ECP-2008-DILI-518001

BHL-Europe

First user evaluation report

Deliverable number	*D5.8*
Dissemination level	*Public*
Delivery date	*31 July 2010*
Status	*Final*
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e*Content*plus

This project is funded under the *e*Content*plus* programme[1],
a multiannual Community programme to make digital content in Europe more accessible, usable and exploitable.

[1] OJ L 79, 24.3.2005, p. 1.

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0 Document History

0.1 Contributors

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0.2 Revision History

The results of the survey were intensively discussed in the consortium over several weeks and particularly during the project meeting in Vienna (May 2010). This resulted in the revision of the analysis before drafting the deliverable document.

Revision Date	Author	Version	Change Reference & Summary
2 July, 2010	NMP, MfN, UGOE	0.1	First draft of deliverable document
20 July, 2010	NMP, MfN, UGOE	0.2	Second draft of deliverable document
23 July 2010	MfN, NMP	0.3	Revised version after internal review
30 July 2010	NMP	1.0	Final version after revision by BHLE consortium

0.3 Reviewers and Approvals

This document requires the following approvals.

Name	Position	Date	Version
Henning Scholz	BHL-Europe PCO	2 August 2010	1.0

0.4 Distribution

Analyses of the user survey was displayed on the BHL portal and also on wiki from the beginning, so every consortium partner had the opportunity to review, comment and improve before the document was finalised. The deliverable document has been distributed to:

Group	Date of issue	Version
BHL-Europe consortium	23 July 2010	0.3
BHL-Europe consortium	2 August 2010	1.0

1 Purpose

This document gives an overview of the results of the first user evaluation survey of BHL-Europe between March and April 2010. For the questions of that survey it is referred to D5.7 of BHL-Europe published in April 2010.

2 Background and context

2.1 Introduction and methodology

BHL-Europe has to understand and evaluate the requirements of the target users and how they are going to use the results of the project. BHL-Europe is targeting a large number of different users ranging from librarians to various types of scientists to the general public (see section 2.2 for more details). There is no universal evaluation method to cover this range of target users in detail. However, a number of instruments are established for a general survey of project results and their use and to prioritise the technical and collection development plan:

(1) Web analytics will be used to quantify the use of the portal (visits, unique visitors, page views, referring sites, country coverage).

(2) Users are encouraged to drop feedback messages either using our online discussion forum or using the online contact form. BHL currently has an issue tracking system (Gemini) in place to collect user feedback.

(3) Face-to-face interactions between the BHL-Europe and BHL members are helpful to get important input, as the projects include a number of key users from different user groups (e.g. librarians, taxonomists). This internal review also helps to identify system bugs and ongoing maintenance needs.

(4) Large projects like EOL or EUROPEANA set priorities based on their experiences and we will take these suggestions into account when planning our next steps.

(5) We will consider developments in biodiversity informatics and networked scientific communication like TDWG developments, PLoS Biodiversity Hubs, new or improved standards (e.g. OAI-PMH), automated metadata extraction tools, data mining opportunities and developments in digital preservation practices, tools and opportunities.

In addition to these broader considerations, specific user evaluations will be carried out twice during the project, the first time at the end of Month 12 to to analyse demand and the service elements of the project. The results are presented herein and will be fed into WP3 to ensure that we focus on those key components that support user needs. The second evaluation in Month 27 will test and validate the impact of the project. It will identify key features which are highly valued by users and will feed into the final revised set of best practice guidelines and components, implemented by WP3 and published by WP2.

We use online questionnaires for this user evaluation procedure to identify user requirements, preferences, experiences, benefits, and unmet needs. We will identify the characteristics and needs of the different target user groups during this process. The details of the online questionnaire are described in more detail in D5.7 so here only a summary is presented. The questionnaire was set up in SurveyMonkey (surveymonkey.com). The questionnaire was developed in close cooperation with our US colleagues of BHL to effectively cover as many aspects important for BHL and BHL-Europe in one survey. As BHL-Europe does not have its own portal now, we asked the users to review the existing BHL Portal

(www.biodiversitylibrary.org) during the survey. The next BHL-Europe survey will also include the BHL-Europe prototype that will be available in October 2010.

Before we implemented the questionnaire we ran a test user requirements survey in fall 2009 among 52 users, who were mostly from the project partner institutions. A summary of the results of that survey is provided below. We also learned how to perform the survey and work with SurveyMonkey as a survey tool to avoid problems with the recent survey. However, we were not successful in using SurveyMonkey without any problems. The setup of our questionnaire caused SurveyMonkey not to store a large number of responses. We identified the problem in cooperation with SurveyMonkey officials two weeks after the release of the survey and solved the problem on 6 April. However, we lost 804 responses due to that problem with the survey technology. As it is obvious from the results presented below, the number of users we recorded in the survey is still extremely high making the results really valuable for the progress of BHL-Europe and BHL.

