

X. ICES as a fishery advisory body

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From the time of the first planning conference for ICES in Stockholm in 1899, the aim was to establish a scientific organization that would bring tangible benefits to commercial marine fisheries. ICES began to provide scientific advice to the governments of the Member Countries during its first year, and international management action resulting from this began to appear in 1907. Later, ICES included recommendations to protect whale stocks, and undertook to assist and advise the League of Nations on general issues of marine science. During the 1930s, further ICES work on technical conservation measures led to the 1937 International Convention for the Regulation of the Meshes of Fishing Nets and Size Limits for Fish. In 1953, ICES established the Liaison Committee to handle the formal provision of scientific advice to the Permanent Commission of the 1946 International Fisheries Convention, which was succeeded by the North-East Atlantic Fisheries Commission in 1963. In 1977, following the creation of 200-mile fishery limits in the North Atlantic, ICES established the Advisory Committee on Fishery Management (ACFM) to replace the old Liaison Committee. The 20th century was rounded off with the signing of a series of Memoranda of Understanding, and Exchange of Letters, with the partner commissions of ICES.

Keywords: fisheries management, history of science, ICES fisheries, regulatory commissions.

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*Lands intersected by a narrow firth
Abhor each other, mountains interposed
Make enemies of nations who had else,
Like kindred drops, been mingled into one.*
William Cowper, 1731–1800

(Quoted by Sir John Murray, United Kingdom Delegate, at the opening of the 1899 Stockholm Meeting)

Preparing the ground: 1899–1902

Whether ICES was originally founded as a scientific organization with an advisory function, or as an advisory council based on science, is difficult to say and, in any event, probably matters little. Although the founding countries had expressed different priorities regarding the main purpose of such an intergovernmental initiative during the years leading up to 1902, the record shows that the aim was to establish not just a marine science organization, but one which would have clearly defined practical objectives to the benefit of commer-

cial fisheries. The preamble to the Resolution from the Stockholm Conference in June 1899 demonstrates this:

Considering that a rational exploitation of the sea should rest as far as possible on scientific enquiry, and considering that international cooperation is the best way of arriving at satisfactory results in this direction, especially if in the execution of the investigations it be kept constantly in view that their primary object is to promote and improve the fisheries through international agreements, this International Conference resolves to recommend to the states concerned the following scheme of investigations which should be carried out for a period of at least five years (Anon., 1899, p. 1).

There followed a detailed and varied programme, however: "The hydrographical work", "The biological work", and "Organisation of a Central-Bureau". It was also recommended that the investigations should begin "May the 1st 1901", that the Faroe Islands and Iceland should be included in the European telegraph system as soon as possible (in the interests of "highsea fisheries and for the weather-forecasts for long periods"), and

that the relation between the halogen content and density of seawater should be "carefully investigated" (Anon., 1899, pp. 2–17).

A statement which the British Delegate D'Arcy Thompson sought (unsuccessfully) to have inserted in the text comes closest to summarizing the present fisheries science programme and fisheries advisory activities of ICES:

That in all researches, whether hydrographical or biological, undertaken by the National Institutions or by the Central Organisation, it be recognized as a primary object to estimate the quantity of Fish available for the use of man, to record the variations in its amount from place to place and from time to time, to ascribe natural variations to their natural causes, and to determine whether or how far variations in the available stock are caused by the operations of man, and, if so, whether, when, or how, measures of restriction and protection should be applied (Anon., 1899, p. XLI).

The support and advocacy of influential figures such as King Oscar II of Sweden and Fridtjof Nansen of Norway obviously played a crucial role. There can be little doubt, however, that the process was greatly facilitated by the recognition – born of the great flowering of science and technology during the 19th century – that science could deliver products of lasting benefit to society.

