

Markets for biodiversity information products: real or imaginary?

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Abstract — In the past decade, a large range of biodiversity information products and services has become available. Some were developed with EC subsidies, some with national funds, and others as initiatives of universities, research institutes or private persons. Few, if any, were developed in the 'commercial world' based on a business plan. Some sponsors and funders ask for exploitation and sustainability plans after the development phase or at the end of the project. The success of these depends on whether the products meet real demands and serve actual markets. Market potential is often misjudged or overestimated and many products are developed without a prior needs or market analysis. This negatively affects the sustainability for biodiversity information services. In this paper we review the marketing of some biodiversity information products in a commercial environment, to assess demands and size of the markets.

Index Terms — biodiversity information products, user needs, markets, return on investment, sustainability.



1 ETI INFORMATION SERVICES: A SPECIALIZED SALES COMPANY

ETI Information Services Ltd (ETIIS) was a subsidiary of ETI BioInformatics, a not-for-profit organisation initiated by the Netherlands' Government and UNESCO. Its aim is to make authoritative biodiversity information broadly accessible and usable by using information technology. Initially Springer Verlag marketed and distributed ETI information products, but recognising the unique market for e-media and specific requirements to reach the audience, ETI developed its own marketing and distribution subsidiary. ETI Information Services Ltd was established in 2001 and relied on the catalogue on the website of ETI. The company launched its own website to support sales on 1 April, 2004. The company ceased trading on 31 March, 2009. ETI products are currently marketed by Margraff, Germany. The purpose of this paper is to share the commercial experience gained in marketing electronic biodiversity

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information products, to discuss the size of this niche market, and the marketing requirements to reach it. The analysis is based on commercial sales of selected multimedia biodiversity titles to 1705 customers from over 50 countries from 2001 to 2008 in a period of 77 months. During that time 9970 items were sold. Sales were direct to customers online, by mail, e-mail or phone orders, or through resellers reaching particular markets. All resellers sold multimedia products as a minor part of their main business, which was usually selling books. ETIIS relied exclusively on income from the niche market for electronic resources related to biodiversity.

The income generated by sales is compared with product development costs to get an impression of the sustainability of such products.

2 USERS OF BIODIVERSITY INFORMATION

ETIIS focused on three categories of users of biodiversity e-products: Teachers and students in schools, colleges and universities (Formal Education); outdoor enthusiasts such as walkers, wildlife observers and workers in Nature reserves (Popular); and, professional specialists, researchers, regulatory officials and dedicated amateurs (Science). Each of these markets has different sizes and requirements and needs to be considered individually. The Formal Education market is not considered in this communication.

3 POPULAR MARKET

The general population is a large and important market for biodiversity information. A number of ETI wildlife field guides should be of interest to non-specialists, i.e. individuals who have an interest in some aspect of nature, and are committed to learn more. This is a highly competitive market with numerous printed products available, so the e-products must be priced competitively. The following titles, showing the price range (including VAT) charged by different distributors, fit these criteria:

- Birds of Europe (£14.95 - £25.95)

- Interactive Guide to Butterflies of Europe (£12.95 - £25.95)

- Interactive Guide to Mushrooms and other fungi (£12.95 - £25.95)

- Interactive Flora of the British Isles (£29.95 - £39.95)

- Five Kingdoms – a multimedia guide to life on earth (£14.95 - £25.95)

ETIIS used several resellers specialized in particular markets to sell some or all of these titles. Their sales should indicate the interest of their customers in biodiversity information in an e-format. Tab. 1 lists the main resellers and sales data, and is followed by some observation on sales and markets.