Different strategies were used to target the users to fill the questionnaire. Libraries and digital library networks were targeted using existing contacts of consortium partners. A large number of professional scientists were encouraged through personal contacts and special mailing lists to fill the online questionnaire. The evaluation period was also announced to the scientific community through the staff members of the consortium partners and the existing networks (e.g. EDIT) to reach a large number of people and get a sound evaluation result. We also collected our target users via various organisations as International Association of Plant Taxonomists, Botanical Society of America, Czech Botanical Society and Zootaxa. EUROPEANA was also helpful in including the open survey in the EUROPEANA News and RSS feed. All users we approached were managed using the BHL Wiki to avoid duplication of effort and to effectively assign responsibilities to contact the various target users.

2.2 Users

The first group of BHL-Europe users (content users) – European citizens – is interested in the content itself. They include natural scientists interested in taxonomic information and the distribution of species through space and time. Social scientists and historians interested in the history of science, and background information about famous and significant scientists of the past. Artists may adapt the artistic representations of plants and animals. For hobby scientists, hobby gardeners, and regional conservation organisations the literature is an inexpensive and easy available resource of information about animals, plants, and fossils occurring in their area. Policy makers on various levels (from local to governmental) need the literature as base and background information for their decisions. Students and learners on various levels (from school to university) need the content as a primary source for their studies. Teachers will be able to complement the content of textbooks by downloading historical and original texts of Charles Darwin, for example. These texts may be used as a teaching resource, since many of those historical texts contain important biological concepts and theories still valid today. These classic and scientifically important contributions help to put the results of modern research projects into context. Eventually, every European citizen who is interested in biodiversity, and has access to the Web is a potential user. The museums that are consortium partners partly identified user groups amongst their visitors.

The second group (technology users) – in particular libraries, digitisation centres, and digital library networks – are interested in the technological outputs from the project, the best

practice approach, and the quantity and quality of content. Digital library networks may adopt our approach and distribute to partners in other domains of digital libraries.

We focused on communicating the existence of this new biodiversity content to a range of potential users. EUROPEANA and the natural science networking projects (EDIT – http://www.e-taxonomy.eu/ and SYNTHESYS – http://www.synthesys.info/) gave us access to a wide number of potential users. However, the general public and education communities are still underrepresented in our user group. Development of a detailed exploitation plan to reach all these user communities is a plan for the next user survey.

Table 1: Target users and their needs.

Target user description	Needs	Involvement & Role	Country coverage
1.1) European citizens	Direct online access to comprehensive information not currently publicly accessible to help raise the awareness and appreciation of biodiversity heritage	End users included in the user testing group	Consortium member states
1.2) Scientists (e.g. Biology)	Taxonomic descriptions of species; biodiversity data of specific regions in the last centuries; full-text searching; taxonomic intelligence	Involved as partners of the consortium	Consortium member states, ERA, global
1.3) Scientists (e.g. History, Cultural heritage)	Historical information on science and scientists	End users accessing biodiversity literature through EUROPEANA	Consortium member states, ERA, global
1.4) Citizen scientists / Hobby scientists	Search, read, download, and print articles about biodiversity in their area	End users included in the user testing group	Consortium member states, global
1.5) Students of different levels (primary to academic)	Reliable and meaningful information and relevant images on biodiversity; minimal time to aggregate information from different sources; research resource	Academic students working in the partner museums will be included in the user testing group. Non-academic students will be targeted through dissemination activities.	Consortium member states
1.6) School teachers	Resource for teaching materials as complement to textbooks	Targeted through dissemination activities	Consortium member states
1.7) Environmental and Conservation agencies / Government officials / Policy makers	Information on impact of climate change, environmental deterioration and human interventions	Directly involved after the establishment of the connection between BHL-Europe and SEIS	Consortium member states, ERA
1.8) Artists	High quality images of animals and plants	End users included in the user testing group	Consortium member states, global
2.1) Libraries	Information on the distribution of heritage material (metadata), new platform for presentation of content	Involved as partners of the consortium	Consortium member states, global

2.2) Digitisation centres	Best practice guidelines for the digitisation of heritage literature	Current and new content providers of the consortium	Consortium member states, global
2.3) Digital library / Open Access networks	Best practice guidelines for the establishment of digital library networks, information about digital repositories (distribution, availability)	Already involved through the networking activities of some of the consortium partners. More networks will be targeted through dissemination activities.	Consortium member states, global

2.3 Fall 2009 survey

A small scale test survey was launched in October 2009 within the BHL-Europe consortium. The goal of this test survey was (1) to test the survey methodology, (2) to identify appropriate questions including the wording of the questions, (3) to collect first user requirements to be used for the initial design of the BHL-Europe prototype. 52 users completed the questionnaire.

