Preliminary Bibliometric Analysis of Information Published in the Proceedings of the Gulf and Caribbean Fisheries Institute (1948-2004): Thematic Areas and Authors

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ABSTRACT

To date, the Gulf and Caribbean Fisheries Institute (GCFI) has published a total of 57 proceedings that catalog the research presented at the organization's annual meetings which occurred continuously from 1948 to 2004. The total number of papers or abstracts published during that period is 2330, ranging from 27 from the first meeting to 104 from the 57th meeting. The 2002 conference featured the greatest number of presentations (141, in Quintana Roo), while the year with the fewest contributions was 1965, with 15 (Miami, 18th meeting). During the 57 years, documents submitted to GCFI proceedings represented 42 different thematic areas. Harvesting and Shrimp Fisheries were the most frequently addressed topic during the first 30 years, while Fisheries Management was the dominant topic during the last 27 years. Harvesting was the most persistent topic, with representation in 50 proceedings, although Stock Assessment garnered the highest number of contributions overall with 197 (8.5% of the total). In total, 2320 researchers contributed work to GCFI proceedings. The 1964 and 1965 memories (17 and 18th) attracted the smallest number of authors (18), while 273 authors contributed to volume 55 of the proceedings (2002). Among the most productive authors are Dalila Aldana-Aranda with 44 publications in 14 proceedings and Richard S. Appeldoorn with 35 contributions in 17 proceedings.

KEY WORDS: History, bibliography, themes, publications

Análisis Bibliométrico Preliminar de los Trabajos Publicados en la Memorias del Instituto de Pesquerías del Golfo y el Caribe (1948-2004): Áreas Temáticas y Autores

Hasta el presente, el Instituto de Pesquerías del Golfo y el Caribe (GCFI, por sus siglas en ingles), ha publicado un total de 57 memorias, que aglutinan los trabajos presentados en los encuentros anuales que se han extendido de manera continua desde 1948 hasta 2004. El número total de trabajos o resúmenes publicados en ese periodo se eleva a 2330, pasando de 27 en la primera memoria a 104 en la última. El evento de 2002 reunió la mayor cantidad de trabajos (141, en Quintana Roo), mientras que el año que se recibieron menores contribuciones fue el de 1965, con 15 (Miami, 18ava reunión). A lo largo de estos 57 años de historia se han abordado un total de 42 áreas temáticas, siendo la Cosecha y la Pesquería de Camarones los que han acaparado el mayor interés durante los primeros 30 años, mientras Manejo Pesquero fue el tópico dominante durante los últimos 27. El tema de Cosecha ha sido el más persistente, con presencia en 50 volúmenes, aunque la Evaluación de Recursos es el que ha totalizado un mayor numero de contribuciones, con 197 (8.5% del total). Este esfuerzo ha estado motorizado por 2330 investigadores, siendo las memorias de 1964 y 1965 (17 y 18avas) las que reunieron la menor cantidad de autores (18), mientras que en el volumen 55 participaron un total de 273. Entre los investigadores mas productivos tenemos a Dalila Aldana-Aranda, con 44 publicaciones y 14 participaciones, seguida por Richard S. Appeldoorn con 35 contribuciones en 17 de las memorias.

PALABRAS CLAVES: historia, bibliografía, temas, publicaciones

INTRODUCTION

By publishing papers, the scientific community communicates the importance and extent of their finding. Those articles reflect the interest and priorities for research in a particular period of time, and if analyzed chronologically changes, in trends and tendencies can be obtained.

The Proceedings of the Gulf and Caribbean Fisheries Institute (PGCFI), a publication born in 1948 as an instrument to record and distribute the information and ideas exchanged by scientists and commercial fishermen during their annual meetings. Thanks to its continuity, a long 57 years of printed issues address the importance and extent of the scientific thematic areas covered and the researchers that have published in the memories. The PGCFI should be fully recognized as a valuable resource of scientific information by and for fisheries biologists and managers.

The objective of the present study is to highlight the purpose and value of the PGCFI through an historical evaluation of the thematic areas that were covered and the researchers that participated in the long 57 years of printed volumes.

