, 1976–1979). The oldest participant was Jens Smed (born in 1914), former ICES Hydrographer, who joined the



Figure 3. Presidents of ICES. Back row (l-r): Gotthilf Hempel (1979–1982), Warren Wooster (1982–1985), Ole Johan Østvedt (1985–1988), and Jakob Jakobsson (1988–1991). Front row (l-r): David Griffith (1991–1994), Alain Maucorps (1994–1997), Scott Parsons (1997–2000), and Pentti Mälkki (2000–2003).

Council's Service Hydrographique in 1939, became Hydrographer in 1946, and retired in 1984 after nearly 45 years of distinguished service. At the Symposium, and in these proceedings, Jens Smed co-authored the lead-off keynote paper (Smed and Ramster, 2002) and authored another contributed paper (Smed, 2002).

A total of 15 invited keynote papers (Figure 4) and 56 contributed papers were presented in 12 consecutive sessions over four days. In addition, 10 presentations were given via posters. While not wishing to single out and identify particular presentations as being especially outstanding or noteworthy, there were, in fact, a number that were exceptionally educational, well delivered, and supported by high-quality visual aids. A special historical highlight was the narrated (by David Griffith, General Secretary of ICES) showing of a seven-minute video of the 29th ICES Statutory Meeting held in May 1936 in Copenhagen. The video was produced in 1993 by Edgar M. Thomasson, ICES Librarian and Information Officer at the time, from a 16-mm silent film discovered in the archives of the ICES Secretariat in Copenhagen. The final two keynote presentations, as well as a poem penned and read by Robert Dickson entitled "Epitaph, Helsinki" (Dickson, 2002a), were given at the concluding session held in conjunction with the Symposium dinner.

Nearly all of the authors of papers and posters presented at the Symposium claimed the distinction of having been engaged in some way in the conduct of scientific research under the ICES umbrella, which added a personal and special dimension of ownership to the many historical perspectives that they offered. Some authors savored involvement spanning nearly half of the life span of ICES, whereas others were relative newcomers. In addition to those present at the Symposium, thousands of other marine scientists have contributed to the impressive record of achievement with which the name "ICES" is associated. All who have participated, whether as founding figures, as leaders and noted achievers, or as humble workers, whether in key roles or in supporting capacities, can be truly proud of their respective contributions to and affiliation with the venerable, one-of-a-kind organization whose unique structure, function, longevity, and binding spirit are unparalleled in the annals of international marine science.

It is altogether fitting that the reflections and reviews tendered by the individuals who assembled in Helsinki during 1–4 August 2000, a small subset of the body of past and present practitioners of marine science under ICES, be preserved in these published proceedings as a lasting contribution to the historical record and legacy



Figure 4. Keynote speakers. Front row (l-r): Michael Sinclair, Scott Parsons, Gotthilf Hempel, and Jake Rice. Middle row (l-r): John Ramster, Jens Smed, Jakob Jakobsson, Øyvind Ulltang, and Alasdair McIntyre. Back rows (l-r): Warren Wooster, Katherine Richardson, Robert Dickson, David Griffith, Helen Rozwadowski, James Stewart, Tim Smith, and Jens Meincke.

of ICES. This volume is coupled with two other works, *Seventy Years Agrowing* by Went (1972) and *The Sea Knows No Boundaries: A Century of Marine Science under ICES* by Rozwadowski (2002), to form a comprehensive historical account of the first century of the life of ICES.

When celebrating 100 years of scientific achievement, one cannot help but remember the many individuals, now departed, who have labored in the name of ICES. We remember these predecessors who founded the Council, faithfully nurtured it with a unique and unflinching spirit of cooperation that still lives today and has become a trademark of ICES, and contributed to its successes during decades of toil and growth. Fresher still in our recollections are friends and colleagues of our own time who also made their mark in science, in the work of ICES, and in our hearts. A fitting tribute to all those deceased men and women whom we remember collectively and individually is the dedication of the Symposium and these published proceedings in their memory.

Sixty-five of the 71 papers presented orally in Helsinki are included in this volume. The papers in Section

I render a description of the overall scientific and political environment in which ICES was established and grew throughout the 20th century, as well as accounts of and insights into the lives and experiences of some of the early ICES pioneers, with particular emphasis on two Norwegian and Russian scientific stalwarts, Johan Hjort and Nikolai Knipowitsch (e.g., Schwach, 2002; Lajus, 2002; Solemdal and Serebryakov, 2002). Papers in Section II focus on noteworthy hydrographic studies conducted under the ICES flag, with special attention to the efforts and contributions of Otto Pettersson (Svansson, 2002) and Martin Knudsen (Morcos, 2002; Smed, 2002) and to many of the multinational field process studies coordinated by ICES. Papers in Sections III–V consider the important role played by ICES in the fields of primary and secondary productivity, marine environmental quality, and natural variability and its effect on the ecosystem. The papers in Section V constitute perhaps the most coordinated group in the volume. Solicited by the Session's keynote presenter (Robert Dickson), whose own paper (Dickson, 2002b) is built around four case studies which describe the growth of our understanding in contrasting aspects of biophysical

change, the contributed papers summarize some of the important scientific understanding reached on physical-biological relationships as a result of the collection and maintenance of long hydrographic and ecological data time-series, the continuation of which is strongly recommended.