We have learned how to handle SurveyMonkey as a tool. The test survey also gave us some first important input for the further development of the BHL Portal and the implementation of the BHL-Europe system. Some of the questions revolved around the following: What does the user expect from the planed BHL-Europe portal; What are the main data sources and functionalities the users are looking for; What quality of digital content the users are looking for; What are the additional services the users would appreciate. We have seen that users need an improved search, filter, and sorting functionality for the portal. The user want to search for all words and the results should be sorted by author first. A simple portal design that is easy to understand and loads quickly is also important. An efficient book viewer is also indispensable as well as a flexible PDF download option. These are just a few highlights of the results.

3 Methods of evaluation

The methodology to evaluate the questions is described below. In questions 2-15 the participants selected answers in a 5-point scale (total agreement to total disagreement), with a neutral option (no opinion or "I don't understand"). We choose this 5 - point - scale answer method to enable us to transfer the resulting preferences reliably into a numerical scale, and to compare them finally with each other, and with results of future surveys that we intend to establish with the same method. To transfer the answers of the 5-point scales into numerical values, the relative abundance (in%) for each one of the five scale points were determined (together 100%, neutral answers were neglected). The proportion for scale point 1 (total agreement) was multiplied by 4, for scale point 2 (moderate agreement) by 3, for scale point 3 (middle option) by 2 and for scale point 4 (moderate disagreement) by 1. These four values were added and finally divided by 2. This method yielded a maximum value of 200 credit points for total agreement by all participants, and a minimum value of 0 credit points for total disagreement by all participants. Values around 150 corresponded to relatively strong

agreement, 100 to unclear results in terms of agreement, and 50 to relatively strong disagreement.

This example illustrates the procedure in more detail:

Question 2, bullet point 2D "for researching biology": Results: **81** "*almost always*" + **194** "*often*" + **253** "*sometimes*" + **204** "*rarely*" + **230** "*never*" (+ 5 "*I don't know*", not considered) (= total 967 answers for this bullet point)

Relative abundance in%: 8.4 + 20.2 + 26.8 + 21.2 + 23.9 = 100%

Credit points: ((8.4 x 4) + (20.2 x 3) + (26.8 x 2) + 21.2) / 2 = **84.0**

4 Time frame and respondents

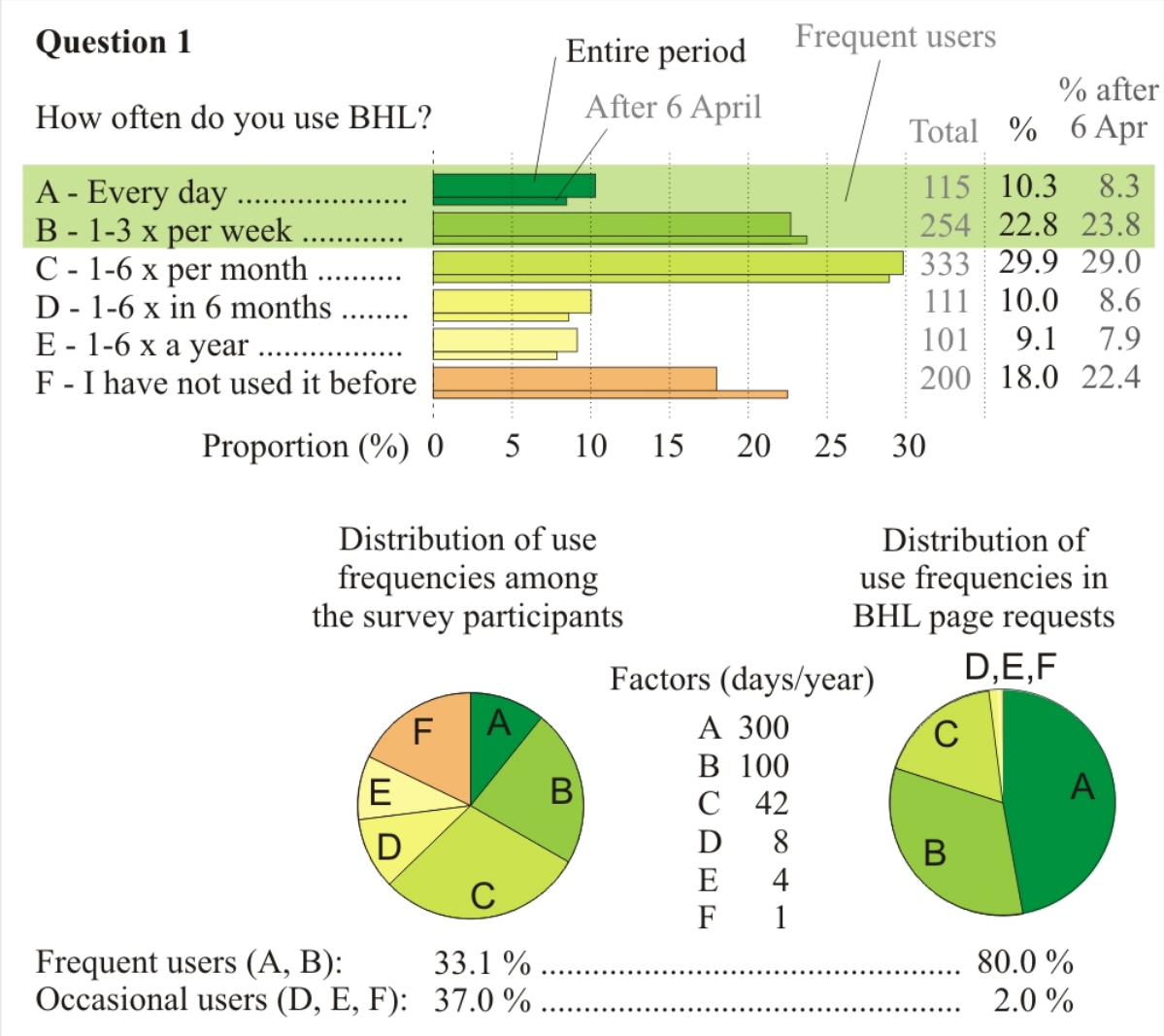
The survey was open from 15 March to 3 May 2010 and we gathered data from 1877 users of the BHL portal (1563 until 06 April, 314 after 06 April; total number of successfully answered surveys: 1063; 759 until 06 April. In the following, the results are described in more detail. Note that graphs present data for frequent users and occasional users separately. Frequent users are defined herein as people using BHL every day or 1-3 times per week (see also below in section 5.1). Also groups of users responding in later stages of the survey (after 6 April 2010) are in some graphs are highlighted. However, there were only minor differences between participants before and after 6 April. We tested this to rule out the possibility that after a few weeks responses would be restricted to occasional users.