MATERIALS AND METHODS

Since de PGCFI is not a publication in the mainstream of science, a database had to be created. The program CDS/Isis for Windows (WINISIS) was used. Information was stored by authors, titles, volume, city and date of publication, number of pages, abstract, keywords and thematic areas. The output of this data base can be consulted through the webpage: www.gcfi.org.

However, to facilitated the analysis a consolidated data base was created in Excel, one for authors and another one for thematic areas. Analyses were conducted using only indicators of offer, as total number of contributions (full papers or abstracts), number of contributions by themati-

carea, and number of researchers (authors and co-authors) that participated in those documents

RESULTS

A brief history of the proceedings publications

To date the Gulf and Caribbean Fisheries Institute (GCFI) has published 57 proceedings that catalog the research presented at the organization's annual meetings which occurred continuously from 1948 to 2004. The only exception was in 1993, when the meeting was cancel and two conferences were held in 1994.

Number of documents in the proceedings

The total number of documents (papers or abstracts) published during the 57 year period is 2330, ranging from 27 in the first volume (1948) to 104 in the 57th (2004) (Figure 1). The 1965 volume (18th) featured the fewest number of documents (15, Miami meeting), while the year with the greatest number of contributions was 2002, with 141 (Quintana Roo, 55th meeting) (Figure 1). This represents an 840% increase in participation.

Thematic areas cover in the proceedings

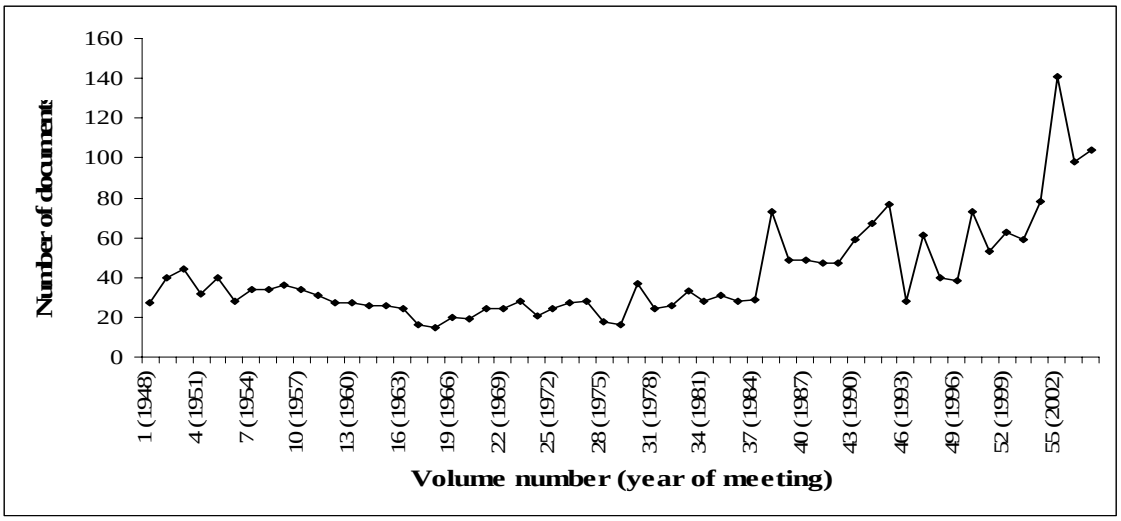
During the 57 year history of the proceedings, documents submitted for publication represented 42 different thematic areas as follows: 22 on the general field of Fisheries (Stock Assessment, Pelagics, Management, Coastal and Reef Fish, Shrimp, Sport, Lobster, Organizations, Industry, Snapper, Disputes, Gastropod, Grouper, Bivalves, Crab, Cephalopod, Sponge, Spawning Populations, Turtles, Echinoderm, Crawfish and Marine Mammals), 7 on Aquaculture (Fish, General Marine Culture, Gastropod, Shrimp, Bivalves, Lobster and Crab), 5 on Economy and Human Dimensions (Marketing, Socioeconomics, Sociological, Public Health and Education), 4 on Environmental Assessment (Man-induced Effects, Marine Parks and Marine Pollution) and 2 on technology (Harvesting & Fisheries Techniques and Remote Sensing). Welcoming/Opening and Closing Addresses were included in these counts. The volume from the 6th meeting (1953) contained the lowest number of thematic areas (5), while the 55th proceedings (2002 meeting) had the highest number with 28 (Figure 2).

