

The history of *Scientia Marina*

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There is a reason for scientific journals; they have an important function. But with time, circumstances change and so does the role these journals play: they must adapt or disappear. Here we present an account of a journal, first published in 1955 under the name *Investigación Pesquera* (Fisheries Research) and later acquiring its current title, *Scientia Marina*, that continues to be a very successful marine research journal, something that is not easy to achieve. Initially set up by a small number of scientists eager to disseminate their research results and those of others, scientific journals are now part of a world that has become dominated by major publishing companies, with their own interests. In addition, while the aim is still to share knowledge, other factors come into play, such as achieving the maximum international ranking, for both journals and authors. Since our journal was first published, many years ago now, it has been able to adapt to changing, often adverse circumstances. Indeed, those responsible for the journal have had to make some very difficult decisions, even though, looking back, they can be seen to have been the correct ones. Suffice to say that, despite not being professionally managed, as the journal has always been run by scientists, who combine editorial tasks with their research, *Scientia Marina* is among the high ranked marine science publications internationally. In this article we summarize the 56-year history of *Investigación Pesquera/Scientia Marina*. We discuss the most significant and decisive challenges to the journal and the situations that have required difficult decisions. Finally, we present current information on the progress of *Scientia Marina* as an international scientific journal.

Antecedents

Before the Spanish Civil War. To understand the circumstances that gave birth to *Investigación Pesquera*, it is necessary to discuss marine research in Catalonia and throughout Spain and how the results of that research were published at the end of the 19th and into the first half of the 20th century. We do not intend to provide a history of marine research, which can be found in Viñas [21], Leonart and Amat [14], Guerra and Prego [12] and Oliver [17], or a more general account, as the

reader will find in Font i Sagué [9], Riera i Tuèbols [16], Camarasa and Català [3] and Vernet and Parés [20], and in the references cited by these authors.

In Catalonia, research on natural history was first published in Catalan in the *Butlletí de l'Associació d'Excursions Catalana* (Bulletin of the Catalan Association of Excursions, from 1878 to 1890) and, beginning in 1891, in its successor, the *Butlletí del Centre Excursionista de Catalunya*. Founded in 1899, the *Institució Catalana d'Història Natural* (Catalan Institution of Natural History, ICHN) [2] published the first *Butlletí de la Institució Catalana d'Història Natural* (Bulletin of the Catalan Institution of Natural History) in 1901, and later (in 1917 but back dated to 1915) *Treballs* (Works), which included marine research.

The *Reial Acadèmia de Ciències i Arts de Barcelona* (Royal Academy of Sciences and Arts of Barcelona) was established in 1764. One of its main activities was the presentation of reports and scientific papers, but it did not start to publish until 1835, *Memorias* (Reports) and 1840, *Boletín* (Bulletin) [13]. In 1871, the *Sociedad Española de Historia Natural* (Spanish Society of Natural History) was created in Madrid. It published 30 volumes of *Anales* (Annals) between 1872 and 1902, and, in 1901, began publishing the *Boletín*, which is still published today.

Other journals were devoted to fisheries: *Revista de Pesca Marítima* (Journal of Marine Fisheries), published between 1885 and 1901, and *Anuario Estadístico de Pesca Marítima en España* (Statistical Yearbook of Maritime Fishing in Spain), which has been published since 1904. These journals as well as the *Reial Acadèmia de Ciències i Arts de Barcelona* published several papers on Catalan fisheries and ichthyology by Joaquín de Borja y Goyeneche [18]. At the turn of the century, extensive research was being carried out in the field of marine sciences. Odón de Buen, from Zuera in Aragon, established the strongest foundations of oceanography research in Catalonia. De Buen was Chair of Natural History at the University of Barcelona from 1889 to 1911, when he left to take up the Chair in Madrid. He was a revitalizing element not only at the university but also in the social and political life of Barcelona [6].

The creation of the *Junta de Ciències Naturals de Barcelona* (Board of Natural Sciences of Barcelona), in 1906, with the participation of de Buen and members of the ICHN, and the founding of the *Institut d'Estudis Catalans* (Institute for Catalan Studies, IEC), in 1907, are the smouldering embers of science from that time, which was marked by interest in science publications. During those years, the ICHN became affiliated with the IEC, and two issues of the *Anuari de la Junta de Ciències Naturals*

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de Barcelona (Yearbook of the Board of Natural Sciences of Barcelona) were published, one in 1916 and the other in 1917.