5 Survey analysis: results and discussion per question

5.1 Use frequencies

Question 1: How often do you use the Biodiversity Heritage Library BHL http://www.biodiversitylibrary.org

- A - Every day
- B - 1-3 times per week
- C - 1-6 times per month
- D - 1-6 times in 6 months
- E - 1-6 times a year
- F - I have not used it before



Most participants of the survey used BHL less than 2 times in a week. This group accounts for approximately 20% of the page requests at BHL.

1/3 of the participants were frequent users, the others occasional users or had not used BHL before. The "frequent users" group (A and B) constituted by far the most important section among the participants in terms of usage.

This question was important for the evaluations of several questions of the survey. Frequent users have more experience with BHL functions, their voice should be considered as more important when questions are asked about the current quality of BHL. Occasional users could eventually convert into more frequent users, if BHL is improved, so their special needs and desires must not be neglected. The answers of this group are important when questions about new ideas for new functionalities are asked. See also Q2: occasional users do not work often with digitized literature, so improving the service has limitations.

Total number: 1026

Frequent users total: 339

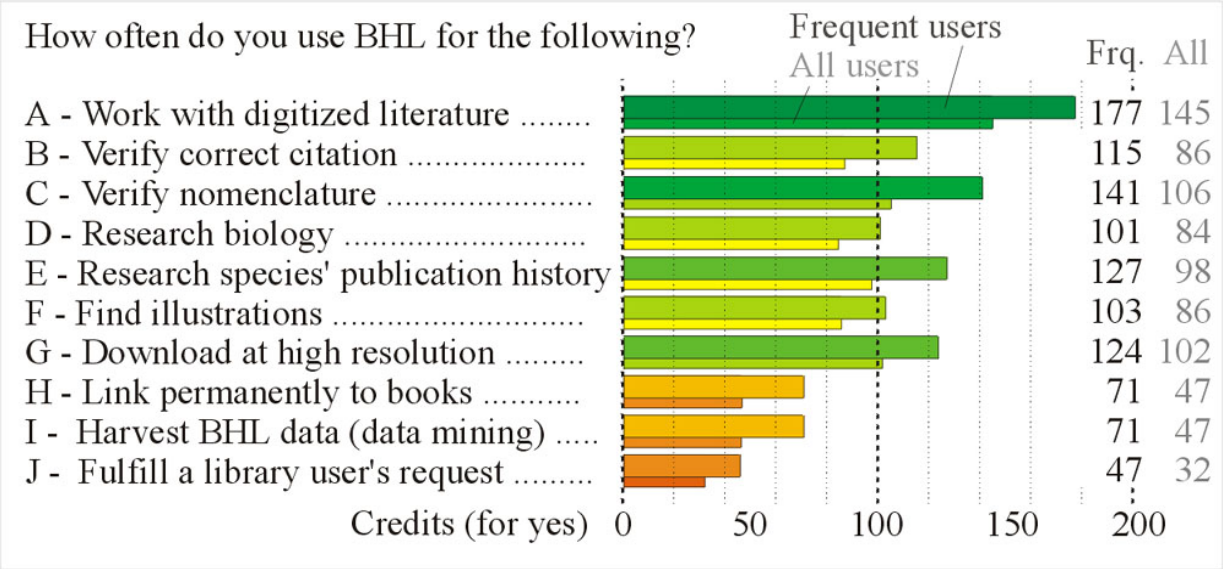
Participants after 06 April: 303

5.2 Use functions

Question 2: How often do you use the Biodiversity Heritage Library for the following?