This productivity of thematic areas can be examined in Table 1. Nine themes represented 53.9% of the total contributions within all thematic areas during the first 30 printed volumes (Harvesting, Shrimp Fishery, Pelagic Fisheries, Stock Assessments, Fisheries Industry, Fisheries Organization, Fisheries Disputes, Fisheries Management and Coastal & Reef Fish Fisheries), while 12 themes represented 54.4% of thematic participation during the next 27 proceedings (Fisheries Management, Harvesting, Stock Assessments, Gastropod Culture, Lobster Fishery, Pelagic Fisheries, Sport Fisheries, Fish Culture, Gastropod Fishery, Coastal & Coral Reef Fisheries, Environmental Assessments and General Marine Culture).

Harvesting was the most persistent topics throughout the 57 year history, with representation in 50 of the proceedings, followed by Stock Assessment and Pelagic Fisheries, with 45 and 44 contributions, respectively (Table 1). Shrimp Fisheries was the second most frequently addressed topic during the first 30 years, with representation in 25 of those volumes, while Fisheries Management was the dominant topic during the last 27 years, with representation in 24 of those proceedings) (Table 1).

The high level of participation in the thematic areas of Shrimp Fisheries, Fisheries Industry, Fisheries Organizations and Fisheries Disputes during the first 30 years, with contributions in 25, 19, 21 and 17 proceedings, respectively, demonstrated the importance and 'popularity' of those themes in the early years of the Institute. Conversely, those same themes were respectively represented in 10, 11, 4 and 7 proceedings in the following 27 volumes (Table 1).

Figure 1. Number of documents printed in the 57 volumes of the GCFI proceedings.



On the other hand, Lobster Fishery, Fish Culture, Gastropod Culture, Gastropod Fishery and Grouper Fishery emerged as significant thematic areas in the recent years, with involvement in 22, 21, 23 and 17 of the 27 last proceedings, respectively, as compared with representation by those themes in 9, 4, 0, 0 and 1 proceedings, respectively, in the first 30 volumes (Table 1).

Stock Assessment garnered the highest number of contributions overall with 197 (8.5% of the 2330), followed by Harvesting with 180 (7.7%) of the total (Table 2). The dramatic shift from areas of interest (themes) which characterized the first 30 years to those identified during the last 27 years can be observed in Table 2. In terms of the total number of contributions contained in volumes 1 through 30, the top 3 thematic areas (Harvesting, Shrimp Fishery and Fisheries Industry), were relegated to 'positions' 13, 21 and 34, respectively, among the thematic areas based on the level of productivity in the last 27 volumes (Table 2).

Authorship

A total of 2320 different researchers have contributed to the GCFI proceedings, as authors or co-authors, during the 57 year history. Overall, 3909 names have appeared as authors in the proceedings, obviously some more than once, among documents printed in all 57 volumes. Volumes 17 and 18 (1964 and 1965, respectively) contained the smallest number of authors among all proceedings, while 273 names appeared involved in the manuscripts published in the 55th volume (2002 meeting) (Figure 3).

The high variability in authorship 'productivity' (i.e., the 'top 20' contributing authors per time series) during the 57 year history of the proceedings is shown Table 3. The names of only 14 authors or co-authors appeared more that 7 times within a particular time series. Those names are: R.A. Kahn, with participation in 8 volumes (volumes 1 to 10; meetings from 1948 to 1957); M.H. Goodwin, with 7 (volumes 31 to 40; meetings from 1978 to 1987); P.A. Murray, R.S. Appeldoorn, D. Matos Caraballo, H.A. Oxenford, D. Aldana Aranda and J.M. Posada, with 9, 8, 8, 7, 7 and 7, respectively (volumes 41 to 50; 1988 to 1997) (Table 3). Only the names of D. Aldana Aranda, R.B. Ditton, T. Brule, T.E. Colas Marrufo, P. McConney and G.A. Delgado appeared in all volumes from the last 7 years (Table 3).

