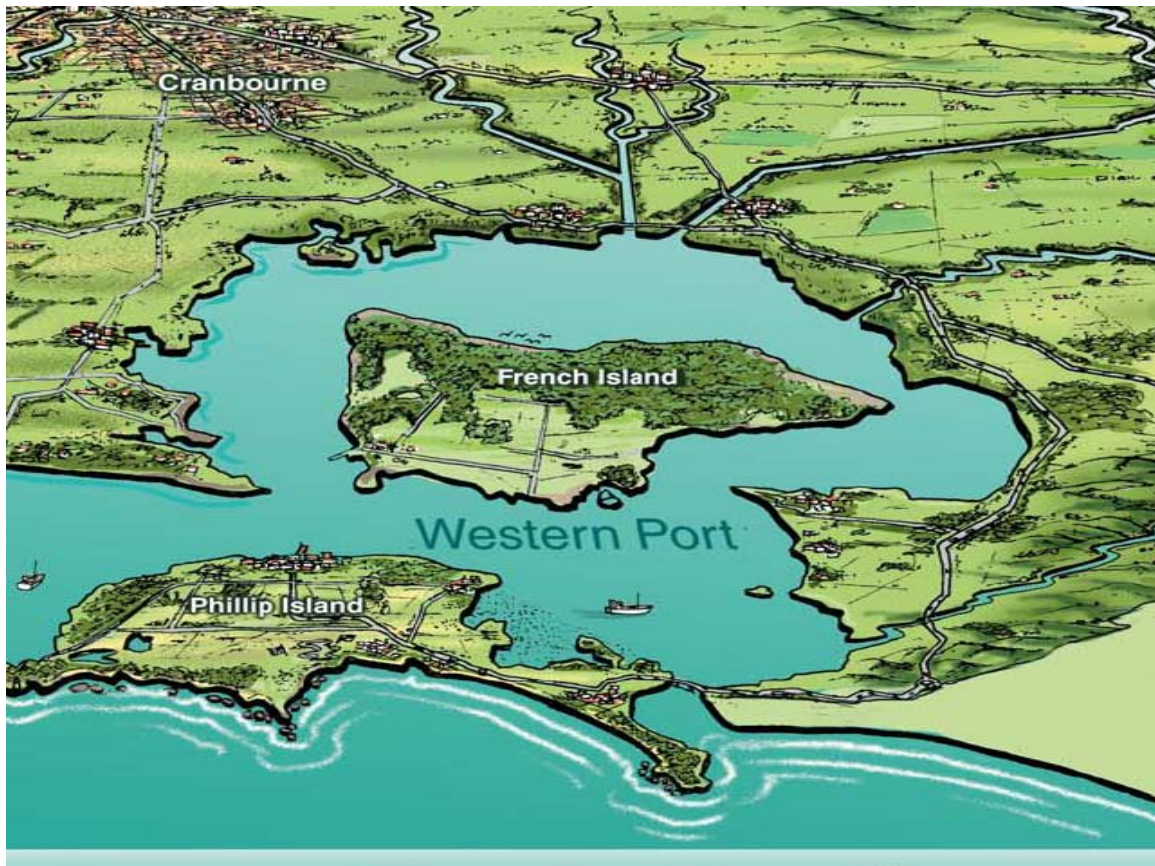


Mornington Peninsula and Western Port Biosphere Reserve Foundation LTD

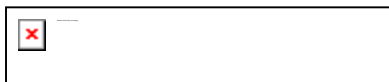
Information Resource Database Updating Project

Report



June 2008

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Preamble

Biosphere Reserves are “living laboratories” for testing sustainable human development and conservation approaches. Biosphere reserves are designed to preserve and generate natural and cultural values through management that is considered scientifically correct, culturally creative and operationally sustainable. The development agents who include the resident community of the biosphere reserve engage in voluntary programs and activities aimed at achieving sustainable ecological conservation and human development within the reserve. The development agencies require logistical support which according to the Man and Biosphere Program of UNESCO is a core function of the Biosphere reserve’s management. This information resource database updating project was therefore designed to meet the Mornington Peninsula and Western Port Biosphere Foundation governing board research committee’s objective of consolidating knowledge. The database is to be employed as decision-making tools to facilitate the development agencies identify conservation intervention opportunities and research opportunities. This project report presents the work carried out to update an existing database that was compiled by Barbara Porter in 2004. The report presents the process and the product of the exercise. It outlines the project, the scope, the purpose, goal and the methodology employed to carry out the task. The report explains the data gathering framework and analyses the final product which is a database in the form of an Endnote X1 library.

Acknowledgement

This project would not have achieved its desired output without the guidance of my Supervisor Dr Sharron Pfueller of the School of Geography Monash University, Mr Jack Krohn of Department of Sustainability and Environment, the link person between the Foundation Board and the University. Jack introduced me to the Biosphere Foundation Board and frequently offered transport to board meetings. He was the link person to various government departments. I would also want to thank Mr Ian Stevenson of Cardinia Shire Council for all the contacts he provided and his extended hospitality and encouragement. Special thanks go to Mr Garrique Pergl, Dr Brian Cuming for their interest and contribution to this project. I would also extend special thanks to the Matheson University library staff Katalin Mindum and Gayle Whyte for their assistance with the endnote software. Last but not least, I acknowledge the support rendered to me by all government department officials who assisted in sorting out documents while I worked in their offices.