[Scale: almost always, often, sometimes, rarely, never, I don't know/understand]

- A - To work with digitised literature
- B - To verify the way to cite the book correctly (author, year, title, pages)
- C - To verify nomenclatural information (spelling of taxon names, author, date, original description/protologue/basionym)
- D - To research the biology behind the name (geographic distribution, morphology, ecology)
- E - To research species' publication history
- F - To find illustrations/images of animals or plants
- G - To download high resolution images of pages
- H - To link permanently and directly to books or pages for which I need a stable URL
- I - To harvest or download BHL data or files for use in other applications
- J - To fulfil a library user's request for information



Results Question 2:

The highest value was obtained for the control question "work with digitized literature" (177 credits in frequent users).

BHL is mostly used for verifying nomenclatural questions (141 credits in frequent users, a very high value), less frequently for researching the publication history of species and for verifying the correct citations of literature sources. BHL is substantially less frequently used to find illustrations, and even less for researches on the biology behind the taxonomic name.

Many users download files at high resolution (124 credits), some provide links to BHL sources (for which they need stable URLs) or use BHL for data mining. The bullet point "fulfil a library user's request" obtained the lowest ranking.

Bullet points H (stable URLs), I (data mining) and J (library requests) addressed particular interest groups, who responded more positively to the points than average (the "all users" value for database providers in bullet point H was 64). The low rates of affirmation do not mean that the service was not requested. It means that the service is only requested by particular target user groups.

Occasional users would not do different things with BHL, but just less frequently in every single bullet point.

Total number (bullet point A): 1026

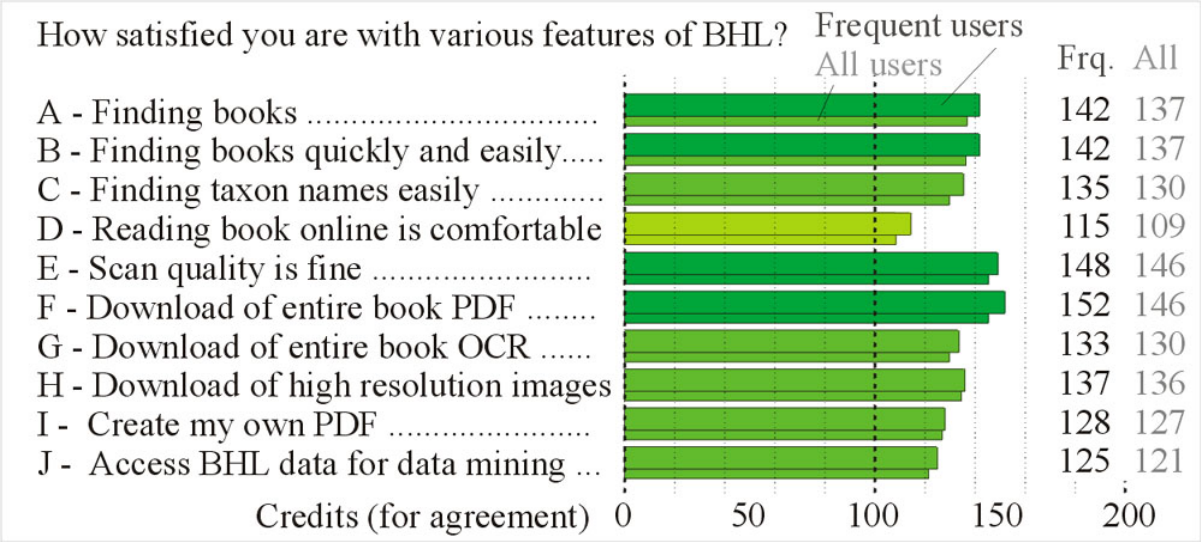
Frequent users total (bullet point A): 366

5.3 Levels of satisfaction

Question 3: We would like to know how satisfied you are with various features of the Biodiversity Heritage Library.

[Scale: strongly agree, agree, neither agree or disagree, disagree, strongly disagree, I don't know/understand]

- A - I find the books I am looking for (by the BHL search function).
- B - I can find the books quickly and easily.
- C - I easily find the taxon names I am looking for (taxon name finding functionality).
- D - Reading the book online is comfortable.
- E - The scan or image quality is fine.
- F - I can easily and quickly download a PDF of the entire book.
- G - I can easily and quickly download the full text (OCR file) of the entire book.
- H - I can easily download the high resolution images of pages I need.
- I - I can easily select pages to create my own PDF.
- J - I can easily access all BHL data for data mining and offline usage.