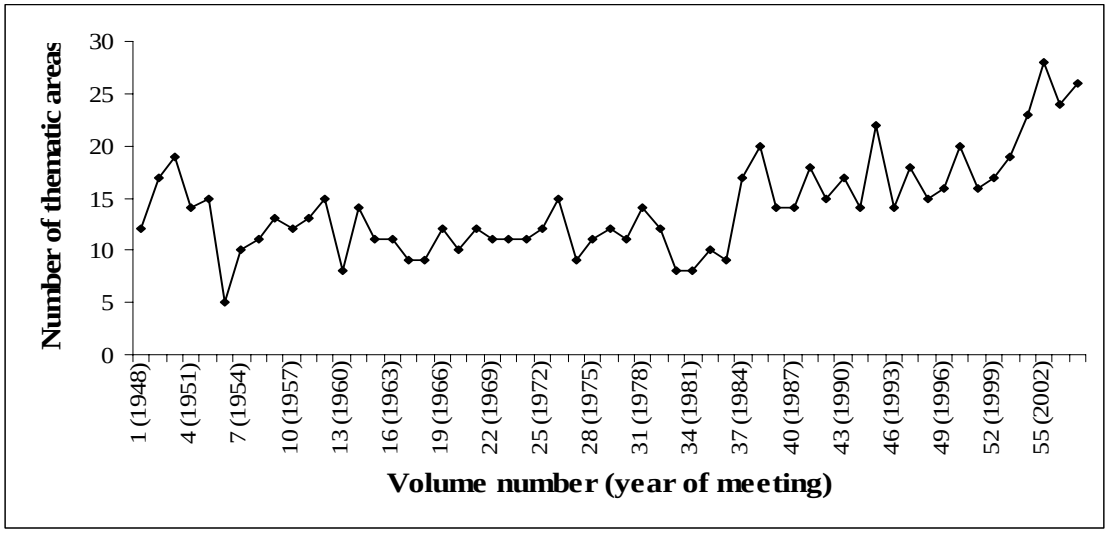
Only C.P. Idyll contributed manuscripts to 2 or more proceedings in each of the first four 10-year time series of volumes (1948 – 1987, vols.1 to 40), followed by H.R. Bullis, Jr. who contributed manuscripts to 2 or more proceedings in each of the first three 10-year series (1948 - 1977, vols. 1 to 30). B.E. Luckhurst, R.S. Appeldoorn and R.B. Ditton were active contributors to each of the last three 10-year time series of volumes (1978 to 2004; vols. 31 to 57). In most instances, authors who contributed during the first 30 years of the proceedings did not contribute during the following 27 years, which, with the passage of time and evolving/shifting research, diminished the linkage between 'early' and 'recent' contributors and their respective interests, i.e., thematic areas of interest.

The 10 authors (or co-authors) with the greatest number of documents published in GCFI proceedings during the 57 year history are showed in Table 4. Contributions by all of these authors were published in volumes from the last 27 years of the proceedings. D. Aldana Aranda and R.S. Appeldoorn have contributed, by far, the greatest number of documents for publication.

DISCUSSION

The contents of the 42 'thematic areas' described in this document confirm the importance of the PGCFI as a chronicle of the region's fisheries during the period 1948-

Figure 2. Diversity in the number of thematic areas for each volume of the GCFI proceedings.



2004. Historic trends in regional fisheries interests, issues of concern and scientific endeavors are revealed on a time-scale basis through the numerous documents (2330) contributed by scientists and fishers to the proceedings. Some themes occurred throughout the history of GCFI, as represented by contributions to the proceedings over many years, and have an interesting evolutionary history, while other themes have a more recent history of development.

The bibliometric analytical procedure used to asses the proceedings' historic database provided a methodology to evaluate each thematic area to determine its historic level of significance and its relationship to other themes within the overall proceedings. The analyses chronologically identified changing trends and tendencies within and among themes, in both scientific contributions and authorship. In the early years, contributions focused in great part on fisheries development, harvesting, fisheries disputes and public health, shifting in later years to individual fisheries, ecosystem scales, social sciences, management, conservation and increased concern for small island issues and artisanal fisheries.