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Executive Summary

This report addresses the process used to develop an information resources database for Mornington Peninsula and Western Port Biosphere Reserve Foundation Board. The project brings to completion earlier efforts by the biosphere reserve governing board to compile a similar database. To accomplish the task, a data gathering framework was developed and applied to generate data. The framework provided for internet and manual searches for publications and documents in targeted sources such as electronic databases, journals, library catalogues, local government authorities, state departments and regional authorities that have jurisdiction over the Biosphere Reserve region.

The data gathering framework developed and employed to carry out the task defined and described the type of data to be sourced; it also identified and categorized the data sources. Study area- local- names keywords, topical name keywords and specific time frames were applied to select the documents whose references were to be entered into the database. The data gathering framework also provides for current and future relational and functional aspects of the data gathering process.

A database with 1502 references was compiled covering a time span of 88 years. It is in the form of an Endnote library. The references in the library have been grouped into 42 data subsets to make it user friendly. Two other forms of datasets are incorporated into the database as PDF attachments. These attachments contain an extra 1878 references. The attachments are documents of previous works by individuals and organisation that were discovered during the searches and were considered important materials to be preserved in the database. Even with this current update, the database is not considered exhaustive. Inherent limitations of internet and manual searches limited the number of publications accessed. Other limitations to the searches were due to inadequacies in regional authorities and state department's information management systems.

However the database represents a fair view of the information resources available for the region. Future improvements to the database would be necessary. Data from two of the largest Australian Biological Consultancy Firms- 'Biosis Research' and 'Ecology Australia' should be collected and incorporated into the database.

Introduction

The Mornington Peninsula and Western Port Biosphere Reserve (MPWP Biosphere Reserve) the only urban biosphere reserve in Australia was proposed by the community and declared a UNESCO biosphere in 2002. At the Nomination stage it covered an area of 214,200 hectares and its core area covered 9,300 hectares. The area was to be expanded during its second phase to cover 3400 square kilometres. The expanded reserve covers the French and Phillip Islands, the waters of the western port and all that land mass covered by the five local government authorities of Mornington Peninsula Shire, Cardinia Shire, Bass coast Shire, City of Casey and parts of the City of Frankston.

Biosphere reserves are designed to preserve and generate natural and cultural values through management that is considered scientifically correct, culturally creative and operationally sustainable. They provide an international framework for linking protected areas with associated working landscapes. Their holistic philosophy towards landscape human/environment interactions provides for integrated land use management systems an impetus to sustainable development of the targeted landscape.

The MPWP Biosphere Reserve region has had a lot of research work carried out well before the nomination of the region as a biosphere. This was due to its unique ecological systems and its importance in relation to economic activities that it sustains. The governing board of the MPWP Biosphere Reserve Foundation therefore desired to have an information resource inventory of all the research work carried out in the region. The inventory was to achieve the objectives of section 4.2.3 and section 4.2.4 of the foundation Charter. The board had initiated the effort to compile a data base in 2004. This database updating project is therefore an attempt to have the database project brought to completion.

Project Description

The project was to update an existing bibliographic database by enlisting references of all publications and documents that are in the form of books, scientific journal articles, research reports, environmental quality monitoring reports, departmental guidelines, topical manuals, social and community organizations publications, conference proceedings, statutes, policies, local plans and regional strategies as well as project and program documents of the Mornington Peninsula and Western Port Biosphere Reserve Region of South Eastern Melbourne in Victoria. The database updating task was to collect and incorporate into the database references of documents published between 2001 and 2008. However the scope of the project was widened to meet the objectives of the Biosphere foundation's core functions by including not only the scientific data but also social environment, planning and management data. The project was therefore to formulate a data gathering and organization framework that could act as the basis upon which the current work was to be carried out and on which future improvements of the database would rely. The project was to build on the database that Barbara Porter had compiled in 2004.

Purpose

1. To create a “data gathering” framework for the database
2. To put together a database of references of published documents whose regional focus was Western Port Bay region and part of the Port Phillip Bay that forms Mornington Peninsula and Western Port Biosphere Reserve.

Goal

To create a bibliographic database of all publications and documents of Mornington Peninsula and Western Port Biosphere Reserve region.

Objectives

- Define the research methodology and formulate search criteria for the data
- To collect data and datasets considered relevant to the MPWP Biosphere Reserve region.
- To organize and update the existing database

Research Methodology

Data Gathering Framework

A data gathering framework provides a systematic pathway to be followed in data collection. It defines and describes the data. It also defines and identifies the data sources, search criteria, the classification and organisation of the data. The software to be employed for managing and storing the data assists in drawing these definitions. The appropriate software chosen for the exercise should provide for easy data manipulation and engagement. It should provide flexibility and accommodate continuous updating and improvement of the database. The Endnote X1 provides an excellent choice for this project since it provides for searching bibliographic databases on the internet, it organises references, images, PDFs and files easily.

The framework developed for this project divides the data gathering process into seven stages which are closely linked to each other.