Users were moderately content with all mentioned features; differences between items were finely tuned. Frequent users were generally slightly more satisfied with the functions. The highest levels of satisfaction were recorded for the PDF downloading function (entire book) and for the scan quality. Slightly lower but still very high levels of satisfaction were registered for the search function (bullet points A and B yielded exactly the same values, the only difference was that A obtained slightly higher values for "*I don't understand*"). The levels of agreement with OCR download functions, high resolution images download and the taxon finder function ranked lower. Still lower support had the create-my-own-PDF function and the data mining access.

The online viewer had by far the lowest level of agreement.

This question had the highest ratings of answers "I don't understand/I don't know". This had partly to do with "first" users not knowing much about BHL. Frequent users knew substantially better what was asked here.

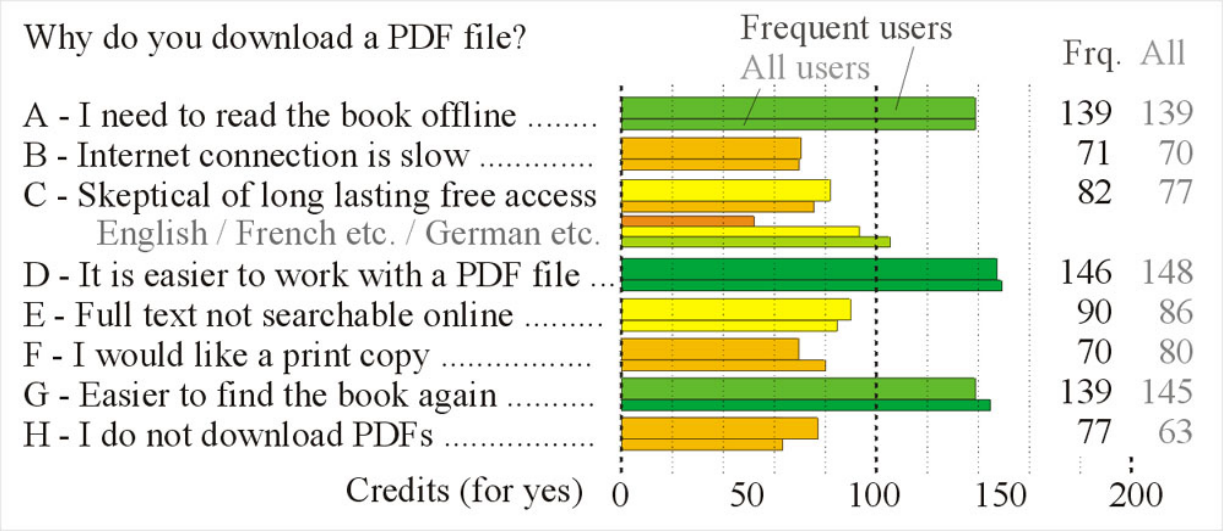
Ratings in% for "I don't understand/I don't know" for bullet points A-J:
All users: 7, 6, 15, 6, 6, 11, 23, 14, 23, 33
Frequent users: 0, 0, 7, 0, 0, 5, 18, 7, 16, 26
Total number (bullet point A): 1023
Frequent users total (bullet point A): 373

5.4 PDF download reasons

Question 4: In this question we would like to understand why you need to download a PDF file.

[Scale: almost always, often, sometimes, rarely, never, I don't know/understand]

- A - Because I need to read the book offline on my computer.
- B - Because the internet connection is slow.
- C - Because I am sceptical that free access to academic/scientific literature will be long lasting.
- D - Because it is easier to work with a PDF file.
- E - Because the full text (OCR file) cannot be searched in the online version.
- F - Because I would like a print copy of the book.
- G - Because it is easier for me to find the book again on my hard disk for repeated usage.
- H - I do not download PDFs, I read the book online.
- Other reason why I download PDFs [free text box]



PDFs are downloaded for a variety of reasons. Highest rankings were recorded for shortcomings in the online viewer and the BHL search function. Computer offline was also important. All other reasons were less important, but none was of minor importance. **Frequent users** has slightly higher concerns for long lasting free access to BHL contents, which corresponds to higher rates of persons who consulted BHL contents without downloading PDF files. **Occasional users** needed PDFs for printing more frequently than frequent users, and they tended to find books again even more rapidly on their own hard disk than frequent users.

4E was unique in this block in that 25% did not understand this question. This concerned also the German survey (25% also there), where the meaning of the term "searchable" was even more finely tuned and misunderstandings would be excluded. The results suggest that searching within the full text of a digitized PDF file is not done by many participants.