DISTRIBUTOR	MARKETING	BIRDS 2.0	IFBI	FIVE KD	BUTTR FLIES	MUSH RM
		1992-2006	May 04	May 02	Jan 02	Dec 02
Alana Ecology	UK :Web, catalogue, adverts, attend fairs	33	261	10	45	53
<u>DreamDirect</u>	UK: Catalogues, Web	1950 Jan04-06	NS	NS	60 (Jan-Feb 04)	NS
NHBS	International: Web, catalogue, trade fairs, meetings	3	167	30	63	18
RHS	S England: Retail shop <u>Wisley Gardens</u>	14	58	27	10	26
Summerfield	UK: Web, catalogues, attend meetings	NS	502	NS	NS	14
ETI IS	Web, adverts, fliers, meetings	99	486	145	239	76
TOTALS		2095	1474	212	417	187

Tab. 1 – Number of e-guides sold by ETIIS and resellers with information on publishing date and marketing methods. NS = Not Stocked.

Observations regarding Tab. 1:

1) The best-selling popular title by far is *Birds of Europe*. *DreamDirect* markets carefully-selected products to a mass market by distributing up to 36 million catalogues per year. Remarkably, *Birds of Europe* is one of the first titles produced by ETI and over ten thousand (in various updates) have been sold since 1992.

2) In contrast to *DreamDirect*'s mass marketing approach, *Alana Ecology* is specialized, and targets outdoor enthusiasts. It features books and CD-ROMs as a subset of its products, which are mainly equipment. For their customers the Interactive Flora of the British Isles (IFBI) is a favourite; they had less interest in birds, butterflies and mushrooms, field guides that could be used by this group.

3) *NHBS* supplies shops, institutions and private customers. It lists all ETI titles amongst the book categories; customers have to seek them out. Though they have numerous books and field guides on birds, they sold only 3 copies of *Birds of Europe*. Are paper field guides the preferred medium for these customers? IFBI and Butterflies are their best lines for ETI products, promoted strongly in their catalogue and website. Sales indicate that most of their e-products achieve very small sales.

4) The *RHS* has a large, customer base of gardeners and horticulturalists and is known for its large selection of plant titles. The shop has a small number of e-products, and does not market them actively. IFBI was their best-selling ETI title. The other sales are likely to be impulse buys.

5) *Summerfield Books* targets the plant sciences market, and e-products are uncommon in their catalogue. However, they actively market titles and have achieved strong sales of IFBI. The BSBI strongly supported the IFBI. Apparently, an audience can be persuaded to purchase these e-products if they are aimed specifically at them and their field of interest.

6) Sales by *ETIIS* itself demonstrate the importance of marketing in boosting sales. In this selection, *IFBI* is the best-selling popular product. It was heavily promoted and received strong reviews in popular and scientific journals; it is now recognized as one of the standard (e)flora for the UK. Advertisements were taken in relevant publications (eg *Plant Talk*) and it was promoted via Google Adwords. The Interactive Guide to Butterflies of Europe is the other best-seller of the popular titles. It was promoted mainly by a repeated advertisement in *Butterfly*, the magazine of Butterfly Conservation (readership 17,000). However, such promotion is expensive and the cost of promotion exceeded the income generated by increased sales!

Sometimes it is implied that e-products are preferred over printed versions. This is not the case. For example, compare the book *Flora of the British Isles* First Edition: Sales 7400 (1991-1997) and Second Edition: Sales 7350 (1997-2004) with the Interactive Flora of the British Isles DVD-ROM: Sales 1474 (2004-2008). Similarly, the book *Flora of the Netherlands* print run was 18,000 while Heukel's Interactive Flora CD-ROM sold over 5,000 copies in four years. E-products have a higher access barrier than books, and the interest of retail shops in stocking e-titles is limited as the products are considered too specialized and with limited sales potential. This prejudice towards the print medium must be overcome if sales for biodiversity e-information are to increase.

