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FIRST YEAR USAGE OF ASFA CD-ROM
AT SCRIPPS INSTITUTION OF OCEANOGRAPHY LIBRARY

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ABSTRACT: During 1987, the Scripps Institution of Oceanography Library gathered the date and logon/logoff time corresponding to public-access usage of its Aquatic Sciences and Fisheries Abstracts (ASFA) compact disk(s). This data reflects usage during the first year of ASFA compact disk availability in the Library and, from this data, can be calculated the number and length of ASFA compact disk search sessions along with the median search session length. Quantification provides some gross measures and indications of ASFA compact disk usage that are of interest for marine science libraries offering or considering purchase ASFA compact disks.

In December 1986, the Scripps Institution of Oceanography (SIO) Library at the University of California San Diego, began providing the Aquatic Sciences and Fisheries Abstracts (ASFA) compact disk database for public access. Produced by Cambridge Scientific Abstracts, ASFA covers worldwide information on freshwater and marine environments. ASFA was initially available on one compact disk which covered the literature indexed from 1982 through 1985. In August 1987, ASFA expanded to two compact disks covering the literature indexed from 1982 to June 1987. The SIO community from with the primary clientele for ASFA compact disks is drawn consists of slightly under 200 graduate students, approximately 270 academics, and a large staff population. The total SIO community numbers over 1000 with 500 being a liberal estimate of the size of the primary audience for ASFA compact disks. Many SIO personnel never need access to a scientific database like ASFA due to the orientation of their positions. Several SIO academics and graduate students do not need access to ASFA because their research interests more clearly fall within the coverage of other databases like Medline or Chemical Abstracts. In addition to the primary audience of SIO personnel, ASFA compact disks are also used occasionally by academics, students, and staff from the SIO Library's mother university (UC San

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Diego), from other San Diego universities and colleges (two of which offer undergraduate-level marine science education), and from several Mexican educational and research institutions with interests in marine science.

The SIO Library began gathering ASFA disk usage data from the first day of public access. Recorded in a file by the ASFA microcomputer, the 1987 data consists of the microcomputer's clock information which records date and time along with recorded notes indicating whether the captured date/time corresponds to loading (logging on) the ASFA search software or exiting (logging off) the search software. The second year data covering 1988 (not covered in this paper) also consists of the status of the searcher in order to ascertain the percentage of SIO usage of the disks. Currently the ASFA disks are available for checkout from the Library's Circulation Desk. Users load the ASFA compact disks into the compact disk player; when ASFA was a one disk database, the compact disk was always loaded in the compact disk player and users did not load the disk. ASFA users first view a menu system based on the AUTOMENU software which is mounted on the ASFA microcomputer. Comprised of menus and instructional text files and screens, the AUTOMENU system controls entrance and egress from the ASFA search software and is designed to facilitate unassisted searching of the ASFA disks and capture usage data. AUTOMENU removes the open-ended DOS prompt from the ASFA disk user and substitutes a controlled hard disk environment for execution of pre-defined DOS commands, display of text files, and loading of ASFA or other software including local databases.

After a menu option to begin searching ASFA is selected, AUTOMENU records (echoes) the ASFA entry date/time in a LOG file. Starting with 1988 data (not covered in this paper) AUTOMENU also queries and records the status of the searcher in the LOG file. When the searcher exits the ASFA search software at the conclusion of a search session or in order to change disks, the ASFA exit date/time is recorded (echoed) in the LOG file.

The use of DOS redirection enabled the capture of the date/time in the 1987 LOG file and also currently captures the searcher status in the 1988 LOG file. Utilizing basic DOS commands and batch file operations, the AUTOMENU system records ASFA entry (logon) in the LOG file by capturing a "logon" note followed by the date/time. Upon exit of the ASFA search software, an ASFA exit (logoff) is recorded in the LOG file by capture of a "logoff" note and the date/time. The batch file incorporated within AUTOMENU that does this is as follows:

```
ECHO ***** >> \LOG
ECHO ----LOGON >> \LOG
GETCLOCK >> \LOG
```