The contributions of thousands of scientist, managers, entrepreneurs and fishers to the fields of research, fisheries, management and conservation of marine natural resources are now available (at no cost) and easily accessible in the PGCFI on the Institute's webpage (www.gcfi.org). The information is there to inform and be used. In the 33rd annual meeting of the organization (1980, San Jose, Costa Rica), Nicholas Chitty (Rosenstiel School of Marine and Atmospheric Science, University of Miami) expressed an idea that is still true and important today: "if you go back over the last few years of GCFI meetings, you will find that I appear to have repeated things said before, and that speakers before me have repeated things said by other in previous years. The point is that we can repeat ourselves forever and be ignored forever until we all acknowledge that the power to solve fishery problems rests with committed and concerned people. We are those people, and we have that power".

ACKNOWLEDGMENT

To Marianella Delgado and Tecnosima C.A. (Venezuela) for their hard work in creating the GCFI database and engine search and the Board of Directors of the GCFI that supported this initiative. To all the researchers that built the history of the PGCFI.

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Figure 3. Number of contributing authors associated with all volumes of the GCFI proceedings, including contributions by authors to more than one document per volume.

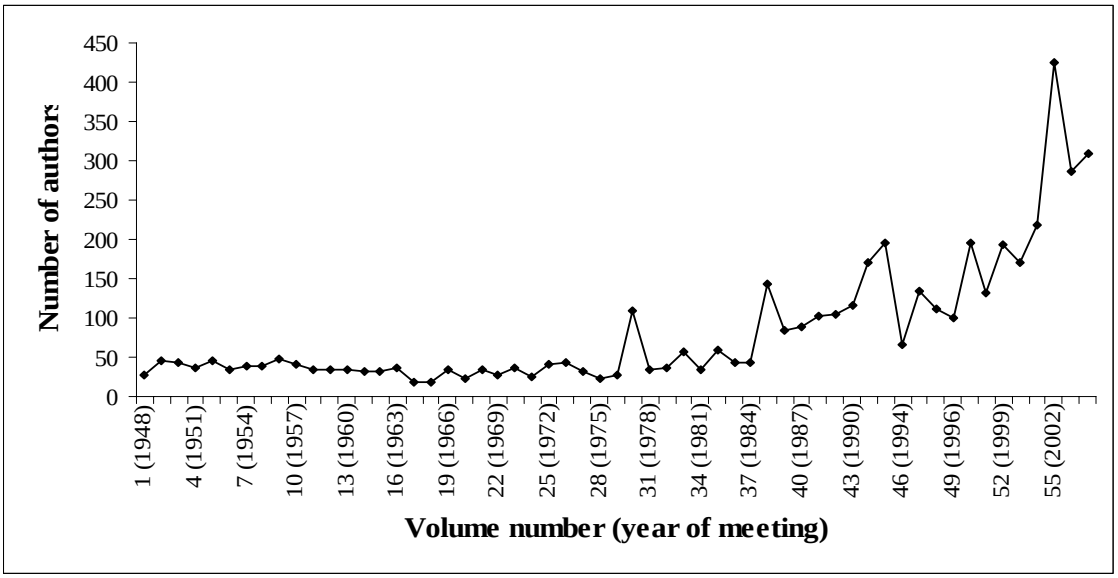

Table 1. Representation by each of the thematic areas during the 57 year history of the GCFI proceedings, examined in periods of 10 printed volumes.