In 1914, now in Madrid, de Buen founded the *Instituto Español de Oceanografía* (Spanish Oceanography Institute, IEO), with laboratories in Palma de Mallorca and Santander, but not in Catalonia. In 1916, the IEO began publication of *Boletín de Pesca* (Fishing Bulletin), which was actually the first journal to specialize in marine biology. De Buen had many students while in Barcelona. Two of them are of particular interest here: Josep Maluquer and Josep Fuset [4]. Maluquer was one of the driving forces behind the ICHN. He published a book on oceanography in Catalan [15] and directed the oceanography section at the Museum of Catalonia, created by the *Junta de Ciències Naturals* (Board of Natural Sciences). The section was not successful and neither was the attempt to create an oceanography center [7]. Fuset, born in Sueca, near Valencia, studied with de Buen not only in Barcelona, but also in Palma de Mallorca and Santander. In 1913, he was named to the Chair of Zoology at the University of Barcelona [8]. One of his students, who also worked as his assistant, was Francisco García del Cid, born in Malaga and raised in Tarragona. In his doctoral thesis, in 1922, García del Cid presented his research on labrid fish. He was the founder of *Investigación Pesquera* and continued the work of de Buen in Catalonia. Until the arrival of the Franco dictatorship, marine science research was basically published by the ICHN.

After the Spanish Civil War. With the dictatorship that followed the Civil War, in 1939, all Catalan scientific institutions were shut down and so were their publications. Neither the institutions nor the publications started up again until the 1970s, with the exception of the clandestine issue, number 37 of the ICHN *Butlletí*, in 1949–1950, and the first publications of the *Societat Catalana de Biologia* (Catalan Society for Biology). State institutions also suffered major changes. De Buen was forced into exile, and the IEO and the *Real Sociedad Española de Historia Natural* (Spanish Royal Society of Natural History) did not resume publication of their research bulletins until the mid-1940s. As a republican, Fuset was removed from his post in 1940. The *Consejo Superior de Investigaciones Científicas* (Spanish National Research Council, CSIC) was set up based on the infrastructure (but not the same philosophy, of course) of the *Junta de Ampliación de Estudios* (Board for Advanced Studies). In this barren panorama, Francisco García del Cid took on the Chair of Zoology at the University of Barcelona, in 1942 [1]. Under the auspices of the CSIC, he created the *Instituto de Biología Aplicada* (Institute of Applied Biology, IBA), in 1943. The IBA was initially based at the Zoology Laboratory of the University of Barcelona, and, in 1944, it began publishing the *Publicaciones del Instituto de Biología Aplicada* (*Publications of the Institute of Applied Biology*).

Marine research activities began in 1948, with the creation, in 1949, of the *Sección de Biología Marina* (Marine Biology Section) within the IBA. García del Cid surrounded himself with a group of young researchers who formed the nucleus of Spanish fisheries science: Enrique Gadea, Buenaventura Andreu, Ramón Margalef, Miquel Massutí, Josep M. Camps, Manuel Gómez Larrañeta, Julio Rodríguez Roda, Antoni

Planas, Francisco Vives, Pere Suau, Carles Bas and Miquel Duran. Some went on to the IEO while others remained at the CSIC. The Marine Biology Section became so important that, in 1951, the *Instituto de Investigaciones Pesqueras* (Institute of Fisheries Research, IIP) was set up as part of the CSIC, with García del Cid as director [12,14]. From the outset, the young researchers at the IIP published in the *Publicaciones del Instituto de Biología Aplicada*, but they soon recognized the need for an independent journal, one devoted to marine sciences, since *Publicaciones del Instituto de Biología Aplicada* covered far more general areas of research. As a result, in 1955, the first volume of *Investigación Pesquera* appeared. The parent journal, *Publicaciones del Instituto de Biología Aplicada* continued to be published until 1974. During those years, other journals were launched, but they had a short life span, such as *Publicaciones sobre Biología Mediterránea* (*Publications on Mediterranean Biology*), of the Spanish Institute of Mediterranean Studies, in Barcelona, in which Margalef published his monograph on phytoplankton of the Costa Brava, in 1945.

The Arago Laboratory, a marine station of the Université Pierre et Marie Curie, in Banyuls-sur-Mer, had a major role in training young scientists both before and after the war. Being close to Barcelona, its impressive library and the scientists who worked there provided contact with the outside world. However, the IIP's scientists never published in the University's journal, *Vie et Milieu*, founded in 1950. Between 1954 and 1965, Dr. García del Cid organized five scientific congresses, the *Reuniones de productividad y pesquerías* (Productivity and Fisheries meetings), which became authentic marine science congresses. The proceedings were published in specific issues in 1954, 1955, 1957, 1960 and 1965. As these were not included in any journal series, they are nowadays difficult to find.