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```
CSA.EXE
ECHO ----LOGOFF >> \LOG
GETCLOCK >> \LOG
ECHO ***** >> \LOG
```

Usage data is captured using the "echo" command and the redirection command indicated by the two "greater than" (>>) symbols. "Echo" causes a statement to be displayed onscreen. The two "greater than" symbols redirect that onscreen display to a disk file called "LOG" wherein it is captured (written). Two "greater than" symbols rather than one symbol in order to add the redirected onscreen display onto the end of a file rather than overwriting an existing file. If a LOG file does not exist, then it will be created automatically when it is first needed and subsequent information will be written into it. The line "ECHO ***** >> \LOG" writes a line of asterisks into the a file called LOG. The asterisks are used for visual separation of search sessions in the LOG file. The line "ECHO ----LOGON >> \LOG" writes a note consisting of a short line and "LOGON" in the next line of the LOG file. This serves to note that the following date/time that will be recorded is associated with entry into the ASFA search software. The line "GETCLOCK >> \LOG" writes the date/time into the LOG file. "GETCLOCK" is a microcomputer clock utility software which sets the microcomputer's clock and calendar. Microcomputer's may have other clock utility software like ASTCLOCK or TIMER. A clock utility software will display the current date and time when invoked and this display can be redirected to a file. The line "CSA.EXE" loads the ASFA search software next; when the searcher exits the ASFA software, the next line of the batch file executes. The line "ECHO ----LOGOFF >> \LOG" writes a short line and "LOGOFF" in the LOG file. The last line "GETCLOCK >> \LOG" writes the date/time associated with the exit of the ASFA search software in the LOG file.

Starting with January 1988, multiple versions of this batch file were created; each includes an additional line recording (echoing) the searcher status to the LOG file. Batch files were created for each selection in an AUTOMENU menu which queries the status of the searcher. For example, the line

```
ECHO SIO ACADEMIC >> \LOG
```

is inserted in an "SIO Academic" batch file before the "ECHO ----LOGON >> \LOG" line. This writes "SIO ACADEMIC" in the LOG file so that the subsequent date/time of logon and logoff can be correlated to use by an SIO academic.

Instead of using microcomputer clock utility software, BASIC can be utilized on some microcomputers to create a date/time entry. For example, the line

