CORE MARINE JOURNALS: SHRINKING?SMALLER CORE COLLECTIONS, CONSORTIA, AND SHARED ACCESS

CORE JOURNALS: FACT OR FICTION?

Barb Butler
Librarian, Oregon Institute of Marine Biology
University of Oregon
P.O. Box 5389 Charleston, OR 97420, USA.
TEL: (541) 888-2581
butler@uoregon.edu

Janet Webster
Librarian, Hatfield Marine Science Center
Oregon State University
2030 S. Marine Science Dr., Newport, OR 97365-5296 USA.
TEL: (541) 867-0108
janet.webster@oregonstate.edu

Abstract:
As editors of the *Marine Science and Technology* section for the last three editions of *Magazines for Libraries* (MFL), we developed lists of journals and annotations to help guide marine sciences acquisitions for all types of libraries. We recommended essential titles at the same time we needed to cancel some of those titles from our own collections. We believe the idea of a "core" collection, particularly for marine science, is no longer a valid concept. Collection development decisions must be made in collaboration with partner libraries and take into consideration the costs and benefits of access versus ownership, use, open-access policies and journal impact.

Keywords: Core journals, marine science, applied marine science, oceanography, collaborative collection development.

What are the core journals in marine science?
Librarians, especially those new to a subject, look for guidance on what journals should be available to their clients. In marine science, we have crafted core journal lists for decades. In 1986 Judith Barnett created an annotated list of 350 marine science titles (Barnett1986). This list was augmented over the years to include an additional 66 titles (Barnett 1995; Barnett 2004 and Barnet 2005). While comprehensive, this list is far more than the average marine laboratory library could acquire. Marine science is an interdisciplinary and evolving field. New additions to the literature must be considered as well as the 400+ titles annotated by Barnett. Faced with this overwhelming list, the

marine science librarian needs to consider if there is a core journal collection or is that a dated concept given economics, local needs, consortial purchasing and open access?

Over the past 25 years IAMSLIC members have used various schemes to describe the literature needed and used by their patrons. Natalie Wiest (1997) surveyed users to create a list of the top-ten journals at Texas A&M Galveston. Parker (2005) looked at literature searches within key databases to describe core titles in the disciplines of fisheries and oceanography. Sieburth (1991) followed a similar approach in describing the literature of the Narragansett Bay estuary.

Many IAMSLIC papers relating to core journals address ways to access needed resources in lieu of subscriptions after journal cancellation projects (Fuseler 1992, Galbraith 2000, Ittner 1993, Wiest 1988 and Williams 1989). Some IAMSLIC members have relied on journal use studies to identify key journals (Norton 1984, Wible 1989), while others have used impact-factors or other ranking criteria to help them separate core titles from those they could de-select (Fuseler-McDowell 1987, Fuseler-McDowell 1988, Haas and Kisling 1994, Kelland 1986, Marshall 1989, and Wible 1989).

In our 2001 paper (Webster and Butler 2001), we reviewed the above IAMSLIC publications relating to core journals and found 20 titles common to all of the studies. Throughout the tables in this article we refer to these titles as the "IAMSLIC 2001 Core". Our approach to collection development has matured over the past decade leading us to reconsider what we really need to own in our individual libraries. Our knowledge is exemplified in our work as editors of the Marine Science and Technology Section of the last three editions of *Magazines for Libraries* (MFL). Our reconsideration may assist others in making strategic decisions.

The situation in 2010

Like many other libraries, we have implemented a number of journal cancellation projects over the years. In 2009 Oregon State University and University of Oregon cut $1.25 Million and $1.2 Million respectively from their journal budgets. Realizing that the current model is no longer sustainable our parent institutions encouraged us to collaborate even more closely and to think of our two separate library systems as a single collection.

More than ever, access to materials is more important and perhaps more sustainable than owning many or most of the journals needed by our patrons. Because of our mandate to collaborate, we ended up cutting some of the journals that we said (in MFL) were essential to institutions supporting a marine biology curriculum. Most notably, University of Oregon no longer subscribes to *Marine Biology* and Oregon State University cancelled *Marine and Freshwater Biology*.

Having cancelled key titles, we began to question the concept of core journals. There are more journals in the field, so it is harder to afford the journals we consider to be "core". Local needs suggest that there is not a single core collection for all marine science libraries. Typical measures of price, use, and impact-factor are no longer enough when it

comes to determining which journals to keep or cut. We need to integrate different means of access from open access to aggregated content to consortial deals along with what we purchase locally.