Investigación Pesquera

The first volume of *Investigación Pesquera*, published in October 1955 (Fig. 1), had a small introductory text explaining the reasons for its creation:

“Even though the *Instituto de Investigaciones Pesqueras* became completely independent in 1951, its research continued to be published in *Publicaciones del Instituto de Biología Aplicada*, the journal of the research association that organized the group dedicated to investigating problems in marine and fisheries biology. The volume of results now exceeds the capacity of these *Publicaciones*, calling for the creation of an independent journal, *Investigación Pesquera*, with no explicit periodicity, but with an estimated annual publication of 500 to 700 pages. The research carried out at the *Instituto de Investigaciones Pesqueras*, until now appearing in *Publicaciones del Instituto de Biología Aplicada*, and the contents of this issue, give an idea of the character of this new publication.”

This explanatory text appeared in the first 20 volumes (until 1961). In volume 21, it was replaced by the journal's own def-

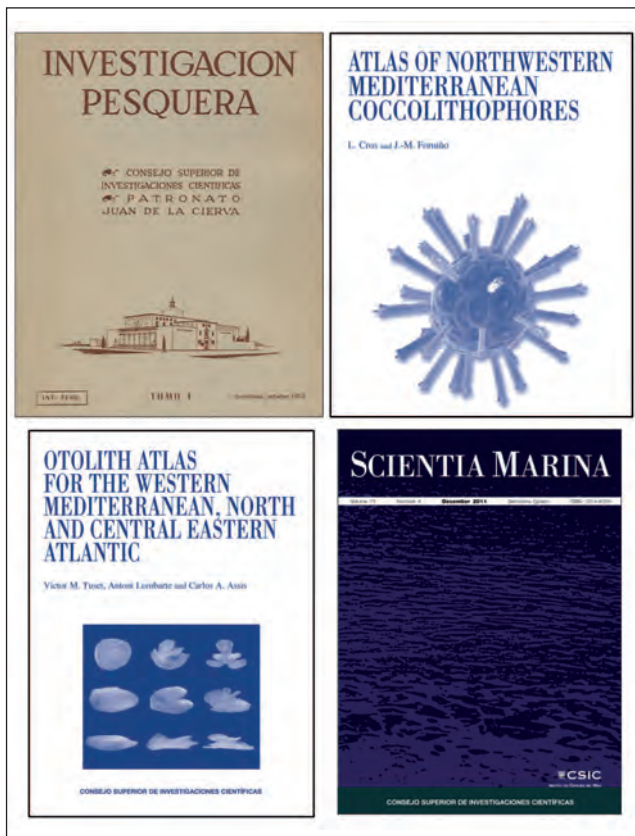


Fig. 1. Covers of the first volume of *Investigaci3n Pesquera*, of two special issues of *Scientia Marina* and a regular issue published in September 2010.

initiation of itself as a “journal of marine and fisheries science, published by the *Instituto de Investigaciones Pesqueras*.” The publisher was the CSIC and the *Patronato Juan de la Cierva*, a CSIC body created to promote relationships with the industry. Even though Dr. Garc3a del Cid was the Editor-in-chief, his name did not appear in the journal until his obituary was published, in volume 30 [1]. Dr. Buenaventura Andreu then took over responsibility for *Investigaci3n Pesquera*, but his name also did not appear until volume 37(2), in 1972. From then on, the name of the Editor-in-chief was always printed and later on also those of all members of the journal’s Editorial Board.

The main IIP center was in Barcelona, with subsidiary laboratories in Blanes (set up before the labs in Barcelona), Castell3, Cadiz and Vigo. *Investigaci3n Pesquera* was, therefore, the journal where the scientific research of all the IIP laboratories was published. *Investigaci3n Pesquera* was published in Spanish until 1968, volume 32. The introduction of other languages was mainly the result of the publication of the proceedings of international symposiums organized by Margalef. In 1969, volume 33 included an article in French. The following volume (34, 1970) published the proceedings of the *Seminario de Ecolog3a Matem3tica* (Seminar on Mathematical Ecology) with all the articles (9) in French. In the following issue and year (number 35, 1971), the proceedings of the conference on upwelling ecosystems were published, with 23 articles: 18 in English, 4 in French and 1 in Spanish. Volume 37 included two articles in Italian.