We conclude that there are many potential users of biodiversity information in the general population, and some are willing to pay for and use it in an e-format. Amongst the 612 biodiversity information e-product *ETIIS* sold, birds were by far the most popular subject. Price, within a limit of £40, does not appear to be an issue for the customer. However, the single most important fact is that while there are many potential users of biodiversity e-information, they need to be made aware of the existence of the product, and then be persuaded to purchase it. Most are not actively seeking to purchase multimedia biodiversity information. Hence marketing is critical. Of course, if the information was free, the situation could be different. *ETI*'s website 'soortenbank.nl' freely offers detailed information, identification keys and distribution maps on almost 7,000 species in the Netherlands. It attracts well over 3,000 unique users daily, a number that is still growing.

4 SCIENCE MARKET

The science market is fragmented and specialized, with small sales to be expected for the vast majority of similarly specific e-products. The largest category of products is from *ETI*'s World Biodiversity Database series: 80+ e-publications. These e-products are taxonomic monographs aimed at specialists and by their nature will have a limited market. It is difficult and costly to reach a small audience. Sales do not appear to be strongly price-sensitive. Like books, sales patterns show that most sales are achieved in the first few years for a title, and then enter a steady state of a few sales per year. Reducing prices can have a temporary effect on lagging sales. Special bulk sales, at a discount, can have a large affect on sales. Specialist training courses are obvious targets, but usually rely on the author's support or knowledge of training efforts. Authors

can be extremely helpful and work hard to promote their publication. They supply mailing and e-mailing lists for contacts, contact their colleagues and promote their titles at relevant meetings. We collated information for the best-selling scientific titles in 2002-2008 listed in Tab. 2 together with sales, prices, publication dates and months available.

Product	Publishe don	Months available	Price ex VAT (GBP)	Units sold
World Seaweed Resources (WSR)	01/04/06	24	21.23	243 ¹
WSR with Cult. Farming of Marine Plants		24	34.00	97
Yeasts of the World	07/05/02	72	59.95	140 ²
Arthropods Econ. Importance - <u>Diaspididae</u>	13/12/02	64	77.95	134 ³
Otoliths of N Sea Fish	01/11/01	78	59.95	88
Zooplankton South Atlantic Ocean	01/08/05	33	42.51	79
<u>Chironomid Larvae</u>	18/09/03	56	107.95/79.95	62
<u>Chironomid Pupae</u>	14/05/03	60	107.95/79.95	59
Crabs of Japan	28/07/04	46	77.95/42.51	57
Harmful Marine <u>Dinoflagellates</u>	05/08/02	69	29.95	56
Arthropods Econ. Importance - <u>Agromyzidae</u>	28/07/04	46	77.95	56
Freshwater <u>Oligochaetes</u>	24/02/03	61	107.95/79.95	53
Turtles of the World	2000	78	59.95/36.95	52
Zooplankton/Micronekton N. Sea	01/04/03	60	79.95/42.51	51

Tab. 2 – Best-selling science titles of ETIIS.

Observations regarding Tab. 2:

- Arthropod titles were promoted by e-mails to addresses provided by the author and to e-mail lists created by data mining. Specialist bookshops and fliers at relevant meetings were also used to promote the titles.

- Chironomids and Oligochaetes. A remarkable number of sales were achieved for these three products. While these are very specialized groups, they have great importance for environmental monitoring of water quality. This market was reached by building up e-mail addresses of water quality specialists. Titles of practical importance are less price-sensitive as they are frequently “must have” rather than “would like to have” products.

- Although World Seaweed Resources is a fairly recent publication, it is the best-selling science title. It was priced low deliberately to encourage sales, and this was possible because a company provided sponsorship for its production. While the low price undoubtedly helped sales, the author has been very important in promoting it. In addition the product was bundled with Cultivation and Farming of Marine Plants at reduced price, which had a remarkable effect on sales of Cultivation and Farming of Marine Plants, one of the poorest-selling scientific titles, with only 14 sold separately over a period of 77 months compared to the 97 sold as part of the special package.