Nurturing and growth: 1902–1907

From its commencement in 1902, ICES was providing scientific advice to the governments of the Member Countries. In addition to advice on fisheries management, the Council also issued frequent reminders and exhortations concerning research and other activities which, it believed, Member Countries should intensify or initiate in order to bring wider benefit to society. Thus we see, in 1902, a statement (ICES, 1903) on the need for accurate fisheries statistics, and in 1905, there was a plethora of recommendations concerning the furtherance of the Council's scientific programme on over-fishing, fishery statistics, and the selectivity of nets. In that year, ICES proposed that the nations fishing the Kattegat should draw up a treaty prohibiting the landing of undersized plaice, which was to be a recurring theme (ICES, 1905).

By 1906, the Council felt the need to ask the nine Member Countries¹ to identify national priorities concerning issues on which they might wish ICES to comment. In January of that year, the Bureau wrote to the Delegates asking them "to communicate with your Government before the Council Meeting of March 1st 1906, in order to be able to lay before the Council a statement as to any one or more particular questions (if

there be any such) on which your Government desires a summary of facts or a definite expression of the Council's opinion" (ICES, 1906, p. 10).

The six countries that responded indicated a common concern regarding variability in fish catches, and they expressed a variety of ideas about how best to tackle this question (ICES, 1906, pp. 20–26).

In line with Otto Pettersson's scientific interests, Sweden's priorities lay in "the relation between the state of the sea and the atmospheric conditions that govern the climate of Northern Europe", but also in herring migrations and the decline of the Baltic salmon fisheries. Finland and Russia were also concerned about salmon stocks and advocated the establishment of a system of salmon hatcheries in the Baltic; Finland suggested that ICES should facilitate the drafting of an international treaty to do so.

The United Kingdom placed a high priority on the productivity of the cod, haddock, plaice, and herring fisheries, and Denmark expressed concern about landings of undersized plaice from the Kattegat and the North Sea. The Netherlands asked ICES to advise on North Sea currents, the occurrence and distribution of different races of plaice, and minimum size limits for "the principal food-fishes".

Different nuances in the scientific priorities expressed by the various countries are interesting, but so is the common thread which runs through the responses – the emphasis on improving and stabilizing fishery productivity. The expectations that were placed on migration studies reflected the widely held belief that year-to-year variations in catches were caused by changes in the patterns of fish migrations. It was not until 1913, however, that Johan Hjort solved this question by demonstrating, in his major work (published the following year), that fluctuations in yield were determined by variations in year-class strength (the abundance of young fish being born each year) (Hjort, 1914).

The harvest: 1907–1939

International management action consequent upon ICES recommendations began to appear in 1907 in the course of the Council's comprehensive 80-page response to the questions that had been put to it in 1906. One of the reports advocated that "the Kattegat is specially suited for legislative interference with the plaice fisheries by means of size-limits to prevent the landing of small fish" (Petersen *et al.*, 1907, p. 54). Elsewhere in the same *Rapports et Procès-Verbaux*, there is a reference (ICES, 1907) to the imminent ratification of a Danish-Swedish convention which would establish a minimum size of 25.6 cm for plaice in the Kattegat, as recommended by ICES two years before (ICES, 1905).

Throughout the ensuing years, the Council continued to devote much attention to the issue of catches of

¹ Denmark, Finland, Germany, The Netherlands, Norway, Sweden, Russia, the United Kingdom (the eight founder members), plus Belgium, which joined in 1903.

undersized fish, particularly plaice. During the 1909 meeting, Friedrich Heincke made a lengthy statement describing the "present position of the General Report on the Plaice Question", a project under his direction (ICES, 1910). Delayed submissions of essential data from the Member Countries delayed the completion of his report on the Plaice Question until October 1913. It was a far-seeing document (Heincke, 1913), in which Heincke had comprehensively analysed an enormous amount of material on plaice biology and the plaice fisheries, and made proposals for minimum size limits and other protective measures for the plaice stocks. Went (1972, p. 36) suggested that the paper² "might well have been a background document to the conference from which resulted the 1937 'Overfishing' Convention of London". In September 1913, in advance of Heincke's full report and on the basis of recommendations drafted by the Plaice Committee in June, the Council agreed to advise governments to implement a 20-cm minimum size limit for North Sea plaice (1 October–31 March) and 22 cm during the period 1 April–30 September (ICES, 1913, pp. 20 and 54). Further, a draft convention (ICES, 1913, p. 64) for protecting plaice and flounder in the Western Baltic had been "worked out and agreed upon by the Council", by correspondence (ICES, 1915, p. 12); it was forwarded to the governments of Germany and Denmark through diplomatic channels.