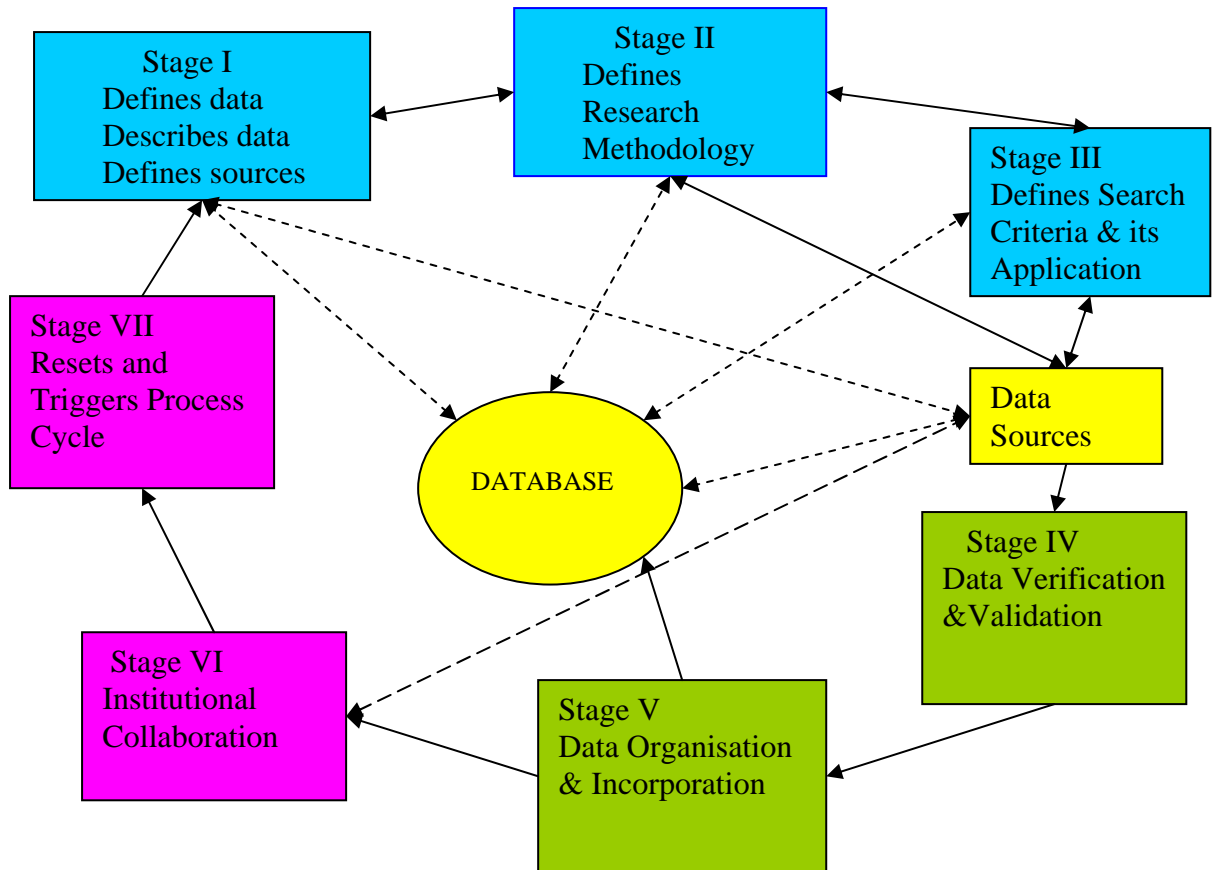


Figure 1: Schematic Diagram of the Data Gathering Framework

Stages I, II, III and VII are the most critical components of the framework. The scope and the depth of the data searches as well as the repetition frequency of the process are defined by these stages. Comprehensiveness of the searches and improvements to the database will depend on how these stages are managed. Stage IV, V and VI are functional and organisational stages of the process.

Data sources

The data sources were identified through consultations among a few members of the MPWP Biosphere reserve foundation board and the researcher. A hypothetical classification of the identified data sources was carried out and a data source importance index calculated for each source. This index was to act as a guide for determining the sources to be searched in the face of time and resource constraints. It was also to act as a basis for evaluation of each data source.

Table 1: Data Sources Identification and Classification

State Organisations	Educational & Research Institutions	Electronic Sources	Key persons	Round Tables & Local Communities
<ul style="list-style-type: none"> State Departments Regional Authorities Local Government Authorities 	<ul style="list-style-type: none"> Universities Libraries Research Institutions Private Consultancy Firms 	<ul style="list-style-type: none"> Databases Electronic Journals Websites Online Catalogues 	<ul style="list-style-type: none"> Personal Collections Personal Libraries 	<ul style="list-style-type: none"> Cardinia Casey Bass Coast Frankston Mornington Peninsula French Island

Table 2: Hypothetical Data Sources Importance Index Determination

	State Departments	Local Govt Auth.	Research Institutions	Academic institutions Universities	Private consultants	Database	Websites	Round tables& communities
Statutes	X	X				X	X	
Policy	X	X				X	X	
Research documents	X	X	X	X	X	X	X	
Guidelines& strategies	X	X	X	X		X	X	
Strategic& mgt plans	X	X	X			X	X	
community organization		X				X	X	X
Consultancy reports	X	X	X	X	X	X		
Books journals, Magazines periodicals	X	X	X	X	X	X		X
Data Source Importance index	7	8	5	4	3	8	6	2

The data source importance index was calculated by summation of the Xs in each column. The bigger the index numbers the higher the source rating. It is an indication of wealth of documents a source is considered to have.

