GAPS AND OVERLAPS:
A COMPARISON OF THREE WATER RELATED CD-ROMS

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ABSTRACT

A comparison of Aquatic Sciences & Fisheries Abstracts (ASFA), Wildlife & Fisheries Worldwide (FWW), and Selected Water Resources Abstracts (SWRA) indicated that the policy to index a journal does not ensure comprehensive, or even substantial, article inclusion. Five 1987 subject core listings from the SCI Journal Citation Reports were used as the basis for selecting a random sampling of articles to search in each database. Although ASFA reviews 99% of the journals in the cores, coverage ranged from 79% of the fisheries articles to 13% of the limnology articles. SWRA covered 60% of the limnology articles. WFW was weak in all areas except fisheries where it substantially enhanced total coverage.

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Aquatic Sciences & Fisheries Abstracts (ASFA) is "overwhelmingly cited by a majority of marine science libraries as their primary database..." (Cambridge Scientific Abstracts, n.d) and has consistently received accolades in print. "ASFA provides comprehensive subject coverage of all aspects of oceanography (biological, chemical, geological, and physical), limnology, commercial fisheries (development, harvesting, management, processing, and marketing), and marine technology (ocean engineering, vessels, underwater vehicles, and offshore resource development)" (Adams, 1982). Starr (1982) and Einarsson (1989) have indicated reservations concerning the completeness of ASFA’s coverage. Questions concerning comprehensiveness and duplication of journal coverage in databases have serious implications for the value of literature searches performed in conjunction with scientific research.

The focus of the current study is intended to further explore this situation by determining the gaps and overlaps of three CD-Rom databases: Aquatic Sciences & Fisheries Abstracts (ASFA), Wildlife & Fisheries Worldwide (comprised of Wildlife Review and Fisheries Review, WFW), and Selected Water Resources Abstracts (SWRA).
Starr's 1982 study compared database overlap for ASFA, Oceanic Abstracts, BIOSIS, and GEOREF. It concluded that "BIOSIS appeared to have the largest amount of material relevant to marine biology and GEOREF had the largest relevant to marine geology." The percentage of journal titles covered by ASFA included 76% of the Oceanic Abstracts titles, 17% of the BIOSIS titles, and 21% of the GEOREF titles. Each database was found to be selective in coverage of individual articles within journals. Essentially, even though all databases indicated that they reviewed a certain journal, they might index different articles for inclusion in their databases.

To more accurately evaluate this phenomena, five 1987 core subject listings were selected from the SCI Journal Citation Reports published by the Institute for Scientific Information. From the core journal listings for fisheries, marine and freshwater biology, marine biology (Fuseler-McDowell, 1989), limnology, and oceanography, 72 unique journal titles were derived. Of these 72, three were excluded because of publishing irregularities in 1987: Tethys, Marine Geophysical Researches, and Dana. (See Appendix I for title listing)

A random sample of up to 10 articles was selected from each of 69 journals from the year 1987. 1987 was chosen because it left sufficient time for the articles to filter into the indexing cycle. The total number of articles was 663, approximately 11% of the total articles (5,994) published in these journals in 1987.

Each article was searched in the three CD-ROM databases using combinations of author and title word searches. If the initial search revealed no hits, a second and/or third combination was entered.

The CD-ROM coverage of the 69 journals selected from the core listing are indicated in Table 1.

A cursory review of Table 1 cannot help but result in the conclusion that the ASFA CD-ROM would be the most complete database and the most appropriate for searching in all five of the ISI cores. It purports to cover all journals but one, the Journal of Freshwater Biology.

In terms of comprehensiveness of article coverage a less consistent picture emerges. Of the 663 articles searched, 420 (63%) were found in ASFA, 110 (17%) were found in WFW, and 91 (14%) were in SWRA. By searching all three CD-ROMs, completeness of coverage can be enhanced to a peak of 76% articles retrieved. At this point, ASFA contributes 306 (61%) unique titles, WFW and SWRA together contribute 84 (17%) unique titles, and there is an overlap of 114 (22%) of commonly indexed titles. The results of coverage in terms of subject cores are shown in Table 2.