4C: Sceptical users (fearing that free access may not be long lasting) were unevenly distributed among participants (average 77 credits). Frequent users were generally more sceptical (82 credits). Surprisingly large differences were recorded between languages. English-language participants (344 persons) were the least sceptical (52 credits) (North Americans had 55 credits), French, Italians and South Americans (140 participants) were more sceptical than average (93-95 credits), German-language participants (143 persons) were very sceptical (103 credits), most sceptical were eastern Europeans and Russians (45 persons, 108 credits). Librarians (92 persons) were much less sceptical (49 credits), this had influence on the low value for English participants in general.

4H: suggests that in roughly 30-35% of the cases PDFs are not downloaded.

Conclusions

Users download PDF files for a variety of reasons. Some reasons can be neutralized by improving BHL functions (PDF reader against online viewer, making it easier to find a book again by improving the search functions) or simply by time (long lasting free access), others not (computer offline). Bullet point H (I don't download PDFs) received surprisingly high rates, even higher by frequent users. It will be important to compare the rating for this bullet point with future surveys.

Total number (bullet point A): 1015

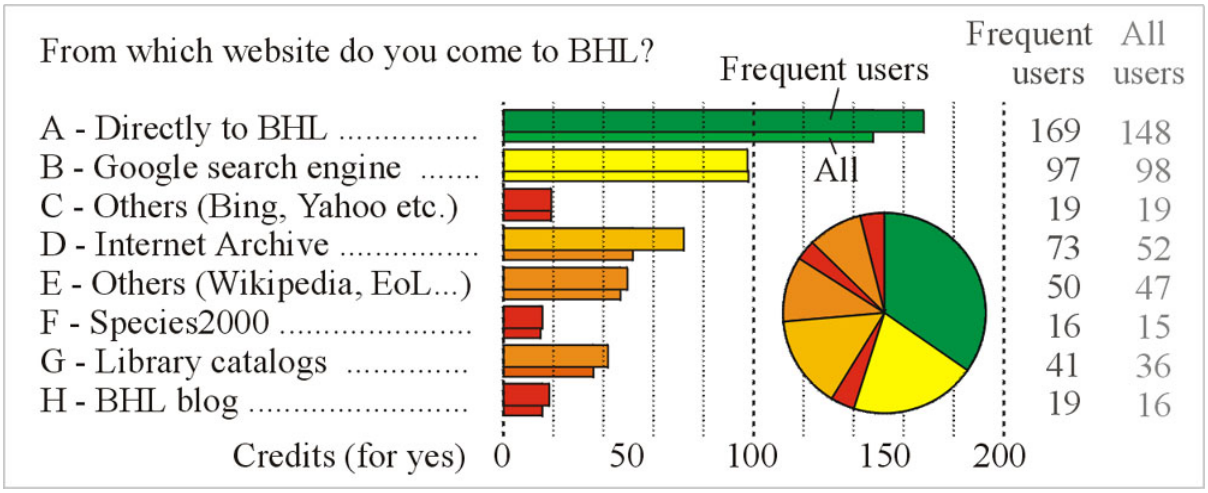
Frequent users total (bullet point A): 350

5.5 Referrers

Question 5: We would like to know from which website you come to the Biodiversity Heritage Library.

[Scale: almost always, often, sometimes, rarely, never, I don't know/understand]

- A - Going directly to the Biodiversity Heritage Library website http://www.biodiversitylibrary.org
- B - Google search engine
- C - Other common search engines (Bing, Yahoo etc.)
- D - Internet Archive www.archive.org
- E - Other websites, for example Wikipedia, Encyclopedia of Life, etc.
- F - Species2000
- G - Library catalogues
- H - The Biodiversity Heritage Library blog http://biodiversitylibrary.blogspot.com/



Most users seem to have bookmarked BHL, especially frequent BHL users. Important referrers were Google, Wikipedia, EOL, occasionally also library catalogues. Other paths were rarely used. Bing, Yahoo and others can be neglected, the BHL blog seems to have only few participants, **Species 2000** was inserted to obtain a negative calibration (Species 2000 does not provide links to BHL). It is possible however, that Species 2000 is used by some participants who get to BHL indirectly via other providers to which Species 2000 provides links.

Frequent users have more commonly bookmarked BHL than the others, and use Internet Archive more frequently, as well as library catalogues. Frequent users use Google exactly as frequently as do occasional users.

We compared the results with those of Google Analytics in the same time period (15 March - 03 May 2010). The results differed markedly:

- Direct traffic: 18.4%
- Google search engine: 49.7%
- Other search engines: 2.5%
- Referring sites: 29%

Conclusions

It will be more important than previously expected to develop strategies for higher rankings in Google. Even for frequent users the Google search engine is much more important than we had thought. Other search engines can be neglected, but it will be important to keep an eye on these, too, since Google's star might be sinking some day. Internet Archive is also important. We received feedback that users tend to look up material found at BHL in Internet Archive in the hope to find the same work in higher quality, for example a Google book.