Appendix A lists the 95 titles we included in MFL and our annotations and recommendations based on the need to collaborate and coordinate between institutions. When we think about collection development it is worth noting that 26% of the titles are from Elsevier. 37% are from Elsevier+Springer, 46% are from Elsevier+Springer+Wiley and 53% are from a combination of Elsevier+Springer+Wiley+Taylor/Francis. Clearly, if we hope to make a change in journal pricing we should be talking to these four publishers.

Describing a Core Collection for the Marine and Aquatic Science Field in 2010
Starting with the MFL list of 95 titles, we looked at how we would build our local collections. Our new decision-making process asks the following four questions:

- Is it open access?
- Is it available through an aggregating site?
- How can we buy this collaboratively?
- Does the benefit warrant the cost?

Based on our combined 40 years worth of experience, we crafted "core" collections for several specific fields. We dubbed these our "Fantasy" collections, the items we would subscribe to if funding allowed. These "Fantasy" collections reflect our personal biases and are based on our knowledge of patron needs. We denoted presence/absence in the table with the 2010 subscription price for each journal in order to know what such a collection would cost. We limited our selections to 20 titles (the number in the IAMSLIC 2001 Core) but if not so constrained, would have included additional titles. Across the board, the cost was greater than our current budgets. Subscribing to only a subset of our "Fantasy Core" collection is more than we can afford, yet another indication that the current model of individual libraries making individual decisions is no longer sustainable.

Table 1 is our "Fantasy" collection for 2010.

Journals	IAMSLIC 2001	Marine Biology	Applied Marine Biology	Ocean Science
Advances in Marine Biology	$177	$177	$177	
American Fisheries Society. Transactions		$1,328	$1,328	
Annual Review of Marine Science		$219		
Aquaculture			$5,086	
Biological Bulletin		$470		

Canadian Journal of Fisheries and Aquatic Sciences	$1,240	$1,240	$1,240	$1,240
Continental Shelf Research				$2,770
Deep-Sea Research. Part 1: Oceanographic Research Papers	$3,344	$3,344		$3,344
Deep-Sea Research. Part 2: Topical Studies in Oceanography	$4,442	$4,442	$4,442	$4,442
Dynamics of Atmopsheres and Oceans				$1,526
Environmental Biology of Fishes			$2,731	
Estuaries and Coasts		$643	$643	
Estuarine, Coastal and Shelf Science	$3,004	$3,004	$3,004	$3,004
Fish and Fisheries			$932	
Fisheries		$132		
Fisheries Oceanography			$1,229	
Fishery Bulletin		$36	$36	
G3: Geochemistry, Geophysics, Geosystems				$1,165
Geophysical Research Letters				$3,800
ICES Journal of Marine Science: journal du conseil	$2,806		$2,806	
Invertebrate Biology		$268		
Journal of Cetacean Research and Management			$3,599	
Journal of Experimental Marine Biology and Ecology	$5,817	$5,817	$5,817	
Journal of Fish Biology	$3,908		$3,908	
Journal of Geophysical Research - Oceans			$4,900	$4,900
Journal of Geophysical Research - Solid Earth				$4,000
Journal of Marine Research	$160			$160
Journal of Marine Systems				$3,028
Journal of Phycology	$894			$894
Journal of Physical Oceanography	$815			$815
Journal of Shellfish Research			$293	
Journal of Plankton Research	$1352			
Journal of the Marine Biological Association of the U.K.		$1,484		

Limnology and Oceanography	$975	$975	$975	$975
Marine and Freshwater Research	$1,740			
Marine Biology	$6,707	$6,707	$6,707	
Marine Biology Research		$448		
Marine Chemistry	$2,813			$2,813
Marine Ecology Progress Series	$5,494	$5,494	$5,494	$5,494
Marine Environmental Research	$2,017			
Marine Geology				$4,569
Marine Mammal Science		$304	$304	
Oceanography and Marine Biology: an annual review	$180	$180		
Paleoceanography				$675
Progress in Oceanography	$3,277			$3,277
Total Collection Cost (2010 rates)	$51,162	$36,712	$55,651	$52,891

*Table 1: What Would Your Fantasy Core Collection Be**?***
Each column is limited to 20 journals. Dollar figures are for the least expensive access (usually e-only) for 2010 (data from Ulrich's).

Where Do Our Patrons Publish and What They Are Citing?
Librarians have a tendency to hold onto certain notions about what is needed. To check our perceptions about our 'fantasy collection', we looked at a one-year snapshot to see where our clients were publishing and what they are citing. This is only a subset of the total resources they must be using but it is a concrete measure of collection use.