130
Core List | Total Journals | ASFA | CD-ROM WFW | SWRA
---|---|---|---|---
Fisheries | 11 | 11(100%) | 11(100%) | 6(55%)
Limnology | 7 | 6 (86%) | 7(100%) | 5(71%)
Marine/Freshwater Biology | 31 | 31(100%) | 22 (71%) | 18(58%)
Marine Biology | 22 | 22(100%) | 13 (59%) | 17(77%)
Oceanography | 30 | 30(100%) | 10 (33%) | 10(33%)
Unique titles in all cores | 69 | 68 (99%) | 21 (30%) | 20(29%)

Table 1: Core Journal Coverage by CD-ROM

Core List | Total Articles | ASFA | WFW | SWRA | AS/WF | AS/SW | WF/SW | All
---|---|---|---|---|---|---|---|---
Fisheries | 100 | 79(79%) | 54(54%) | 5 (5%) | 95(95%) | 79(79%) | 57(57%) | 95(95%)
Limnology | 60 | 13(22%) | 3 (5%) | 40(66%) | 14(23%) | 49(81%) | 44(73%) | 50(83%)
Marine Biology | 217 | 147(68%) | 40(18%) | 32(15%) | 158(73%) | 157(73%) | 74(34%) | 1/1(79%)
Marine/Freshwater Biology | 214 | 142(66%) | 37(17%) | 32(15%) | 150(70%) | 151(70%) | 65(30%) | 161(75%)
Oceanography | 286 | 174(60%) | 9 (3%) | 14 (5%) | 177(61%) | 179(63%) | 29(10%) | 183(64%)

Table 2: Comparison of article coverage in ASFA, WFW, and SWRA

In analyzing the results of this study, one is first struck by the fact that in no core were all articles indexed, either in individual databases or in the composite coverage of all databases. When all CD-ROMs were searched, coverage ranged from 95% in fisheries to 64% in oceanography. While one is tempted to judge the oceanography coverage on the basis that Oceanic Abstracts (OA) would be the logical database to provide comprehensive coverage in this area, Catherine Deckard, Senior Editor of Oceanic Abstracts, indicated that there is an 80% overlap in coverage between OA and ASFA. Unique coverage in OA is limited to ships, shipping and ports. Of even more significance is the fact that OA, as a matter of
policy, accepts the coverage of journals reviewed at the ASFA input centers; therefore, there is legitimate concern that OA’s coverage will be no greater than ASFA’s.

Reviewing the findings in terms of core subject coverage reveals an interesting mosaic of gaps and overlaps.

ASFA covered 79% of the fisheries articles searched, WFW 54%. By searching both CD-ROMs, the researcher would retrieve 95% of all articles: 41 unique articles from ASFA, 16 unique articles from WFW, and 38 (40% overlap) which were common to both. SWRA indexes minimally in this core.

However, in coverage of articles in limnology core journals, SWRA indexed 40 (66%) of the 60 articles searched. If searched in combination with ASFA, coverage increases to 81% with 36 (73%) unique articles coming from SWRA, 9 (18%) from ASFA and 4 (9%) overlap. WRW indexes minimally in this core.

In both marine biology and marine and freshwater biology, ASFA includes the greatest number of articles: 147 of 217 (68%) in marine biology and 142 of 214 (66%) in marine and freshwater biology. Unlike the fisheries core, where a substantial increase of unique articles were obtained by searching WFW, here both WFW and SWRA would be needed to affect coverage.

In oceanography, a composite search of all three databases retrieved only 183 of the 286 articles, or 64%. Concern had already been noted about Oceanic Abstracts coverage of this area.

While the implications of this study must be interpreted with respect to the legitimacy of the importance of ISI’s core listings and an awareness of sample size, the preliminary findings clearly indicate the need for a more rigorous exploration of article coverage.

1. The selectivity with which articles are indexed precludes the possibility of providing thorough subject searches using any one of the database studies.

2. Adequate coverage of fisheries materials appears to necessitate searches in both ASFA and WFW.

3. SWRA provides the strongest coverage of limnology, but it can be enhanced by searching ASFA.

4. Coverage of marine and freshwater biology is between 66-68% in ASFA. Starr’s findings in 1982 indicate more substantial coverage in BIOSIS in the area of marine biology.
5. Coverage of oceanography cannot be significantly improved from the ASFA coverage of 60% by searching either WFW or SWRA alone or in combination.