The next five sections (VI–X), which contain roughly half of this volume's contributions, are devoted to fisheries topics, clearly the mainstay of the ICES program throughout its first 100 years. Section VI dwells on the fish stock issue, including the notions of structure, discreteness, and migrations, as well as early controversies among ICES scientists (Sinclair and Smith, 2002; Secor, 2002) and the present-day mismatches between stock definition and management units (Stephenson, 2002). The theme of the papers in Section VII is the highly migratory fish species ("ocean travellers") and the fisheries on them. The keynote paper (Jakobsson, 2002) and several of the contributed papers present extremely interesting historical overviews of some of the more prominent species and fisheries and reference many of the key scientists. This section contains one (Holst *et al.*, 2002) of the three papers in this volume on Norwegian spring-spawning herring, the largest and one of the most-studied herring stocks in the world, which underwent both a dramatic collapse and a subsequent recovery during the second half of the 20th century. Section VIII features five papers which review mariculture activities within ICES.

Section IX addresses perhaps the most important and most highly visible area of scientific work within ICES: population dynamics of exploited marine animal populations and the evaluation of the impact of harvesting activities on them. This section contains 11 papers, more than any other single section, and is unique in that the lead authors of two of the papers (Beverton and Anderson, 2002; Sætersdal, 2002) are distinguished scientists who are deceased. Another author, legendary fisheries assessment expert and former Beverton colleague Sidney Holt (2002), had not attended an ICES meeting in more than 40 years. Two of the contributions (Fernandes *et al.*, 2002; Walsh *et al.*, 2002) provide exceptional reviews of the scientific work in the fields of fisheries acoustics and fishing technology under ICES. Section X concludes the papers on fishery resources by summarizing the role of ICES as a fishery advisory body (Griffith, 2002) and providing illustrations of the specific function of ICES in several fisheries management arenas.

Section XI comprises a single paper by Gotthilf Hempel, President of ICES from 1979 to 1982 and recently retired premier scientist-administrator from Germany. This is a cleverly worded and comprehensive overview of the many services and indirect benefits provided by ICES as well as most of its major direct contributions to marine science in hydrography, biology, and dealing with the overfishing problem. The text of this paper (Hempel, 2002) reflects the author's many

and varied personal experiences in the political, scientific, and "human relations" life of the Council. Perhaps more so than any other author in this volume, he draws attention to the comradery, close friendships, mentoring, good will, and the special indomitable ICES spirit, the "spirit in which marine science freely developed under ICES for a full century".

Section XII, Grand challenges for ICES, provides an opportunity for three authors (Wooster, 2002; Rice, 2002; Parsons, 2002), from the differing perspectives of a well-traveled, semi-retired, elder statesman-oceanographer (Warren Wooster), a mid-career fisheries assessment scientist (Jake Rice), and a senior fisheries administrator and ICES President (Scott Parsons), to reminisce, reflect, and speculate.

One of the papers in this volume (Møller Christensen, 2002) was not presented at the Symposium, but was viewed by the Editor as being worthy of inclusion by virtue of its subject matter and content. This paper, a short essay describing the author's experiences attending his very first ICES Statutory Meeting in the late 1950s as a student and temporary employee of ICES, is a realistic and, at times, humorous account of the goings-on (scientific and social) at the Meeting. The story is particularly interesting because it includes anecdotal comments about many familiar scientists, several of whom attended and participated in the August 2000 Symposium and authored papers in this volume (e.g., Ole Johan Østvedt, Jakob Jakobsson, Gottthilf Hempel).

Pentti Mätkki and his staff at the Finnish Institute of Marine Research are gratefully acknowledged for the outstanding arrangements which they provided in Helsinki. In particular, I would like to recognize Maiju Koivula and Päivi Siltanen of the Finnish Institute of Marine Research for their efficient handling of registration, hotel booking, and detailed arrangements for the reception, Symposium dinner, and post-Symposium excursion to Tallinn, Estonia. The friendly and helpful assistance rendered during the Symposium by Maiju Koivula, Jari Helminen, and Matti Maunumaa of the Finnish Institute of Marine Research, Margaret Moody and Bodil Chemnitz of the ICES Secretariat, and Kaija Pönni-Susiluoto of the Finnish Game and Fisheries Research Institute is greatly appreciated.

Lastly, I would like to express my personal thanks and gratitude to all of the authors who provided contributions to the Symposium. I am particularly indebted to the keynote speakers for accepting their assignments, for assisting in soliciting contributed papers for their sessions, for moderating their respective sessions at the Symposium, and for helping to review the contributed papers in their sessions. I am very appreciative of the strong support and guidance provided by the members of the Scientific Steering Committee throughout the planning of the Symposium. I take this opportunity to also thank and acknowledge those who reviewed papers or provided assistance with references or biographical

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