Data Definition

The data to be sourced were references of documents and publications whose subject and geographical focus was the MPWP Biosphere reserve region. Their relevance was dependent on the subject coverage, regional focus and the purpose for which the documents were published. Those to be considered were of general and specific aspects of ecological conservation, human development and sustainability of the biosphere reserve environment. The data to be collected from each document and publication included; type of document, author(s), year of publication, title, publisher, edition, size of document, editor(s), call number, location of the document and where possible electronic link to the document among other bibliographic details.

Table 3: Classification of documents and publications

Reports	Legislations and Policy Documents	Planning Documents	Published Works	Generic Materials
<ul style="list-style-type: none"> • Annual reports • Research reports • Consultancy reports • Environmental Effects Statements • Monitoring reports 	<ul style="list-style-type: none"> • Statutes • Policy documents • By laws • Guidelines • Technical Manuals 	<ul style="list-style-type: none"> • Local Strategic Plans • Regional Strategic Plans • State Plans • Development Plans • Site Plans • Catchment Mgt Plans • Conservation Plans • Transport plans • Coast Mgt Plans • Projects & Programmes 	<ul style="list-style-type: none"> • Research Papers • Books • Journals & Periodicals • Magazines • Research & Academic Thesis 	<ul style="list-style-type: none"> • Unpublished Works • Audio visuals • Unclassified Materials • Website Materials

Data description

The documents and publications to be considered were those related to physical, biological and chemical aspects of the environment. In addition publications on environmental management, natural resource management, research and monitoring, education and training, planning, human and environmental health, resources availability, natural limitations and challenges of the biosphere region were considered relevant. Documents of social organization and coordination, historical, cultural, spiritual, social-economic and general community activities which comprise the social environment of the reserve region were also considered relevant.

Data Classification and search criteria

Search criteria that were formulated were geared towards gathering and selecting publications and documents of physical environment, social environment and planning and management aspects of the study area. Search criteria were to employ the use of *Study-area-local-names* keywords to narrow down the search to publications with a regional focus to the study area. These keywords were to be used in combination with selected *topical subject names* keywords to specify the kind publication. Publication dates in the searches were used to filter out old publications.

Table 4: Keywords and time frames employed in the electronic searches

Type of Keyword	Keywords	Searches Time frame
Study area -local-names	Mornington Peninsula, Western Port, Western Port Bay, Port Phillip and Western Port Bay, Hastings, Cardinia, Pakenham, Dandenong, Cranbourne, Officer, Bunyip, Watson Creek, Lang-Lang Creek, Koo-Wee Rup, South Gippsland ,Bass Coast, Port Hasting, Phillip Island, French Island, City of Casey, Casey, City of Frankston, Frankston, Officer, Berwick. Flinders, Mt Eliza,Sorrento	From 2001-2008
Topical subject	Sustainability ,biodiversity, bio-map, endangered species, migratory species, habitat, flora , fauna, native vegetation, weeds, pests, catchments, soils, soil types, soil erosion ,sedimentation, geomorphology, land, land capability, landscape, degradation, pollution, salinity, agriculture, environment effects statement, national park, , conservation, preservation, management, environment, marine , marine park, marine life, sea grass, mangroves, aquatic, aquaculture, fisheries, , water, waterways , estuaries, water quality, wetland, Ramsar wetland, drainage, agriculture, research , study, creeks, ecology, birds, endangered species and Southern brown bandicoot.	From 2001-2008
Planning and Management	Coastal management, catchment management, environment management plans, management plan, local plan, regional strategy, policy, statute, legislation, guidelines, planning scheme, growth corridor, economic &development Plans	From 2001-2008
Social environment	Demographic data, population, culture, heritage, sites, aboriginal, indigenous people, native, tourism, gender, census reports, migration, emigrants, movements, settlement types, habitation, community organisation, landcare, bushcare, rivercare, friendscare groups, round tables, clubs, population trends, customs, festivals, traditional, networks, organisations, community development, neighborhood, demographic studies, language	From 2001-2008

Data Collection

Data collection strategies were divided into four; Electronic Searches, Manual Searches, Working with Existing Databases and Contacting Key People

Electronic Searches

Electronic data search is summarized in table 5 and table 6.

Table 5: Electronic Sources Searched

Electronic databases & Journals	Library catalogues	Departmental online catalogues	Websites
<ul style="list-style-type: none"> • Informit • Web of Knowledge • GeoBase • Electronic Journals 	<ul style="list-style-type: none"> • Monash University • Melbourne University • RMIT University • Libraries Australia • Australian National Library • Latrobe University 	<ul style="list-style-type: none"> • Environmental Protection Authority • Department of Natural Resources and Environment 	<ul style="list-style-type: none"> • MPWP Biosphere • Parks Victoria, • CCB, EPA ,DPI,DSE • Melbourne Water • CSIRO • Port Phillip and Westernport Catchment Management Authority • Australian Bureau of Statistics (ABS) • Cardinia Shire, City of Casey, City of Frankston, Mornington Shire Council and Bass Coast Shire. • Australian Green House Office (AGO) • Australian Conservation Foundation

Choice of the Databases and Search Platforms

Australian databases were chosen because of their national and regional focus. The bulk of the electronic searches employed the 'Informit' database platform. Other electronic databases searched included GeoBase and Web of Knowledge. Electronic databases and Journals were accessed through internet provided by Monash University. Searches were also extended to State Departments and Regional Authorities websites.