Significant Issues of *Investigaci3n Pesquera*

Often without changing the numeration of the journal, and without any special announcement, *Investigaci3n Pesquera* published several remarkable volumes, dealing with congress proceedings or monographic supplements. Among the first were:

- Seminario de Ecolog3a Matem3tica (Seminar on Mathematical Ecology), 1970, volume 34
- Simposio sobre Sistemas de Afloramiento (Symposium on Upwelling Systems), 1971, volume 35
- Seminario sobre An3lisis Factorial en Ecolog3a y Taxonom3a (Seminar on Factor Analysis in Ecology and Taxonomy), 1972, volume 36
- Seminario sobre la Endocrinolog3a en la Reproducci3n de los peces (Seminar on the Reproductive Endocrinology of Fish), 1977, volume 41
- Simposio sobre Din3mica de Poblaciones en Pesquer3as (Symposium on Population Dynamics in Fisheries), 1979, volume 43
- III Colloquium Crustacea Decapoda Mediterranea (Colloquium on Mediterranean Decapod Crustaceans), 1987, volume 51
- Simposio sobre Econom3a de la Pesca (Symposium on Fisheries Economics), 1987, volume 51

Significant monographs published by *Investigaci3n Pesquera* that followed the numerical series of the journal were:

- Estudios sobre las algas bent3nicas en la costa sur de la Pen3nsula Ib3rica (litoral de C3diz), by J. Seoane-Camba, published in 1965, volume 29, 216 pages
- Crust3ceos Dec3podos Ib3ricos, by R. Zariquiey, published posthumously in 1968, volume 32, 510 pages
- Foramin3feros Ib3ricos. Introducci3n al estudio de las especies bent3nicas recientes, by G. Colom. 1974, volume 38

Sister Publications to *Investigaci3n Pesquera*

In the 1970s, there was a recognized need for an appropriate vehicle to publish documents or articles that were not strictly “research” from a standard point of view. As a result, several series of collections were published, today all extinct, which responded to those needs while they existed.

Informes T3cnicos (Technical Reports). First appearing in 1971, these were published until 1992, a total of 170 volumes. The name of the journal was changed to adapt to the changing context. Thus, *Informes T3cnicos del Instituto de Investigaciones Pesqueras* (Technical Reports of the Institute of Fisheries Research) became *Informes T3cnicos de Investigaci3n Pesquera* (Technical Reports of Fisheries Research), from number 138, published in 1987, following the reorganization of the IIP laboratories as independent institutions [12]; this succession was therefore assigned to the journal rather than to the

Institute. Beginning with volume number 157, published in 1990, the journal was called *Informes Técnicos de Scientia Marina* (Technical Reports of *Scientia Marina*), to adapt to the new name of the parent journal. Originally a publication dedicated to fisheries technology, its objective was later extended to: “publish work of interest to the industry, analytical techniques and methodologies, aquaculture and consultation documents, all related to marine sciences.” In this series, monographs, normally short, were published.

Resultados de Expediciones Científicas, Suplemento de Investigación Pesquera (Results of Scientific Expeditions, Fisheries Research Supplements). Twelve of these supplements appeared between 1972 and 1984. This series published the research resulting from expeditions on the first Spanish oceanographic research vessel, the ‘*Cornide de Saavedra*,’ which entered service in 1971. The initial title, *Resultados de Expediciones Científicas del Buque Oceanográfico Cornide de Saavedra. Suplemento de Investigación Pesquera*, was retained until volume 8 (1979). Once a second oceanographic vessel, the ‘*García del Cid*,’ came into service in 1979, the reference to vessel was eliminated, beginning with volume 9 (1981).

Informes Técnicos. Suplemento de Investigación Pesquera (Technical Publications. Fisheries Research Supplements). This was a series of just three monographs, published between 1971 and 1974. The objective was practically the same as that of *Informes Técnicos*, possibly more extensive.

Datos Informativos (Informative Data). The goal was to publish data reports, particularly of research cruises. Seventeen volumes were published between 1976 and 1986.

The Birth of *Scientia Marina*

In 1979, the four laboratories of the Institute of Fisheries Research, in Barcelona, Vigo, Cadiz and Castelló, became four independent institutes [12]. The *Investigación Pesquera* journal continued to be based in Barcelona but towards the second half of the 1980s, various problems threatened its continuity. The CSIC had very little interest in the journal and the pressure on scientists to publish in foreign journals increased. Meetings were held at the *Institut de Ciències del Mar* (Institute of Marine Sciences, ICM), the new name of the former IIP, where the continued publication of the journal was debated.

The journal was produced by the ICM’s scientists themselves, who donated part of their research time to the journal. Financing came from the CSIC but was not easily obtained. Finally, thanks to the financial support of the ICM and the work of a group of researchers, the decision was made to continue the journal, but adapting it to modern times. The year 1988 saw the last publication of *Investigación Pesquera* and, in 1989, the first issue of *Scientia Marina*. In 2007, the CSIC started to col-

Table 1. Editors-in-chief of *Investigación Pesquera* and *Scientia Marina*

<i>Investigación Pesquera</i>	
1955–1965	Francisco García del Cid
1966–1986	Buenaventura Andreu
1986–1988	Jordi Leonart
<i>Scientia Marina</i>	
1989–1991	Jordi Leonart
1992–1997	Josep M. Gili
1998–2001	Carles Pedrós Alió
2002–2005	Pere Abelló
2006–2010	M. Pilar Olivar
2010–	M. Dolors Vaqué

laborate to the financial support the journal. Table 1 lists the Editors-in-chief of the journal, and the dates they exercised this role.