The Oregon Institute of Marine Biology (OIMB, University of Oregon's marine laboratory) work published in a single calendar year including student reports, theses, dissertations and published articles was examined to see what patrons were citing. OIMB publications in 2008 cited 1,098 articles from 274 different journals, far more titles than OIMB could ever afford. Forty-three percent of these citations were from the 37 journals currently subscribed to by the OIMB Library. While this would seem to validate the current journal collection it is also worth noting that 56% of the citations for OIMB-owned items could be attributed to just four journals: Biological Bulletin, Journal of Experimental Marine Biology and Ecology, Marine Biology, and Marine Ecology Progress Series suggesting that OIMB might do with a very few journals. The data suggests that Nisonger (2008) is right, 80 percent of OIMB serial use can be attributed to just 20 percent of the titles acquired. Perhaps it is time to consider only acquiring those seven or so titles and saving our collection budget to pay for interlibrary loan transactions.

Similar data for the Hatfield Marine Science Center (HMSC, Oregon State University's marine laboratory) were obtained from ISI Web of Science. HMSC serves a clientele more focused on the applied aspects of marine biology and fisheries and is roughly ten times the size of OIMB. HMSC authors cited 200 titles more than once in 2008. 16.5% of the citations were to three titles Marine Ecology Progress Series (6.5%), Canadian Journal of Fisheries and Aquatic Sciences (6%) and Fisheries Bulletin (4%) The top seventeen titles cited are owned by HMSC and account for 44% of the citations. There appears to be a top tier of journals (the big three) and then a second tier that are widely used. Additional years of citations as well as student thesis and dissertations should be considered to get a more comprehensive picture of resource use.

We compared these data from HMSC and OIMB with the IAMSLIC core list established in 2001 (Table 2). Eight of the 20 IAMSLIC core titles are missing from this list and there are significant differences in what our two client groups use. This suggests that our respective core collections would be distinct and have shifted from the IAMSLIC core. In other words, core collections are of significance locally, and cannot be prescribed regionally or globally.

Note, *Annual Review of Marine Science* is a new title and not yet cited or published in by our users but we believe it may be an important title in marine biology. The annual reviews pose an interesting collection challenge as these are monographic series used as a more general reference. Consequently, they could be considered reference material rather than journals.

	IAMSLIC 2001	**OIMB pubs**	**HMSC pubs**	**OIMB cites**	**HMSC cites**
Advances in Marine Biology	X			4	6
Annual Review of Marine Science					
Biological Bulletin		5		61	4
Bulletin of Marine Science		1		21	12
Canadian Journal of Fisheries and Aquatic Sciences	X		6	13	136
Deep-Sea Research. Part 2: Topical Studies in Oceanography	X	1		24	43
Estuaries and Coasts			2	7	24
Estuarine, Coastal and Shelf Science	X			7	25
Fishery Bulletin			6	4	102

ICES Journal of Marine Science: journal du conseil	X		5	2	43
Journal of Experimental Marine Biology and Ecology	X	2	4	64	43
Journal of Fish Biology	X		2	2	39
Journal of Shellfish Research		2	11	3	10
Journal of the Marine Biological Association of the U.K.	X		3	34	21
Limnology and Oceanography	X			20	39
Marine Biology	X	1		82	50
Marine Ecology Progress Series	X	5	11	60	139
Marine Mammal Science				4	29
Oceanography and Marine Biology: an annual review	X			14	11
Transactions of the American Fisheries Society		2	5	2	42

Table 2: The New Core
Comparison of the IAMSLIC 2001 Core with the titles our users cited and published in during 2008.

What about fisheries?
With the exception of *Journal of Fish Biology* and *Canadian Journal of Fisheries and Aquatic Sciences*, important fisheries titles did not appear in the 2001 IAMSLIC synthesis (Table 3). Do marine biology and fisheries not overlap as we believe they do? Or does this omission simply reflect that IAMSLC authors are from institutions that don't deal with the applied aspects of marine science? Note the new journal from American Fisheries Society: *Marine and Coastal Fisheries*. New journals and the changing nature of marine research also challenge the concept of core journal subscriptions.

	IAMSLIC 2001	**OIMB pubs**	**HMSC pubs**	**OIMB cites**	**HMSC cites**
American Fisheries Society. Transactions		2	5	2	42
Aquaculture		1	6	6	49

Environmental Biology of Fishes		1		2	25
Fish and Fisheries					9
Fisheries				1	8
Fisheries Oceanography			7	2	35
Fishery Bulletin			6	4	102
Journal of Shellfish Research		2	11	3	10
Marine and Coastal Fisheries					
Reviews in Fish Biology and Fisheries					2

Table 3: Fisheries Core Journals?
Shifts in research focus from marine biology to applied science suggest some additional core titles.