Scientific e-titles, by their nature, cover very specialized groups and have a small, fragmented market. Even best-selling titles rarely achieve sales beyond 100. In comparison: scientific books usually have print runs of 500-800. For

the foreseeable future, books will outsell e-products even for the same title: books have the clear advantage in portability, comfort of handling, familiarity, shelf life and identifiable prestige on the shelf. The trend in scientific publishing is towards smaller print runs, pitched to a known market and then straight to Publish on Demand. E-products are ideal for this trend, as they can be produced easily at little cost in small numbers, and they can also be updated easily.

After the first few years of sales, there will be a long period when sales continue at a trickle rate. Significantly reducing prices can promote the level of these sales, while linking to e-mail marketing can enhance the effect. However, the costs of producing a database for e-mail marketing are substantial, and are not met by the small numbers of sales. Hence, even if funding is available, one should ask, "Who wants the information?" Always ask, "Is this a need-to-have or a would-like-to-have, product?" All biodiversity information is not equal. It could be argued that it is nice to know about the butterflies or birds in a region, but it is essential to know about pests, crop protection, insect vectors of disease, etc. So, if investment is required, some priorities will also be required.

5 PRODUCT DEVELOPMENT COSTS

The selected biodiversity information products discussed here use the *Linnaeus II taxonomic information management system* as a vehicle to compile, organize, share, and e-publish (on disk, web, mobile) biodiversity data. Linnaeus II was developed in the 90-ties (initially with subsidies from UNESCO and the Dutch government) as a freely available data management tool for scientists to create 'e-monographs'. The website: <http://www.eti.uva.nl/products/linnaeus.php> provides further information. This software is updated in 3-4 year cycles. Current version is 2.65 (2008), while a wholly new (web-based) version (Linnaeus NG) is expected in 2011. When calculating the development costs for e-products as described here, the generic costs of (maintaining) the information management system must be taken into account. ETI estimates the cost of an update cycle of Linnaeus to approximately 50,000 Euros. The cost for technical user support (helpdesk) amounts to 15,000 euro per annum. ETI distributes the additional costs equally over all e-products amounting to 5,000 Euros per e-product.

Tab. 3 gives an indication of the product development costs of the popular-educational and scientific e-products discussed. Popular-educational products, created by ETI staff in collaboration with external specialists and contributors, are more expensive to develop than the scientific titles which are often built and delivered by the authors to ETI in an almost publishing-ready state. However, when the author's research costs and institutional overheads are taken into account especially the science products would be extremely expensive.

Title	Costs*	Revenues	Results
Birds of Europe (1)	120,000	302,000	+ 182,000
HIFN+IFBI (2)	191,000	97,000	- 93,000
Butterflies (3)	43,000	51,000	+ 8,000
Mushrooms (3)	91,000	51,000	- 40,000
Scientific Titles (5)	20,000	7,000	- 13,000 (av. per title)

Tab. 3 – Overview of developments costs for several products compared to revenues from sales. Notes: (*) includes 5,000 Euros 'system maintenance costs' see text. (1) Birds of Europe was produced in the English, Dutch, German and Italian language. (2) The Interactive Flora of the British Isles built upon and extended an earlier developed Interactive Flora of the Netherlands. (3) The Butterflies and Mushrooms e-guides were produced in the English and Dutch language. The multi-language approach increased the market potential for the content. (5) The development costs for purely scientific titles is based upon the average of the e-products listed in Tab. 2; similar for the revenues.

ETI has been relatively successful in marketing biodiversity information e-products. Still, the development costs of many less popular e-products exceed the income generated by sales as demonstrated by Tab. 3. Sustainability (i.e. updating the products, keeping them available) is therefore an issue. Academic developers not always properly calculate full development costs (i.e. all hours, all overheads) when considering product exploitation and sustainability issues. A way to address this is: cooperation, increased efficiency by standardization of data (exchange) formats, shared software (developments), joint marketing approaches, in combination with serving the markets needs. The *KeyToNature* project (www.keytonature.eu) demonstrated that a collaborative approach is possible, as for computer based species identification products.

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