As the continuation of *Investigación Pesquera*, the first issue of *Scientia Marina* is number 53. Changes to the format were made by graphics artist Pepa Estrada, who modernized the journal, increasing its size to A4 and giving it a new cover as well as two-column pages (Fig. 1). There was a major debate over the name of the new journal. A Spanish name was no longer appropriate in a world where the English language dominates, but the scientists could not agree on an English title. A title in Latin was finally chosen but one totally understandable by all, *Scientia Marina* (‘*Marine Science*’ in English).

While *Investigación Pesquera* gave birth to *Scientia Marina*, this change was not sufficient to overcome the problems of

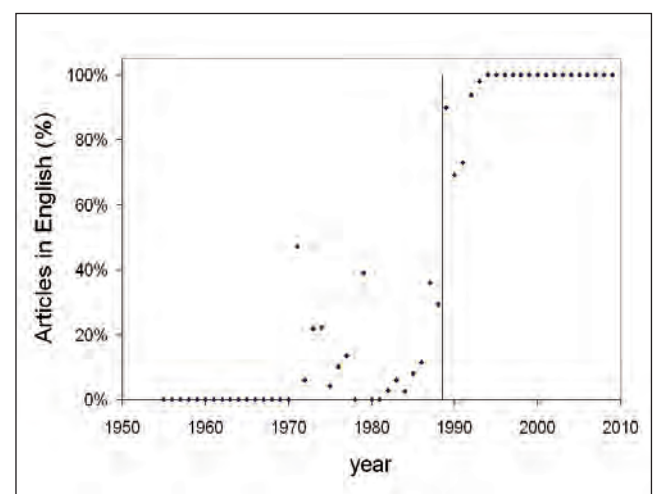


Fig. 2. Evolution of the introduction of English in the journal. The change from *Investigación Pesquera* to *Scientia Marina* (in 1988–1989) is indicated with a vertical line. The coincidence between the change in name and format and the move to 50% of the articles appearing in English is shown. Articles in English published during the 1970s were from the monographs of international meetings.

the journal. One of its aims was to become international and thus one of the more than 7000 journals evaluated in the *Journal Citation Reports*. This would assign it an impact factor, reported in the Science Citation Index (SCI) [10]. In its new format, over 50% of the journal's original articles were, for the first time, published in English, with the remainder in Spanish (Fig. 2). A basic requisite for a journal to be included in the SCI is regularity of publication. This was secured from the very beginning by *Scientia Marina*. Four regular issues of the journal are published yearly (one every 3 months), as well as a variable number of monographs and special issues, together making up a single volume. The journal's entry in the SCI in 1995 was the result of hard work by the first editorial teams, who not only convinced foreign authors to publish their research results in the journal but also managed to get its issues out on time. During this same period, publication of the monographic volumes continued and increased. These have contributed to the journal becoming better known and they have been cited many times.

Moreover, the impact factor has tended to increase, from an initial 0.2 to 1.1 in 2011 (Fig. 3). The journal is included in the Marine and Freshwater Biology category, and, in line with its impact factor, is number 54 of 92 journals in this field. It should also be mentioned that the level of autocitation, considered a negative element when above 20%, according to Testa [19], is only between 4 and 11%.

The monographic volumes, initially considered as being exceptional, have become an integral and important part of *Scientia Marina*. By 2009, 38 of these volumes had been published (Table 2), with a total of 10,795 pages. Many organizers

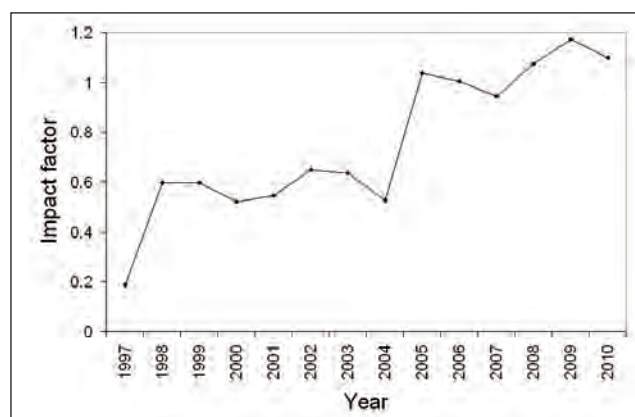


Fig. 3. Impact factor of *Scientia Marina* since its inclusion in the Science Citation Index in 1997.