What about oceanography?
Oceanography is not a key focus for our marine laboratories, yet Table 4 lists some titles we feel are important. Five titles which were not cited by either of our institutions were ones recommended by researchers at the Oregon State University College of Oceanographic and Atmospheric Science. We typically ask our faculty for this type of input when we are making selection decisions. However, can we get them to understand that the cost of ownership may outweigh the benefit? We see this as a key area in which to educate our faculty.

	IAMSLIC 2001	**OIMB pubs**	**HMSC pubs**	**OIMB cites**	**HMSC cites**
Continental Shelf Research					6
Deep-Sea Research. Part 1: Oceanographic Research Papers	X		2		6
Dynamics of Atmopsheres and Oceans					
G3: Geochemistry, Geophysics, Geosystems			5		7
Geophysical Research Letters					35
Journal of Geophysical Research - Oceans			4		6
Journal of Geophysical Research - Solid Earth			6		50

Journal of Marine Systems					
Journal of Physical Oceanography	X				
Marine Chemistry	X				7
Marine Geology					3
Marine Geophysical Researches					
Paleoceanography					
Progress in Oceanography	X		4		39

Table 4: Oceanography Core Journals?
Some marine science libraries support geology and oceanography while others focus strictly on the biological and near shore.

As we look through our MFL list of annotations there are some key journals that we think round out a marine biology journal collection yet none of these made it into our 20-title "Fantasy" core journal lists. These "orphan" titles might not belong in our libraries but are still important titles in our field (Table 5). Four of these titles appeared in our 2001 synthesis but were not important to our individual collections, still more evidence that the concept of a "core" collection may not exist in marine biology. In particular, journals addressing phycology are underutilized perhaps reflecting a shift in research, a lack of institutional commitment or changes in where people publish.

	IAMSLIC 2001	**OIMB pubs**	**HMSC pubs**	**OIMB cites**	**HMSC cites**
Botanica Marina					
Fisheries Management and Ecology					
Fisheries Research			7		
Harmful Algae					
Invertebrate Biology				10	
Journal of Cetacean Research and Management					28
Journal of Coastal Research		1	2	1	2
Journal of Marine Research	X			7	
Journal of Phycology	X				
Journal of Sea Research				1	2
Marine and Freshwater Research	X			6	5

Marine Environmental Research	X				
Marine Fisheries Review					
Marine Pollution Bulletin				2	3
Marine Technology Society Journal					2
Oceanography					

Table 5: Orphans in Need of a Home?
These have been important titles in the past and may still be in some libraries and to some researchers.

The Future of the Core Journal Collections

Our situation in Oregon is not unique. In a brief survey of IAMSLIC members, we found that many are cutting collections or have little to begin with. We heard from 20 different IAMSLIC members and with only three exceptions all have needed to cancel subscriptions in response to inflating journal prices. Many rely on larger consortia such as their university (University of California Libraries) or country-wide negotiations (Malawi Library and Information Consortium) to ensure access to needed journals. Others, especially those that are smaller or privately funded, struggle to maintain any access

What surprised us in our survey is that IAMSLIC members, in general, are not practicing collaborative collection development. A 2006 report to the U.S. National Marine Fisheries Service by NOAA Fisheries Library Consortium identifies the top journals subscribed to by NOAA libraries along with a recommendation that NMFS "Centrally provide and fund core journal titles, databases, and aggregators electronically through NMFS". This recommendation was not implemented at the time although progress has made on some shared purchases. In our survey, we learned that one NOAA library cancelled all of their journal subscriptions during the past fiscal year.

Journal prices will continue to inflate and we need to look at ways to provide our patrons with the resources they need. Intner (1993) described the core collection as "the nucleus of needed materials no self-respecting library would be willing to be without. " We suggest that it is time for us to worry less about image and being individually the best, and think more about working with today's information environment where the concept of the journal is eroding and the article is "the thing". We need to stop thinking of core collections and start thinking about how to supply articles in the most economic fashion. This involves being part of negotiations with our larger institutions and our consortia so the needs of our users are articulated and accommodated. Four commercial publishers publish over 50% of the journals we have identified as important to marine science. We need to continue to talk with them about our needs and new approaches to access. Our researchers are also changing their behavior as well so we need to continue reminding them, and the next generation of researchers, how scientific communication works and the importance of their role in helping to shape it.

We know how to help our users get what they need efficiently and economically, but we no longer just put a journal on the display shelf or license it for electronic access. Journal collections are local yet consortial.They serve our users.They should be sustainable, meaning they are affordable and access will endure. The concept of the core journal collection is becoming defunct.

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