Thematic areas	1 to 10	11 to 20	21 to 30	First 30 volumes	%	31 to 40	41 to 50	51 to 57	Next 27 volumes	%	Total number	Total %
Stock assessment	40	15	21	76	9,2	43	50	28	121	8,1	197	8,5
Harvesting	46	44	20	110	13,3	38	25	7	70	4,7	180	7,7
Fisheries management	13	4	31	48	5,8	12	45	30	87	5,8	135	5,8
Pelagics fisheries	15	11	14	40	4,8	23	24	46	93	6,2	133	5,7
Gastropod fishery	0	0	0	0	0,0	18	60	48	126	8,4	126	5,4
Coastal and reef fish fisheries	13	6	7	26	3,1	9	34	45	88	5,9	114	4,9
Lobster fishery	5	1	6	12	1,5	29	45	21	95	6,3	107	4,6
Shrimp fishery	32	35	18	85	10,3	8	4	10	22	1,5	107	4,6
Sport fisheries	7	5	7	19	2,3	34	14	28	76	5,1	95	4,1
Fisheries industry	57	12	14	83	10,0	1	2	2	5	0,3	88	3,8
Environmental assessment	7	15	11	33	4,0	3	18	33	54	3,6	87	3,7
Fish culture	1	3	0	4	0,5	29	36	11	76	5,1	80	3,4
Grouper fishery	0	0	1	1	0,1	1	48	27	76	5,1	77	3,3
Marine parks	0	2	0	2	0,2	1	20	53	74	4,9	76	3,3
Gastropod culture	0	0	0	0	0,0	18	25	29	72	4,8	72	3,1
Fisheries organizations	17	15	8	40	4,8	10	1	3	14	0,9	54	2,3
Marketing	17	8	16	41	5,0	12	0	1	13	0,9	54	2,3
Snapper fishery	3	1	3	7	0,8	1	16	30	47	3,1	54	2,3
Man-induced effects	1	6	8	15	1,8	7	3	24	34	2,3	49	2,1
Remote sensing	2	3	0	5	0,6	7	6	28	41	2,7	46	2,0
Marine culture (general)	1	1	5	7	0,8	16	15	7	38	2,5	45	1,9
Clam, mussel, oyster fishery	16	13	0	29	3,5	2	0	6	8	0,5	37	1,6
Fisheries disputes	4	8	13	25	3,0	8	0	1	9	0,6	34	1,5

Table 1. (Continued) .

Socioeconomics aspects	2	2	3	7	0,8	3	9	13	25	1,7	32	1,4
Sociological aspects	6	0	11	17	2,1	1	4	7	12	0,8	29	1,2
Shrimp culture	2	2	7	11	1,3	8	7	1	16	1,1	27	1,2
Marine pollution	3	6	9	18	2,2	0	3	6	9	0,6	27	1,2
Spawning populations	0	0	0	0	0,0	1	3	20	24	1,6	24	1,0
Clam, mussel, oyster culture	0	1	2	3	0,4	5	10	4	19	1,3	22	0,9
Public health	8	7	3	18	2,2	3	1	0	4	0,3	22	0,9
Crab fishery	2	2	1	5	0,6	5	2	6	13	0,9	18	0,8
Welcoming/Opening address	14	1	0	15	1,8	1	0	0	1	0,1	16	0,7
Education	1	0	1	2	0,2	0	0	11	11	0,7	13	0,6
Cephalopod fishery	0	2	1	3	0,4	2	4	2	8	0,5	11	0,5
Sponge fishery	8	0	0	8	1,0	0	0	1	1	0,1	9	0,4
Crab culture	0	0	0	0	0,0	5	2	1	8	0,5	8	0,3
Lobster culture	0	0	2	2	0,2	0	1	4	5	0,3	7	0,3
Closing address	2	0	3	5	0,6	1	0	0	1	0,1	6	0,3
Turtles fishery	1	0	0	1	0,1	3	0	0	3	0,2	4	0,2
Echinoderm fishery	0	0	0	0	0,0	2	0	2	4	0,3	4	0,2
Crawfish fishery	3	0	0	3	0,4	0	0	0	0	0,0	3	0,1
Marine mammals fishery	0	0	1	1	0,1	0	0	0	0	0,0	1	0,0
Total number of contributions	349	231	247	827		370	537	596	1503		2330	

Table 2. Total number of contributions in each of the thematic areas during the 57 year history of the GCFI proceedings, examined in periods of 10 printed volumes.