The plaice advice did not receive universal approval, however (ICES, 1915, p. 6). Belgium considered that the proposals were not in the interests of Belgian fisheries. The United Kingdom accepted the proposals in principle, but on condition that the Council should do no more than draft the "heads of a convention". The United Kingdom declined to go along with any further involvement by ICES, on the grounds that "the drafting of a convention is outside the functions of the Council and is a matter rather for the official representatives of the various Governments". Germany, The Netherlands, Norway, and Sweden agreed to discuss the matter further. Denmark was prepared to accept the proposals, but only on condition that all the other interested parties did likewise.

The outbreak of war in 1914 brought a temporary halt to these international fisheries management developments, however, and thus the Danish-German convention on plaice in the Western Baltic did not appear until 1928 (ICES, 1928a, p. 30). On the basis of further recommendations which had been drawn up by the Transition Area and Baltic Area Committees in 1927 (ICES, 1928b), this convention made provision for a size limit of 24 cm as well as closed areas and closed seasons; a 35-cm size limit for Baltic salmon and sea trout was also recommended.

The provision of management advice by ICES was not confined to fisheries, nor were the recipients limited to Member Governments. In 1928, the League of Nations wrote to ICES proposing mutual cooperation "in regard to the question of the rational exploitation of the resources of the Sea" and enquiring "whether, under what conditions, in respect of what species and in what regions an international protection of the fauna of the sea might be established" (ICES, 1928a, p. 112).

In response, the Council advised that the protection of fish could not be achieved "by means of an international convention of general application". Fishery problems, it was pointed out, were so localized that effective conservation measures were best dealt with by "agreement between the nations interested and between them alone". The Council stated that it was not competent to express an opinion on seals because it had investigated only their interactions with fisheries (and only in European waters) and not their commercial exploitation. In regard to whaling, however, some general facts were listed which should be taken into account; the invitation to make proposals for the regulation of whaling was declined. Nevertheless, the Council undertook to assist and advise the League of Nations regarding general scientific matters "as are within the competence of the Council" (ICES, 1928b, pp. 14 and 112).

It would be reasonable to assume that these League of Nations initiatives were facilitated through Fridtjof Nansen, Norwegian Delegate to the League from 1920 to 1930. Nansen – a commanding and widely respected figure whose exploits in polar exploration had earned him renown abroad and adulation at home – had played a key role in the foundation and early years of ICES. He was the Director of the ICES Central Laboratory in Kristiania (now Oslo) until it closed in 1908.

In 1929, the Whaling Committee drew up proposals for urgent action to protect whales, addressed to Member Governments which, it was recommended, should implement uniform legislation (ICES, 1929, p. 62). In this, ICES was sowing the seeds of the London Whaling Conference of 1937 and the International Whaling Convention which followed it in 1946.

During the 1930s, ICES convened a series of Special Meetings to focus on specific aspects of fisheries biology and technology in relation to conservation (see text table below). The 1934 Special Meeting drew up definitive recommendations concerning technical conservation measures (ICES, 1934). These actions came to fruition in the International Convention for the Regulation of the Meshes of Fishing Nets and Size Limits for Fish, adopted in London in 1937. The President of ICES, Henry Maurice, commented that this might be said to have "set the seal of administrative achievement on the scientific work directed by the Council" (ICES, 1937, p. 10).

² Went's text clearly refers to Heincke's 1909 progress report, but the sentiment suggests that Went had the 1913 report in mind.