of international meetings, research project coordinators, and authors of monographic themes have published their work in *Scientia Marina*. Monographic editions strictly follow the journal's quality standards and, while the main editors responsible for the various monographs are not always members of the journal's Scientific Editors board, they follow-up its standards. Possibly the only relevant difference with the regular issues is that a monograph cover consists of an image alluding to its content (Fig. 1). Many of the journal's most cited articles correspond to these monographs, for example, the research of Gasol et al. (2000) and Codispoti et al. (2001) [5,11], which have been the most frequently cited since the journal was included in the SCI. In a journal covering a field as wide as marine sciences, the publication of these special issues, with their ho-

Table 2. Monographic volumes of *Scientia Marina* published between 1989 and 2009

Title	Year	Edited by	Issue
Advances in marine chemistry	2010	Julián Blasco and Jesús M. Forja	Sci Mar 74S1
Stock structure and quality of black scabbardfish in the southern NE Atlantic	2009	Leonel Serrano Gordo	Sci Mar 73S2
Advances in early life history study of fish	2009	Catriona Clemmesen, Arne M. Malzahn, Myron A. Peck, and Dietrich Schnack	Sci Mar 73S1
Otolith atlas for the western Mediterranean, north and central eastern Atlantic	2008	Victor M. Tuset, Antoni Lombarte, and Carlos A. Assis	Sci Mar 72S1
Scientific advances in polychaete research	2006	Rafael Sardà, Guillermo San Martín, Eduardo López, Daniel Martín, and David George	Sci Mar 70S3
Recent advances in the study of fish eggs and larvae	2006	M. Pilar Olivar and J.J. Govoni	Sci Mar 70S2
Oceanography of the Bay of Biscay	2006	X.A.G. Morán, J.M. Rodríguez, and P. Petitgas	Sci Mar 70S1
The Magellan-Antarctic connection: links and frontiers at high southern latitudes	2005	Wolf E. Arntz, Gustavo A. Lovrich, and Sven Thatje	Sci Mar 69S2
Promoting marine science: contributions to celebrate the 50th anniversary of <i>Scientia Marina</i>	2005	Cèlia Marrasé and Pere Abelló	Sci Mar 69S1
Mediterranean deep-sea biology	2004	F. Sardà, G. D'Onghia, Ch-Y. Politou, and A. Tselepidis	Sci Mar 68S3

Table 2. (Continued) Monographic volumes of *Scientia Marina* published between 1989 and 2009

Fauna of the Mediterranean Hydrozoa	2004	J. Bouillon, M.D. Medel, F. Pagès, J.M. Gili, F. Boero, and C. Gravili	Sci Mar 68S2
Biological oceanography at the turn of the millenium	2004	J.D. Ros, T.T. Packard, J.M. Gili, J.L. Pretus, and D. Blasco	Sci Mar 68S1
Mediterranean seabirds and their conservation	2003	E. Mínguez, D. Oro, E. De Juana, and A. Martínez-Abraín	Sci Mar 67S2
Fish stock assessments and predictions: integrating relevant knowledge	2003	Oyvind Ulltang, and Geir Blom	Sci Mar 67S1
Marine benthic algae of Namibia (2002)	2002	Ana Gordoia, and Jordi Rull Lluch	Sci Mar 66 S3
Mediterranean marine demersal resources: the Medits international trawl survey (1994-1999)	2002	Pere Abelló, J.A. Bertrand, L. Gil de Sola, C. Papaconstantinou, G. Relini, and A. Souplet	Sci Mar 66S2
Atlas of northwestern Mediterranean Coccolithophores	2002	Lluïsa Cros and J.M. Fortuño	Sci Mar 66S1
A marine science odyssey into the 21st century (2001)	2001	J.M. Gili, J.L. Pretus, and T.T. Packard	Sci Mar 65S2
An interdisciplinary view of the ocean	2001	J.L. Pelegrí, I. Alonso, and J. Arístegui	Sci Mar 65S1
Aquatic flow cytometry: achievements and prospects	2000	M. Reckermann and F. Colijn	Sci Mar 64S2
Trends in Hydrozoan biology-IV	2000	C.E. Mills, F. Boero, A. Migotto and Josep M. Gili	Sci Mar 64S1
Biology and fisheries of dolphinfish and related species	1999	E. Massutí and B. Morales-Nin	Sci Mar 63S3-4
Magellan-Antarctic: ecosystems that drifted apart	1999	W.E. Arntz and C. Ríos	Sci Mar 63S1
Nephrops norvegicus: Comparative biology and fishery in the Mediterranean Seab	1998	F. Sardà	Sci Mar 62S1
Ecology of marine molluscs (1997) Edited by	1997	J.D. Ros, A. Guerra	Sci Mar 61S2
Lectures on plankton and turbulence	1997	Cèlia Marrasé, Enric Saiz, and J.M. Redondo	Sci Mar 61S1
Advances in hydrozoan biology	1996	S. Piraino, F. Boero, J. Bouillon, P.F.S. Cornelius, and J.M. Gili	Sci Mar 60S1
The European anchovy and its environment	1996	I. Palomera and P. Rubiés	Sci Mar 60S2
Underwater light and algal photobiology	1996	F.L. Figueroa, C. Jiménez, J.L. Pérez-Llorens, and F.X. Niell	Sci Mar 60S1
International symposium of middle-sized pelagic fish	1995	C. Bas, J.J. Castro, and J.M. Lorenzo	Sci Mar 59S3-4
Topics in marine benthos ecology	1995	R. Sardà and J.D. Ros	Sci. Mar. 59S1
The size structure and metabolism of the pelagic ecosystem	1994	J. Rodríguez and W.K.W. Li	Sci Mar 58S1-2
Recent advances in ecology and systematics of sponges	1993	M.J. Uriz and K. Rützler	Sci Mar 57S4
Northwestern Mediterranean fisheries	1993	Jordi Leonart	Sci Mar 57S2-4
Aspects of hydrozoan biology	1992	J. Bouillon, F. Boero, F. Cicogna, J.M. Gili, and R.G. Hughes	Sci Mar 56S2-3
Planktonic cnidarians of the Benguela Current	1992	F. Pagès, J.M. Gili, and J. Bouillon	Sci Mar 56S1
Guide to Ichthyoplankton of the Southeast Atlantic (Benguela Current Region)	1991	M. Pilar Olivar and José Manuel Fortuño	Sci Mar 55S1
Atlas de fitoplancton del mar Mediterráneo	1991	Maximino Delgado, José Manuel Fortuño	Sci Mar 55S1
Topics in marine biology	1989	J.D. Ros	Sci Mar 53S2-3