```
ECHO ? DATE$,TIME$ : SYSTEM | BASIC | FIND /V "?" >> \LOG
```

will briefly note the date/time in LOG when BASIC is in the root directory or a specified directory path. For IBM-compatible microcomputers, the term "BASIC" may have to be replaced with the name of the compatible's Basic eg GWBASIC. For sophisticates, commercially-available logging software will track microcomputer usage and an article by Holloway and Jackson presents a BASIC program that tracks usage ("Using the Microcomputer to Keep Statistics on the Use of CD-ROM", LASERDISK PROFESSIONAL, v1, n3, Sept 1988: 67-69).

From this LOG file of logon and logoff dates and times, the frequency and length of ASFA search sessions can be analyzed. Data was captured for all but three and one half weeks in late August and early September. Changeover of the AUTOMENU system from a one disk environment to a two disk environment occurred in mid-August necessitating radical revision of the entire AUTOMENU system comprising explanatory screens, menus, and batch files. Bugs in batch files that resulted in lack of data capture were caught during subsequent revisions.

For the first seven months of 1987, search sessions involved one ASFA disk. Starting in mid-August, ASFA expanded to two disks and search sessions could involve one or two disks. The amount of data on the two disks is disproportionate since one disk covers items indexed from 1982 through 1986 and the other disk covered items indexed for the first six months of 1987. Thus search time on the smaller disk could be expected to be shorter than the larger disk for many searchers. The LOG file is not capable of recording which disk is being used since this information is only known by the ASFA search software which does not interact with the LOG file. The Library decided not to ask searchers which ASFA disk they were about to search since this would introduce an additional AUTOMENU menu asking which disk was in the compact disk player. Since only gross data was necessary for management purposes, an additional menu was considered to be an unnecessary intrusion.

A search session is defined as one completed logon (load ASFA software) and logoff (exit ASFA software) for one ASFA disk. Thus a search of two complementary ASFA disks is recorded as two search sessions. Search sessions without a logoff date/time are not counted since the elapsed time of the session cannot be calculated; these incomplete sessions occur whenever the searcher or the ASFA search software freezes the microcomputer necessitating a reboot of the microcomputer. When a searcher attempts to change disks while the ASFA search software is loaded, the microcomputer freezes and has to be rebooted. A logoff date/time which complements the logon date/time already recorded in the LOG file when the ASFA search software was loaded will not appear in

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the LOG file. The ASFA search software has to be exited properly using the EXIT option on ASFA's main menu in order for a logoff date/time to be recorded in the LOG file.

Figure One illustrates the weekly number of 1987 search sessions. The number of search sessions per week ranged from 7 search sessions during Christmas week to 70 search sessions during 8-14 November. Two search sessions per individual searcher probably comprise the majority of usage after mid-August since two disks were available for searching. Figure Two reduces the number of search sessions by half for sessions after mid-August. A reduction ratio of one half can be applied to the number of search sessions for two-disk ASFA but it will underestimate the number of search sessions since some searchers will have deliberately searched only one disk of the two-disk ASFA. ASFA disk usage appears to be fairly regular throughout the year with the expected reductions during holidays and summer. The SIO Library reduces its hours of operation during holiday weeks and summer weeks; it is arguable whether this has much impact on ASFA usage since library usage is lighter during these weeks.

The elapsed time associated with the search sessions are illustrated in hours on a weekly basis in Figure Three. Search hours per week ranged from 1.4 hours during Christmas week to 29.5 hours in the first week of January. January usage is probably high due to the novelty factor of the ASFA compact disks which were introduced at the beginning of the previous month. Usage throughout the rest of the year fluctuates with an expected lower usage during summer and holidays. For the 48.5 weeks for which data is available, searching averaged 12.7 hours per week.

Figure Four illustrates the number of search sessions corresponding to elapsed session times under 60 minutes; the search sessions are limited to the first thirty weeks of 1987 when ASFA was a one disk database. The range of search session times is 1 to 342 minutes with the median time being 15-16 minutes. During these 30 weeks there were 873 search sessions totalling 405 hours. Figure Five illustrates the number of search sessions corresponding to elapsed session times over 60 minutes during the first thirty weeks. In both figures there is an expected asymptotic distribution as higher search session lengths are reached.

Figure Six illustrates the number of search sessions corresponding to elapsed session times under 60 minutes for those weeks when ASFA was a two disk database. The range of search session times is 1 to 281 minutes with the median time being 11-12 minutes. This median search session length of 11-12 minutes for two-disk ASFA is less than the 15-16 median time for one-disk ASFA since one of the two ASFA disks contained only 6 months worth of information. During these weeks there were 585 search sessions totalling 212 hours. Figure Seven illustrates the number of search sessions corresponding to elapsed session times

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over 60 minutes for those weeks when ASFA was a two disk database.

Currently compact disk ASFA is a two disk database and the median time for one search on two disks can be estimated from the above data. The time spent searching the two ASFA disks would be far greater than the 11-12 minute median observed for searching one of those two disks; it would also be greater than the 15-16 minute median observed for the smaller ASFA database on one disk. ASFA on two disks offers more information to search and display than one-disk ASFA. The median time for a search of two ASFA disks would be less than or equal to 22-24 minutes which is a doubling of the 11-12 minute median for one disk. This median time of 22-24 minutes for a search of ASFA on two disks can be expected to increase with time as the ASFA database on compact disk expands.

The ASFA disks are not in constant use in the SIO Library and are not used at a level at which queueing problems would occur. During 1987, the number of search sessions daily ranged from 0-22; there were many days when the disks were not used even though the Library was open. For the 271 days in 1987 for which there was ASFA activity, the total number of search sessions was 1458 with the average number of search sessions per day being 5.4. For 1987, 617 hours was the total time of ASFA usage and, for the weeks of 1987 for which there was complete data, ASFA searching averaged 12.7 hours per week.

The data presented are intended to present a snapshot of ASFA usage in one particular marine science library. The data obviously reflects the library's research environment, hours of operation, the size of its primary and non-primary clientele, and its instructional efforts. While usage data is certainly of interest in the management of an ASFA compact disk site, it should be considered judiciously by institutions considering purchase of ASFA compact disks. The value of ASFA's information to the research interests of the users should be the primary consideration for purchase and not a financial analysis studying the anticipated usage of the compact disks, the existing usage of the online ASFA database, and the cost of the subscription to the printed ASFA. A strict cost comparison of the cost of the ASFA compact disks versus their anticipated usage, existing online usage, and cost of subscription to the printed ASFA does not consider the added value of unlimited access to and browsing of the ASFA compact disks or the added value of direct enduser searching. While enduser searching of compact disks can be problematic on occasion, it can also lead to serendipitous discovery of useful information. The problems associated with enduser searching are not new to the introduction of ASFA compact disks since endusers did their own searching of the printed ASFA. Thus the problems associated with enduser searching of ASFA compact disks are best addressed by bibliographic instruction rather than by avoidance of the purchase of compact disk ASFA.

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