Thematic areas	1 to 10	11 to 20	21 to 30	First 30 volumes	%	31 to 40	41 to 50	51 to 57	Next 27 volumes	%	Total number	Total %
Stock assessment	40	15	21	76	9,2	43	50	28	121	8,1	197	8,5
Harvesting	46	44	20	110	13,3	38	25	7	70	4,7	180	7,7
Fisheries management	13	4	31	48	5,8	12	45	30	87	5,8	135	5,8
Pelagics fisheries	15	11	14	40	4,8	23	24	46	93	6,2	133	5,7
Gastropod fishery	0	0	0	0	0,0	18	60	48	126	8,4	126	5,4
Coastal and reef fish fisheries	13	6	7	26	3,1	9	34	45	88	5,9	114	4,9
Lobster fishery	5	1	6	12	1,5	29	45	21	95	6,3	107	4,6
Shrimp fishery	32	35	18	85	10,3	8	4	10	22	1,5	107	4,6
Sport fisheries	7	5	7	19	2,3	34	14	28	76	5,1	95	4,1
Fisheries industry	57	12	14	83	10,0	1	2	2	5	0,3	88	3,8
Environmental assessment	7	15	11	33	4,0	3	18	33	54	3,6	87	3,7
Fish culture	1	3	0	4	0,5	29	36	11	76	5,1	80	3,4
Grouper fishery	0	0	1	1	0,1	1	48	27	76	5,1	77	3,3
Marine parks	0	2	0	2	0,2	1	20	53	74	4,9	76	3,3
Gastropod culture	0	0	0	0	0,0	18	25	29	72	4,8	72	3,1
Fisheries organizations	17	15	8	40	4,8	10	1	3	14	0,9	54	2,3
Marketing	17	8	16	41	5,0	12	0	1	13	0,9	54	2,3
Snapper fishery	3	1	3	7	0,8	1	16	30	47	3,1	54	2,3
Man-induced effects	1	6	8	15	1,8	7	3	24	34	2,3	49	2,1
Remote sensing	2	3	0	5	0,6	7	6	28	41	2,7	46	2,0
Marine culture (general)	1	1	5	7	0,8	16	15	7	38	2,5	45	1,9
Clam, mussel, oyster fishery	16	13	0	29	3,5	2	0	6	8	0,5	37	1,6
Fisheries disputes	4	8	13	25	3,0	8	0	1	9	0,6	34	1,5

Table 2. (Continued).

Socioeconomics aspects	2	2	3	7	0,8	3	9	13	25	1,7	32	1,4
Sociological aspects	6	0	11	17	2,1	1	4	7	12	0,8	29	1,2
Shrimp culture	2	2	7	11	1,3	8	7	1	16	1,1	27	1,2
Marine pollution	3	6	9	18	2,2	0	3	6	9	0,6	27	1,2
Spawning populations	0	0	0	0	0,0	1	3	20	24	1,6	24	1,0
Clam, mussel, oyster culture	0	1	2	3	0,4	5	10	4	19	1,3	22	0,9
Public health	8	7	3	18	2,2	3	1	0	4	0,3	22	0,9
Crab fishery	2	2	1	5	0,6	5	2	6	13	0,9	18	0,8
Welcoming/Opening address	14	1	0	15	1,8	1	0	0	1	0,1	16	0,7
Education	1	0	1	2	0,2	0	0	11	11	0,7	13	0,6
Cephalopod fishery	0	2	1	3	0,4	2	4	2	8	0,5	11	0,5
Sponge fishery	8	0	0	8	1,0	0	0	1	1	0,1	9	0,4
Crab culture	0	0	0	0	0,0	5	2	1	8	0,5	8	0,3
Lobster culture	0	0	2	2	0,2	0	1	4	5	0,3	7	0,3
Closing address	2	0	3	5	0,6	1	0	0	1	0,1	6	0,3
Turtles fishery	1	0	0	1	0,1	3	0	0	3	0,2	4	0,2
Echinoderm fishery	0	0	0	0	0,0	2	0	2	4	0,3	4	0,2
Crawfish fishery	3	0	0	3	0,4	0	0	0	0	0,0	3	0,1
Marine mammals fishery	0	0	1	1	0,1	0	0	0	0	0,0	1	0,0
Total number of contributions	349	231	247	827		370	537	596	1503		2330	

Table 3. A list of researchers and the number of proceedings to which they contributed at least one document within each series of 10 volumes of the GCFI proceedings.