Table 6: Databases accessed through the “Informit” Database Platform

No	Subheading	Coverage	Time frame
1	ANR-Index Agriculture and Natural Resources	Agriculture and natural resources	2000 - Present
2	ANR-Research- Agriculture and Natural Resources Research	Ongoing research in agriculture and natural resources	Current & recent completed research
3	ELIXIR DPI Electronic Library Exchange for Information Resources	Agriculture, mineral resources, conservation and land management/ planning	1990 - present
4	ENDANGERED-Threatened Species in Australia A Select Bibliography	Australian threatened flora and fauna	1960 - present
5	ANR -Research Archive - Agriculture and Natural Resources	Completed research projects on agriculture and natural resources	1984 - present
6	Streamline- Australia’s Natural Resources Database	Sustainable management of land , vegetation and water resources	1982-Present
7	Eva –Environment Abstracts	Environment and related fields	1987 - present
8	AHB –Australian Heritage Bibliography	Australian natural and cultural environment	
9	ABOA	Australian Bibliography of Agriculture	
10	ARRIP –Australian Rural Research in Progress		Current research
11	ELIXIR- DPI Electronic Library	Ecology, conservation, forestry, national parks, soil conservation, botany, horticulture, land use and management, water, pests, animal control, geology, aquaculture, fisheries and marine studies	1853 to present

Manual Searches

Various Local Government Authorities, State Departments and Regional Authorities considered as publishers and holders of publications and documents relevant to the Western Port Bay and the surrounding regions were visited.

Table 7: Sources manually searched

Departments	Regional Authorities	Local Government Authorities	Private & Other Sources
<ul style="list-style-type: none"> • DSE(Knowledge Learning Centre) • Parks Victoria 	<ul style="list-style-type: none"> • Central Coastal Board • MPWCMA 	<ul style="list-style-type: none"> • Cardinia Shire council • Mornington Peninsula Shire council • City of Casey Council 	<ul style="list-style-type: none"> • Dr Brian Cuming • Biosphere Reserve office-Hastings

Working with Existing Databases and Key people

In addition to Barbara Porter's database, other datasets were discovered in the course of the manual searches. Others were volunteered to be included into the final database. Key people provided information and data which was incorporated into the database.

Table 8: Existing databases and discovered datasets

No	Dataset	Title	No. of references	Data form	Time Spans
1	Barbara Porter	MPWP database	863	Endnote library	1920-2001
2	ACRUE	Bibliographies	1176	PDF file	1885-1998
3	Dr Brian Cuming	WPPC	298	Endnote library	1928-2002
4	Rebecca Cohen	References relevant to western port	702	Hard Copy	1970-2000

Data Sources Analysis

The data sources visited and searched did not accurately conform to the initial calculated data source importance index. Table 9 gives the researcher's evaluation of the data sources visited.

Table 9: Data Sources Analysis

Data source	Quality of data	Data Yield	Source Document Mgt System	Usefulness of the source	Data source Importance index
Existing databases	average	high	average	good	7
Key people	average	moderate	good	average	
Electronic Databases	high	high	good	good	8
Local G.A	average	high	average	good	8
Universities	high	moderate	very good	average	4
Electronic Journals	high	high	very good	average	8
Websites	low	low	average	poor	6
Government Departments	high	low	average	average	7
Authorities	low	low	poor	poor	7
Private Consultancies	average	low	good	poor	3
Round tables & Communities	low	low	poor	poor	2

The Database

A database with 1502 references was compiled covering a time span of 88 years. It is in the form of an Endnote library. The references in the library have been grouped into 42 data subsets to make it user friendly. A unique dataset called "*Bibliographies*" was created to accommodate specially identified references with datasets as PDF attachments. The references in which the datasets are attached are titles to the documents compiled by Rebecca Cohen and Australian Centre for Research in Urban Ecology (ACRUE). These two attachments contain an extra 1878 references. A summary of the details of these documents are presented in table 8.

The whole of Barbara Porter's database has been retained in the library and 270 references of recent publications (years 2002 to 2008) have been added. In addition, 369 references of publications produced in or before 2001 have also been incorporated into the database in the process of the database updating exercise.