ICES Special Scientific Meetings

1932	The Effect upon the Stock of Fish of the Capture of Undersized Fish (ICES, 1932)
1934	Size-Limits for Fish and Regulations of the Meshes of Fishing Nets (ICES, 1934)
1938	Rate of Growth (ICES, 1938a), Light Measurements (ICES, 1938b), Salmon Migrations (ICES, 1938c)
1939	Overfishing Problems (ICES, 1939)

The modern era begins: 1946–1977

The 1937 International Convention never came into effect. The eruption of World War II interrupted the process before the requisite number of countries had been able to ratify it and, in 1946, it was replaced by the more comprehensive International Fisheries Convention, also signed in London. The Permanent Commission established under the terms of the 1946 Convention held its first meeting in 1953, with ICES designated as its source of scientific advice. This was provided through the Liaison Committee, established in the same year and first convened in 1954.

The Chair of the Permanent Commission, R. G. R. Wall (Fisheries Secretary of England and Wales), was invited to address the Council at the 1953 Statutory Meeting. He spoke of the international esteem for ICES and referred to the two questions on which the Commission had requested, by letter dated 12 June 1953, the provision of advice:

Firstly, we are seeking your scientific advice on the state of the cod, haddock and plaice fisheries in northern waters – because we are concerned to know whether further measures of conservation are required for these fisheries; and secondly your scientific advice on a proposal which the Permanent Commission has before it that the provisions of the Convention of 1946 should be extended to include the area of water as far south as latitude 36°N, which would take in the whole of the continental shelf off the Atlantic coasts of France, Spain and Portugal (ICES, 1954, p. 12).

As agreed, the Council gave its response – by the end of the same Statutory Meeting. Viewed beside the complex analytical statements of more recent years, the 1953 advice may seem a little unfocused – and concise; it consisted of only 500 words! But it must be remembered that the assessment methodology readily available at that time was primitive, by modern standards. Ray Beverton and Sidney Holt's seminal work, *On the Dynamics of Exploited Fish Populations*, was not to appear in print for another four years (Beverton and Holt, 1957). And it was not until 1965 that John Gulland described his VPA (virtual population analysis) in an annex to the report of the North-East Arctic Fisheries Working Group (Gulland, 1965). The highlights of the

brief advisory statement of 1953 are shown below (ICES, 1954, p. 16):

With regard to the northern stocks of cod, haddock and plaice..., it is advised that, in the light of the scientific evidence now available and the imminent introduction of the 110 mm mesh regulation it is not now possible to provide an unqualified answer. Further research must be carried out and an assessment of the position will be provided by the Council at the earliest possible moment.

For the North-Eastern Area..., the opinion is that, on the scientific evidence available at the present moment it would not be proper to recommend any further conservation measures in this area. The information available does suggest, however, that this matter should be kept continually under review...also, particularly in view of the significance of past climatic changes to the fishery in the area, that the relationship between the fishing effort being exerted and the stocks available should be watched carefully.

In connexion with the request for advice as to the desirability of extending the provision of the 1946 Convention southward...the Atlantic Committee is in favour of this and would even favour an extension...down the west African coast as far as Senegal as these grounds are thought to be depleted. In the Atlantic Committee's areas it is thought that there is a depletion of the stock of hake which ought to be arrested by appropriate means as soon as possible. The stocks of sole, however, are not considered to be over-exploited.

The 1953 Statutory Meeting was also noteworthy by virtue of a thoughtful presentation by Geoff Kesteven, Chief of the Marine Fisheries Branch of FAO. In the context of the need for scientific support to fully realize the food-production potential of the oceans, he spoke of "the young new science, fisheries science, which is now emerging". He identified its three main components as being fishery biology, fishery economics, and fishery technology, and in a foresighted statement, he described ICES as its natural home:

Fishery science was born here, and suffered here the vicissitudes of its adolescence: we think that most probably it will graduate here. We believe also that the Council's knowledge of fishery resources and its experience in matters concerning their exploitation will enable it to take a lead in the conversion of fish-hunting to fish-husbandry and in all which that will mean in bringing new areas and new resources under exploitation (ICES, 1954, pp. 15–16).