mogeneous themes, was particularly important before reference searches and the Internet became widely available. These monographic issues brought the journal to many readers who were not familiar with the content of its regular issues.

The articles published in *Investigación Pesquera* were mainly in the areas of biology, ecology and fisheries (80%), with oceanography as a secondary area [12], reflecting the composition of the center. The increase in the number of disciplines studied at the Institute of Marine Sciences since the end of the 1980s, particularly with the arrival of specialists in marine geology and physical oceanography, implied both a diversification in the areas covered in the articles and more interdisciplinary research, particularly between the biological and physical aspects of marine science. As a result, it became necessary to appoint a panel of scientists for the different fields covered in the journal, the Scientific Editors, to assist the Editor-in-chief. The Scientific Editors panel was set up in 1989 with 23 scientists and today comprises around 60 scientists. The scope of the journal includes marine biology and ecology, taxonomy, faunistics, marine biogeography, physical oceanography, chemical oceanography and marine geology.

Investigación Pesquera began the process of peer evaluation by two external reviewers during the 1980s. *Scientia Marina* follows the same model, with its Scientific Editors assigned the responsibility of finding reviewers, evaluating the manuscript once the authors have modified it according to the reviewers' comments, and giving their final recommendations to the Editor-in-chief. A frequent problem encountered by many journals, including *Scientia Marina*, is finding peer reviewers who are prepared to accept this time-consuming and thankless task.

The move to publish in English and the inclusion of international scientific editors have helped to increase the journal's international recognition. Despite the general nature of *Scientia Marina* and the interest in publishing research of broad scope, many papers deal with the Mediterranean and nearby areas of the Atlantic, even though manuscripts from areas further afield, such as the Antarctic and Latin America, are frequent. Over the last few years, the number of manuscripts received from scientists in Spain has decreased, from more than 50% in 1997 to 20% in the last 4 years.

The number of manuscripts received annually for publication in the regular issues has increased from around 90 at the end of the 1990s to currently around 250. Regular volumes have been limited to a little more than 800 pages annually since 2006, for financial reasons. As such, the aim is to diversify the content of the journal, with preference given to interdisciplinary articles of general interest to those in the field of marine research, around the world, and to articles that present significantly new results in relation to the Mediterranean areas and the nearby areas of the Atlantic. The page-number limitations together with the desire to publish relevant and potentially citable articles means that the editorial boards must often strictly limit the number of accepted manuscripts. In addition, the pressure on scientists to publish means that, on occasions, manuscripts are too short or written too quickly and with insufficient care, also results in their rejection. Today,