Analysis of the Database

Table 10: Data Subsets/Thematic Groups

Number	Subset Name	No. of References	Percentage of the Total No. of References
1	Aerial Photographs	3	0.19
2	Agriculture	84	5.6
3	Annual Reports	3	0.19
4	Bibliographies	3	0.19
5	Biodiversity	119	7.92
6	Biosphere	15	0.99
7	Catchment Management	39	2.6
8	Climate Change	8	0.53
9	Coastal Management	49	3.26
10	Community Organization	13	0.86
11	Development	46	3.10
12	Economics	10	0.66
13	Endangered Species	26	1.73
14	Environment	106	7.05
15	Fauna & Birds	78	5.19
16	Flora	93	6.19
17	General	58	3.86
18	Geology and Soils	26	1.73
19	Health	52	3.46
20	Heritage	16	1.06
21	Information & History	48	3.26
22	Journals-IUCN	2	0.13
23	Land Care	40	2.66
24	Marine & Fisheries	56	3.73
25	National Parks	19	1.26
26	Planning	16	1.06
27	Chemicals & Pollution	75	4.99
28	Recreation	6	0.40
29	Research & Co-ordination	23	1.53
30	Resources	12	0.78
31	Sedimentation	7	0.47
32	Social Environment Issues	57	3.79
33	Statutes & Policy	62	4.13
34	Strategies and Guidelines	34	2.26
35	Sustainability	13	0.86
36	Tourism	22	1.46
37	Transport	11	0.73
38	Waste Management	24	1.59
39	Water	59	3.92
40	Weeds & Pests	26	1.73
41	Wetlands	34	2.26
42	Wildlife	3	0.19