In 1953, ICES established the Liaison Committee from within its existing committee structure (ICES, 1954). The standing committees reflected the priority areas in the scientific programmes of ICES and its Member Countries, and the chairs of the various committees, then as now, were acknowledged experts in their respective fields. What better, therefore, than to construct an advisory group with membership drawn from the chairs

of the most relevant standing committees, to liaise with the Permanent Commission?

The Liaison Committee was first convened in 1954 and, until its last meeting in 1977, was composed of the chairs of those standing committees which dealt with fish and shellfish biology, fishing gear technology, and fisheries statistics. This composition changed from time to time, in accordance with developments in the ICES committee structure. The Chair of the Consultative Committee also served as Chair of the Liaison Committee. The membership was enhanced by the addition of four coopted members and a secretary selected mainly on the grounds of their expertise in mathematical and statistical analysis. During the early years of the Liaison Committee, most of the analytical assessments were done at the several-day sessions of the coopted members and the secretary, which preceded the meetings of the Committee itself. The members of the Liaison Committee in 1954 and 1977 are listed in Annex 1.

Further evolution: 1977–1999

The 1946 Convention and its Permanent Commission were replaced by the North-East Atlantic Fisheries Convention and its Commission (NEAFC) in 1963. In turn, the 1963 Convention had to be rewritten following the widespread extension of fishery limits to 200 miles during the 1970s, and thus the "new" NEAFC came into effect in 1982 following the ratification of its 1980 Convention (NEAFC, 1995).

The structure of the old Liaison Committee was no longer considered adequate, since its membership was fundamentally determined by a process essentially unconnected to the drafting of fisheries management advice – the elections of chairs of the nine standing committees concerned. Now that individual countries were gaining control over their own fishing waters, they wanted much more control over who should be given responsibility for the sensitive task of providing that advice to their national fisheries administrations. Thus in 1977, ICES established the Advisory Committee on Fishery Management (ACFM) to replace the old Liaison Committee. ACFM was first convened in 1978, with a new structure that guaranteed all ICES Member Countries full participation in the advisory process. The members of ACFM in 1978 are listed in Annex 1. Through a diplomatic nicety designed to allay fears that an advisory committee composed of nationally appointed members would follow national instructions instead of the dictates of science, ICES agreed that members of ACFM would be nominated by their respective countries, but appointed by the Council. To reinforce this concept, it was also agreed that ICES would pay the travel and per diem expenses incurred in participating in ACFM meetings.

It is clear that the regular identification of national priorities by the Member Countries, and the annual or

near-annual issue of recommendations by ICES, have continued from the earliest years of ICES up to the present day. ICES, however, no longer involves itself in drafting regional conventions (or even national legislation), as occurred in the past. Nowadays, ICES confines its participation in such activities to the provision of advice on the scientific and technical specifications attached to international regulations aimed at the rational harvesting of living resources, or on guidelines for environmental management.

During the 1970s and 1980s, as other regional commissions became established, they too turned to ICES for scientific advice as NEAFC and the Permanent Commission before it had done. The International Baltic Sea Fishery Commission (IBSFC) sought and obtained the support of ICES at the foundation of the IBSFC in 1974, as did the North Atlantic Salmon Conservation Organization (NASCO) upon its establishment in 1983. The Commission of the European Communities first requested fisheries management advice from ICES in the early 1980s, and in 1987 this arrangement was formalized by an Exchange of Letters with the Directorate-General for Fisheries (DG-XIV).