The findings of this study support concerns of comprehensiveness of coverage in ASFA and have indicated the potential pitfalls of relying on a single database as a reliable source for adequate subject coverage. ASFA’s completeness of coverage ranged from 22% in limnology to 79% in fisheries. Searching Fisheries Review (in the form of Wildlife and Fisheries Worldwide CD-ROM) significantly increased the fisheries coverage. SWRA indexed more articles in the limnology core than either ASFA or WFW.

Results from this study indicate the necessity of a more thorough analysis of article coverage in related databases including Oceanic Abstracts and BIOSIS.

REFERENCES


Deckard, Katherine. 1990. Personal communication, August.


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APPENDIX 1
Core Journal Listings for 1987

Fisheries

Aquacultural Engineering
Aquaculture
Archive fur Fishcereiwissenschaff
Bamidgh
Canadian Journal of Fisheries and Aquatic Sciences
Fisheries Bulletin (NOAA)
Fisheries Review
Marine Fisheries Review
Nihon Suisan Gakkaisi -- Bulletin of the Japanese Society of Scientific Fisheries
Progressive Fish Culturist
Transactions of the American Fisheries Society

Limnology

Archiv fur Hydrobiologie
Australian Journal of Marine and Freshwater Research
Journal of Freshwater Ecology
Journal of the Water Pollution Control Federation
Limnology and Oceanography
Water Research
Water Resources Research

Marine Biology

Advances in Marine Biology
Australian Journal of Marine and Freshwater Research
Biological Bulletin
Biologiya Morya

134
Bulletin of Marine Science
Canadian Journal of Fisheries and Aquatic Science
Helgolander Meeresuntersuchungen
Journal du Conseil
Journal of Experimental Marine Biology and Ecology
Journal of Fish Biology
Journal of Plankton Research
Journal of the Marine Biological Association of the United Kingdom
Limnology and Oceanography
Marine Biology
Marine Ecology-Proceedings Series
Marine Ecology-Pubblicazioni della Stazione Zoologica di Napoli
Marine Environmental Research
Marine Mammal Science
Netherlands Journal of Sea Research
Oceanography and Marine Biology
Ophelia
Sarsia

Marine and Freshwater Biology

Advances in Marine Biology
Aquaculture
Aquatic Toxicology
Archiv fur Hydrobiologie
Australian Journal of Marine and Freshwater Research
Biological Bulletin
Biologiya Morya
Botanica Marina
Canadian Journal of Fisheries and Aquatic Science
Coral Reefs
Freshwater Biology
Helgolander Meeresuntersuchungen
Internationale Revue der Gesamten Hydrobiologie
Journal du Conseil
Journal of Crustacean Biology
Journal of Experimental Marine Biology and Ecology
Journal of Fish Biology
Journal of Plankton Research
Journal of the Marine Biological Association of the United Kingdom
Marine Behavior and Physiology
Marine Biology
Marine Ecology-Proceedings Series
Marine Ecology-Pubblicazioni della Stazione Zoologica di Napoli
Marine Environmental Research
Oceanography

Annales de l'Institute Oceanographique
Australian Journal of Marine and Freshwater Research
Bulletin of Marine Science
Continental Shelf Research
Deep-Sea Research Part A-Oceanographic Research Papers
Dynamics of Atmospheres and Oceans
Estuarine and Coast Shelf Science
Geo-Marine Letters
Helgolander Meeresuntersuchungen
IEEE Journal of Oceanic Engineering
Initial Reports of the Deep Sea Drilling Project
Izvestiya Akademii Nauk SSR Fizika Atmosfery i Okeana
Journal du Conseil
Journal of Geophysical Research-Oceans
Journal of Marine Research
Journal of Physical Oceanography
Limnology and Oceanography
Marine Chemistry
Marine Geodesy
Marine Geology
Marine Geotechnology
Marine Technology Society Journal
Meeresforschung-Reports on Marine Research
Netherlands Journal of Sea Research
Oceanography and Marine Biology
Oceanologica Acta
Oceanus
Okeanologiya and Oceanology-USSR
Progress in Oceanography
Undersea Biomedical Research