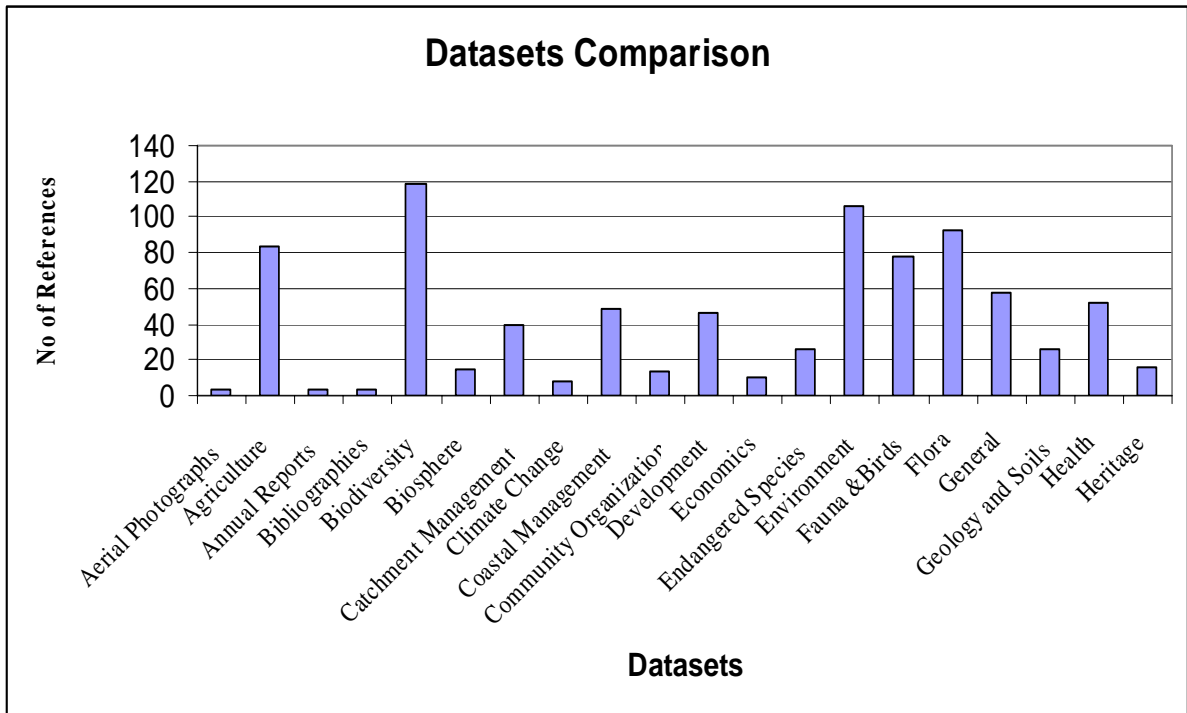


Figure 2A: Dataset Comparisons

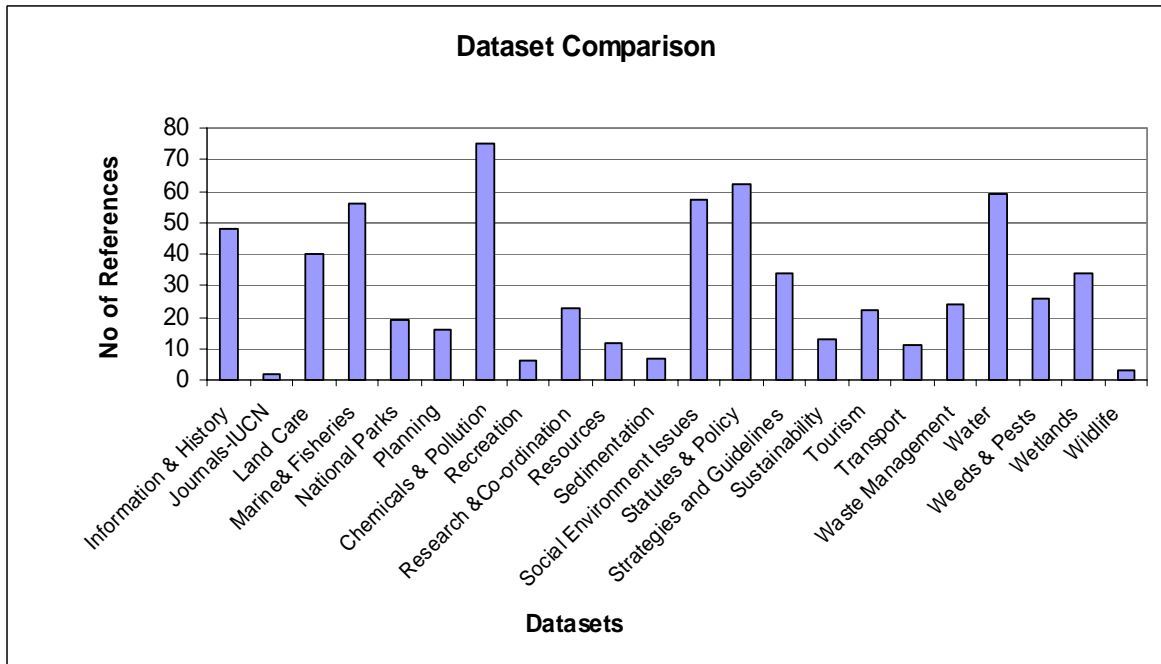


Figure 2 B: Dataset Comparisons (Continued)

Overall there were 16 datasets in the library with more than 40 references each. The above bar chart does not capture references in the PDF attachments. The *bibliographies* dataset although appearing as minority data subset in the above Bar Chart representation is however big in content as it accommodates 1878 references in the form of PDFs.

Table 11: Temporal Distribution of the Data.

Year	Refs	Year	Refs	Year	Refs	Year	Refs	Year	Refs
2008	4	1989	36	1969	0	1949	1	1929	0
2007	15	1988	24	1968	2	1948	0	1928	1
2006	44	1987	15	1967	0	1947	2	1927	0
2005	50	1986	20	1966	4	1946	0	1926	0
2004	53	1985	12	1965	0	1945	0	1925	0
2003	55	1984	27	1964	2	1944	1	1924	0
2002	51	1983	9	1963	0	1943	0	1923	0
2001	122	1982	12	1962	0	1942	2	1922	0
2000	90	1981	12	1961	2	1941	0	1921	0
1999	66	1980	17	1960	0	1940	1	1920	1
1998	59	1979	23	1959	0	1939	0		
1997	65	1978	17	1958	1	1938	1		
1996	51	1977	21	1957	1	1937	2		
1995	56	1976	18	1956	0	1936	0		
1994	47	1975	26	1955	0	1935	0		
1993	65	1975	25	1954	1	1934	0		
1992	42	1973	7	1953	0	1933	2		
1991	45	1972	8	1952	0	1932	0		
1990	39	1971	13	1951	0	1931	0		
1989	36	1970	8	1950	1	1930	0		

Figure 3 is a representation of the data captured per year over the whole time span of 88 years. Documents captured from 1920 to 1960 are on average low. Most of the publications captured in the database were published between 1970 and 2006.