Name of researcher	1 to 10	Name of researcher	11 to 20	Name of researcher	21 to 30	Name of researcher	31 to 40	Name of researcher	41 to 50	Name of researcher	51 to 57
Kahn, R.A.	8	Bullis Jr., H.R.	6	GCFI	4	Goodwin, M.H.	7	Murray, P.A.	9	Aldana Aranda, D.	7
GCFI	7	McLeod Chapman, W.	4	Tabb, D.C.	4	Waugh, G.T.	5	Appeldoorn, R.S.	8	Ditton, R.B.	7
Springer, S.	6	Iversen, E.S.	3	Jones, A.C.	3	Olsen, D.A.	5	Matos Caraballo, D.	8	Brule, T.	7
Idyll, C.P.	5	Costello, T.J.	3	Roedel, P.M.	3	Oxenford, H.A.	5	Oxenford, H.A.	7	Colas Marrufo, T.E.	7
Strasburger, L.W.	5	Reintjes, J.W.	3	Rathjen, W.F.	3	Berg Jr., C.J.	5	Aldana Aranda, D.	7	McConney, P.	7
Whiteleather, R.T.	5	Jones, A.C.	3	Allen, H.B.	3	Dammann, A.E.	4	Posada, J.M.	7	Delgado, G.A.	7
Ingle, R.M.	5	Yokel, B.J.	3	Whiteleather, R.T.	3	Davis, M.	4	Luckhurst, B.E.	6	Murray, P.A.	6
Wiles, D.W.	5	Crutchfield, J.A.	3	Rhodes, R.J.	3	Luckhurst, B.E.	4	Aiken, K.A.	6	Appeldoorn, R.S.	6
Higman, J.B.	4	Schaefers, E.A.	3	Jensen, A.C.	3	Hunte, W.	4	Beets, J.	6	Matos Caraballo, D.	6
Wallace, D.H.	4	Holston, J.A.	3	Koburger, J.A.	3	Bannerot, S.B.	4	Sullivan, K.M.	6	Luckhurst, B.E.	6
Anderson, A.W.	4	Klima, E.F.	3	Bullis Jr., H.R.	2	Caddy, J.F.	4	Keithly Jr., W.R.	6	Glazer, R.A.	6
Dawson Jr., C.E.	4	Miles, C.	3	Iversen, E.S.	2	Schmied, R.L.	4	Patiño-Suarez, V.	6	Franks, J.S.	6
Galtsoff, P.S.	4	Winsor, H.C.	3	Yokel, B.J.	2	Wilkins, R.M.	4	Ditton, R.B.	5	Prada, M.C.	6
Heydecker, W.D.	4	GCFI	2	Idyll, C.P.	2	Roedel, P.M.	3	Lipcius, R.N.	5	Brown-Peterson, N.J.	6
Rivas, L.R.	4	Idyll, C.P.	2	Juhl, R.	2	Carranza Fraser, J.	3	Glazer, R.A.	5	Posada, J.M.	5
Van Gelderen, P.	4	Ingle, R.M.	2	Abel, R.B.	2	Burnett-Herkes, J.	3	Stoner, A.W.	5	Matthews, T.R.	5
Bullis Jr., H.R.	3	Wallace, D.H.	2	Neblettt, W.R.	2	Appeldoorn, R.S.	3	Dennis, G.D.	5	Davis, M.	5
Gunter, G.	3	Gunter, G.	2	St. Amant, L.S.	2	Ditton, R.B.	3	Brule, T.	5	Brito Manzano, N.	5
Broadhead, G.C.	3	Butler, P.A.	2	Brawner, J.T.	2	Mahon, R.	3	Acosta, A.	5	Baqueiro Cardenas, E.R.	5
Mackin, J.G.	3	Lindner, M.J.	2	Beardsley, G.L.	2	Haughton, M.O.	3	Sadovy, Y.	5	Mateo Rabelo, I.	5

Table 4. List of authors or co-authors with the greatest number of documents published during the 57-year history of the GCFI proceedings.

Name of researcher	Number of contributions
Aldana Aranda, D.	44
Appeldoorn, R.S.	35
Murray, P.A.	25
Ditton, R.B.	24
Oxenford, H.A.	23
Brule, T.	21
Luckhurst, B.E.	21
Matos Caraballo, D.	21
Davis, M.	21
Glazer, R.A.	20