In 1993, ICES adopted a policy of 100% recovery of the costs of providing advice (ICES, 1994, p. 25), and after collective and extended negotiations between ICES and the fishery commissions, a series of Memoranda of Understanding, and Exchange of Letters, were concluded with them individually:

- 1998 IBSFC
- 1998 NEAFC
- 1999 NASCO
- 1999 European Commission

The completion of this process clarified and formalized the working relationships between ICES and the commissions, as befits the requirements and obligations of today's world. The fruitful cooperation seen in earlier years continues, and ICES is glad to refer to the "clients" by the sobriquet they themselves coined during the collective negotiations: "the Partner Commissions of ICES".

Final reflection

Four key factors ensured the successful establishment and early impetus of ICES: 1) influential sponsors were involved – pre-eminently King Oscar II, Fridtjof Nansen, and Otto Pettersson; 2) initially, a commitment of no more than five years was sought from the Member Governments; 3) the 1906 approach of "don't tell them; ask them" incorporated the governments in the advisory process at the outset; and 4) the highest possible standards of excellence, within the constraints imposed by the available equipment, data, and methodology, helped to ensure a quality product.

These were but the operational considerations, however. The ultimate acclaim for one hundred years of sustained excellence, both in marine science and in the pro-

vision of objective scientific advice, must be ascribed to the imagination and energy of the founders, and to the dedicated work of the scientists and administrators of the broad ICES community.

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Annex 1

Membership of the Liaison Committee*First meeting, 1954 (ICES, 1954):*

R. S. Wimpenny (United Kingdom), Chair

Gunnar Rollefson (Norway), Chair, North-Eastern Committee

Å. Vedel Tåning (Denmark), Chair, North-Western Committee

Cyril Lucas (United Kingdom), Chair, North Sea Committee

Jean Le Gall³ (France), Chair, Atlantic Committee*Last meeting, 1977 (ICES, 1978):*

Gunnar Sætersdal (Norway), Chair

Rodney Jones (United Kingdom), Chair, Demersal (Northern) Committee

Claude Maurin (France), Chair, Demersal (Southern) Committee

Jakob Jakobsson (Iceland), Chair, Pelagic (Northern) Committee

Georges Kurc (France), Chair, Pelagic (Southern) Committee

C. P. Ruggles (Canada), Chair, Anadromous and Catadromous Fish Committee

James E. Stewart (Canada), Chair, Shellfish and Benthos Committee

Josef Popiel (Poland), Chair, Baltic Committee

P. J. G. Carrothers (Canada), Chair, Gear and Behaviour Committee

David Griffith (Ireland), Chair, Statistics Committee

A. S. Bogdanov (USSR)

Coopted Member

Brian Jones (United Kingdom)

Coopted Member

Alan Saville (United Kingdom)

Coopted Member

Albrecht Schumacher (Fed. Rep. Germany)

Coopted Member

Secretary: Vadim Nikolaev, ICES Statistician

Membership of the Advisory Committee on Fishery Management*First meeting, 1978 (ICES, 1979):*

Alan Saville (United Kingdom), Chair

A. S. Bogdanov (USSR)

Josef Popiel (Poland)

Brad Brown (USA)

K. Popp Madsen (Denmark)

Emigdio Cadima (Portugal)

Klaas Postuma (Netherlands)

Rudy De Clerck (Belgium)

Sigfus Schopka (Iceland)

David Cushing (United Kingdom)

Albrecht Schumacher (Fed. Rep. of Germany)

Alvaro Fernández (Spain)

Veikko Sjöblom (Finland)

David Griffith (Ireland)

Bengt Sjöstrand (Sweden)

Alain Maucorps (France)

Øyvind Ulltang (Norway)

Scott Parsons (Canada)

Bernhard Vaske (German Democratic Republic)

Claude Maurin (France), Chair, Demersal Fish Committee

Jakob Jakobsson (Iceland), Chair, Pelagic Fish Committee

Ole Bagge (Denmark), Chair, Baltic Fish Committee

Secretary: Vadim Nikolaev, ICES Statistician

³ Le Gall died in February 1954 and was succeeded as Chair of the Atlantic Committee by J. Furnestin (France).