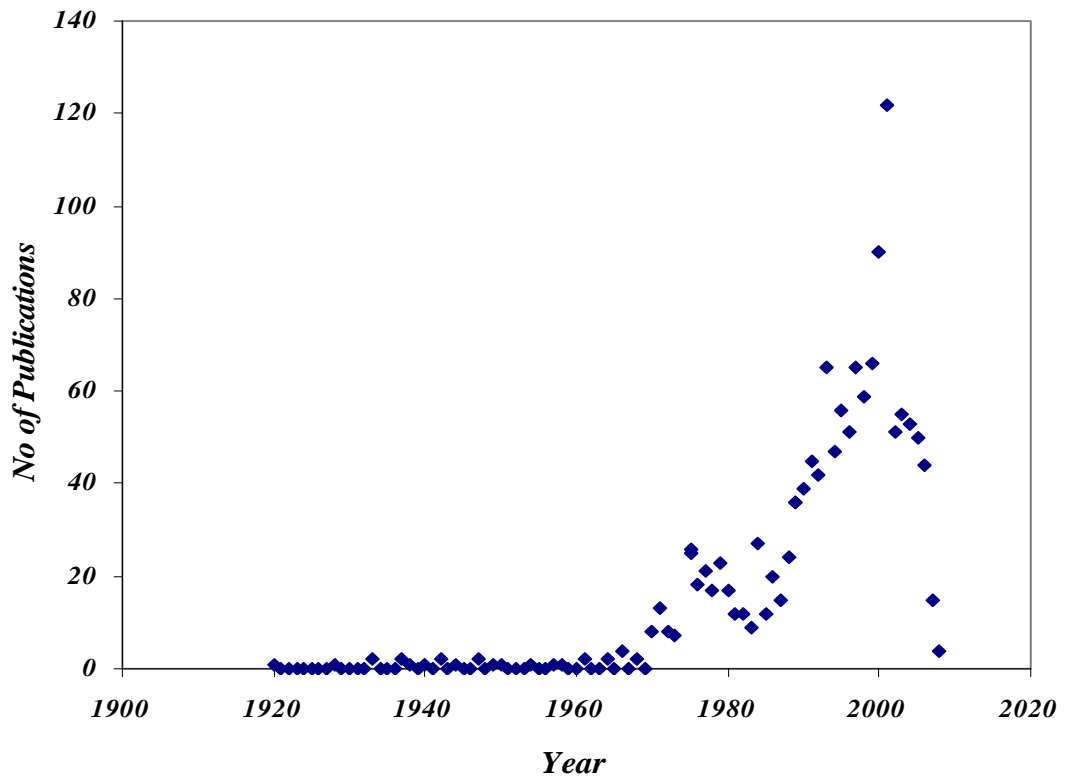


Figure 3: Data captured per year

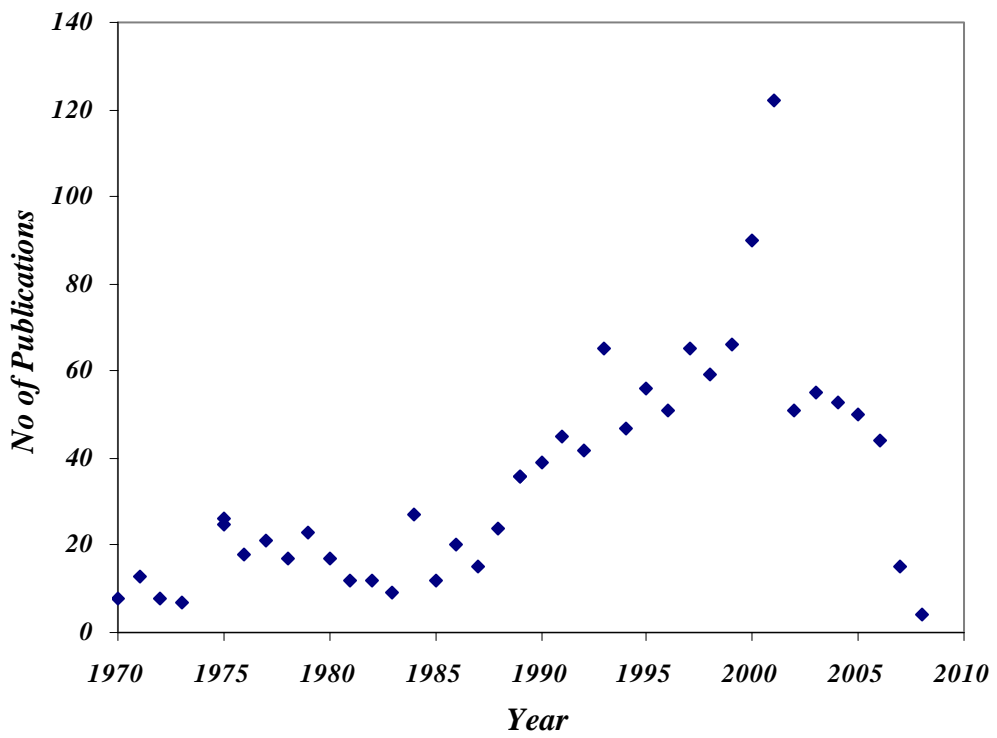


Figure 4: The peak period for the study area's documents publication.

The usefulness of Project

The project provides a case study of how a biosphere reserve management in line with biospheres reserve's philosophy of voluntary programs could attract programs from local educational institutions. This project has consolidated outputs of previously scattered database compilation efforts and has updated the existing database by incorporating recently published documents into the database. It has formulated a data gathering frame work which is an basis to an information network system which the biosphere reserve management could utilize to keep the database updated. The relationship between Monash University School of Geography and the MPWP Biosphere Reserve Foundation could be enhanced in future to provide opportunities for upgrading the database.

The database represents publications and documents contribution by policy makers, scientists and resource managers and local community towards achieving a sustainable regional development and biodiversity conservation of the study area. The database is a useful reference point for the region's information resources. It provides links to the resources or indicates the location the resources. It is recommended that this database be posted on the biosphere website to make it accessible to many users.

CONCLUSIONS

The formulation of the data gathering framework laid the foundation for putting together the database. By employing the framework, data was collected from various sources using the research methodologies adopted. The data collected was organised into a database in the form of an Endnote Library. Analysis of the data gathering process, data sources and search methodologies adopted point to inadequacies in the process and in the product. It cannot therefore be claimed that the database created is exhaustive. In addition the database houses data in form of PDFs as a matter of convenience due to time constraints to sort out and enter the data as standard references in the Library. It is recommended in future that the Foundation Board will acquire services of a volunteer to convert these PDFs into standard Endnote library references. Moreove,r no bibliographic database is considered complete as new materials are produced and previously unknown works continue to be discovered. It is therefore recommended that the database upgrading exercise becomes an on-going project and future editions of the database be produced as frequently as conveniently possible. Data from two of the largest Australian biological consultancy firms- 'Biosis Research' and 'Ecology Australia' should in future be collected and incorporated into the database. The database should be posted on the MPWP Biosphere Reserve website to make it accessible to the community and all development agents and resource managers who are stakeholders in the Biosphere Reserve.

Overall, the database gives a fair picture of the information available for the region and it is therefore a useful tool for assisting planners and managers to identify knowledge gaps and opportunities for future research work. The data gathering framework provided should act base upon which future improvements could be made.

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