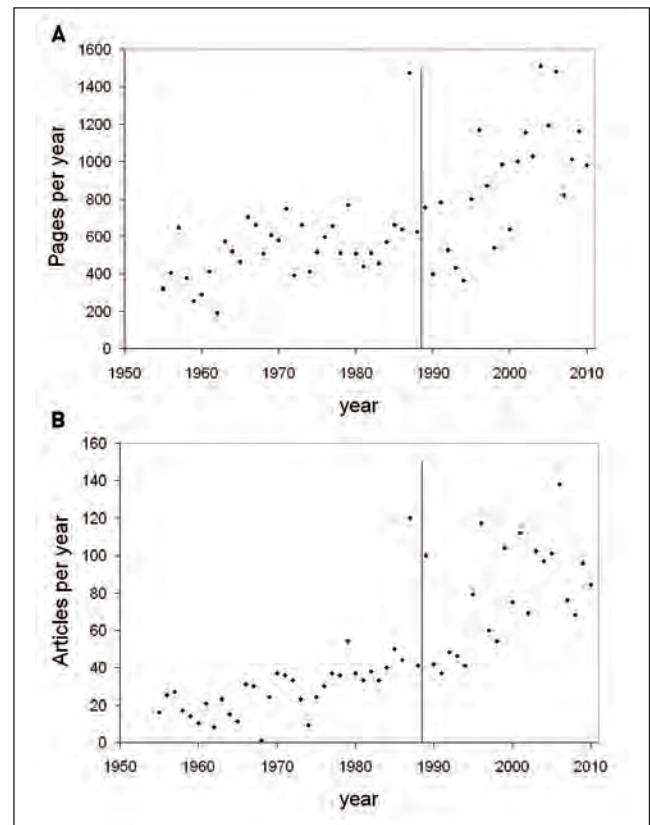


Fig. 4. (A) Number of pages published annually. The change from *Investigación Pesquera* to *Scientia Marina* (in 1988–1989) is indicated with a vertical line. There is a general increase both for *Investigación Pesquera* and *Scientia Marina*. (B) Number of articles published annually. The continuous increase, for both journals as well as the variation in *Scientia Marina*, is due to the publication of monographic issues.

while only 30% of the manuscripts received are published, there has been an increase in the number of pages and the number of articles published annually (due to the special issues), as was the case with *Scientia Marina*'s predecessor *Investigación Pesquera* (Fig. 4). Another positive indicator of the journal's progress is the reduction, over the last 10 years, of the manuscript-processing time, which currently is around 6 months between the receipt of a manuscript and its final acceptance.

The aim of the journal is to make the results of scientific research fully available, which means maximum distribution. With this in mind, the journal is exchanged with those of many universities and research centers, and there are also a small number of subscribers. The exchange has allowed improvement of the ICM library, which has thus become one of the most complete libraries on marine science in Spain. Since 2004, all the content of *Scientia Marina* and *Investigación Pesquera* has been accessible on the Internet [<http://www.icm.csic.es/scimar/>], although there is still a print version. In some cases, the online version contains supplementary material (such as videos or very large tables). Given that the main objective is the diffusion of research results, it was decided to offer free access to the online version.

The arrival of the digital era has not only made all content available online, but it has also greatly facilitated the everyday

management of the journal. Each stage of the publication process, from the database of the manuscripts and their stage of processing to communication with the authors, editors and reviewers, has become much faster, and the time to publication has been accordingly reduced. In addition, another advantage of online content is that, as soon as the proofs for the articles have been revised by authors and editors, they appear on the web page as 'forthcoming articles.'

While for the authors, the process of publishing ends once the manuscript is accepted, much work remains before it can be published. The experience of *Scientia Marina* has shown us that the participation of professionals is fundamental in this phase, in order to achieve a high-quality final product. Revision of the language, text, and formats, and, above all, the layout of the text and figures are carried out by a team of professionals who closely collaborate with the editorial team of the journal.

In a world as competitive as that of science journals, achieving a high SCI ranking is a major challenge. It depends to a large degree on the quality and interest of the articles published in the journal, which is generally related to their number of citations. However, the journal also contains interesting research whose dissemination is not reflected in this ranking, as it has not likely to have been frequently cited within the previous two years, the time taken into consideration to calculate the impact factor of the Thomson Reuters (formerly ISI) Web of Knowledge.

Conclusions

The journal *Scientia Marina*, previously *Investigación Pesquera*, is, today, an international reference for marine sciences. In the capable hands of its managers, and despite an uncertain budget, it has been able to adapt to the recent changes in the world of scientific journals. The decisions regarding its format and management have not always been easily made and they have sometimes conflicted with general opinion or the opinions of the CSIC itself. The quality, regularity of publication, and the dedication of a number of people, many actively engaged in scientific research—with all that this demanding profession implies—are, without doubt, the keys to the success of this enterprise.

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