Other search engines and the BHL blog yielded only slightly higher rates than Species2000, so those were close to zero.

Library catalogues were difficult to evaluate more closely for a better understanding of this point. North Americans had 46 credits, South Americans 24 and Germans 25.

Total number (bullet point A): 1000

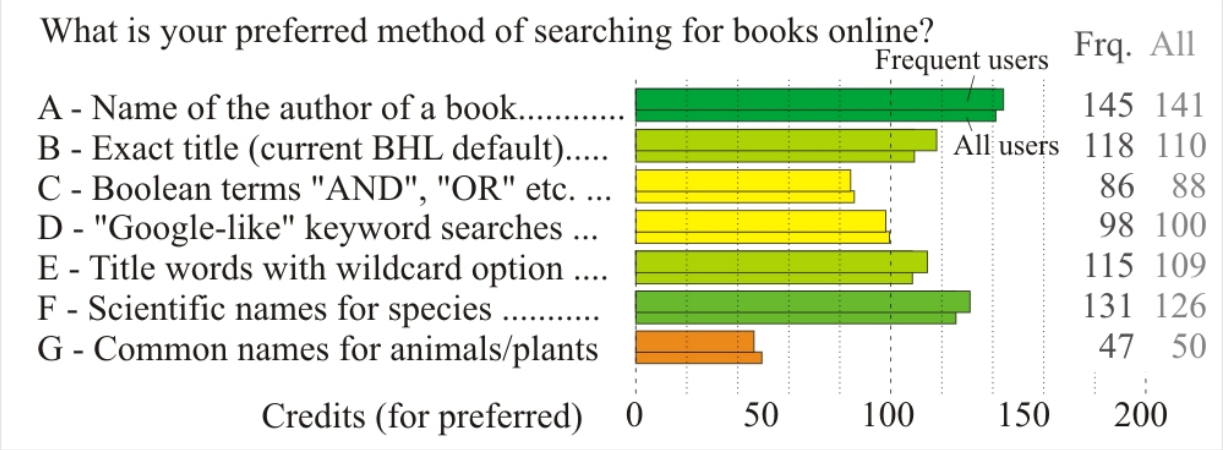
Frequent users total (bullet point A): 367

5.6 Search methods

Question 6: Help us to understand your preferred method of searching for books online. Please rate each of the following search strategies.

[Scale: totally prefer, very much prefer, moderately prefer, slightly prefer, not at all prefer, I don't know/understand]

- A - Search on the name of the author of a book
- B - Search using an exact sequence of letters used in the title of a book (current BHL default)
- C - Perform advanced searches using Boolean terms such as "AND", "OR", or "NOT" between keywords and return a refined list of search results
- D - Perform simple "Google-like" keyword searches that return a long list of search results ranked by relevancy
- E - Search of some words or parts of words of the title, author and/or year of a book, with wildcard option (* symbol), with few results
- F - Search on scientific names for species and genera used in books
- G - Search on common/vernacular names for animals and plants used in books to find information on the corresponding species



Most users searched for the author, but not always and exclusively. There were hardly any differences between frequent and occasional users. Those who were used to the current BHL default function tended to rank this method higher. But they also ranked higher the wildcard option search for titles and authors.

Google-like search was not preferred, even less by frequent users. Google returns too many insignificant results and is not able to search for an exact sequence of letters, incorrect spellings are automatically corrected (it is not possible to search for an uncommon spelling of a name), these are shortcomings in the Google search function.

Not many users use advanced search options with **Boolean terms** like "and", "or", "not" etc. If they do not find immediately what they have been looking for, they prefer to start a new search with other keywords instead of using a Boolean search function. Some comments in the free text questions however suggest that some users do use Boolean search terms. It would be convenient to provide these as an additional option.

Scientific names of species and genera are extremely often searched for. This means that linking taxonomic names with literature sources, as done by uBio tools (taxon finder) or AnimalBase is very important and highly requested.

Common/vernacular names of animals and plants are very rarely looked for (50 credits). A special analysis of the general interest readers and artists (29 persons) gave a value of 95 credits - probably significantly higher but still not extremely much.

Conclusions

The **preferred default search function** following these results would be one like that: author, year and some words of the title, with a wildcard option, yielding as few results as possible, and an independent search function where taxonomic names would be found.

The current BHL default should be maintained as a possible option "exact letter combination in title", so that "relle des mo" could be inserted and return only extremely few results (of a title "*Histoire naturelle des mollusques*").

Boolean terms are not preferred and should only be offered as an extra function on request. The default search function should be able to understand the word "and" as a word belonging to the title.

Total number (bullet point A): 1055

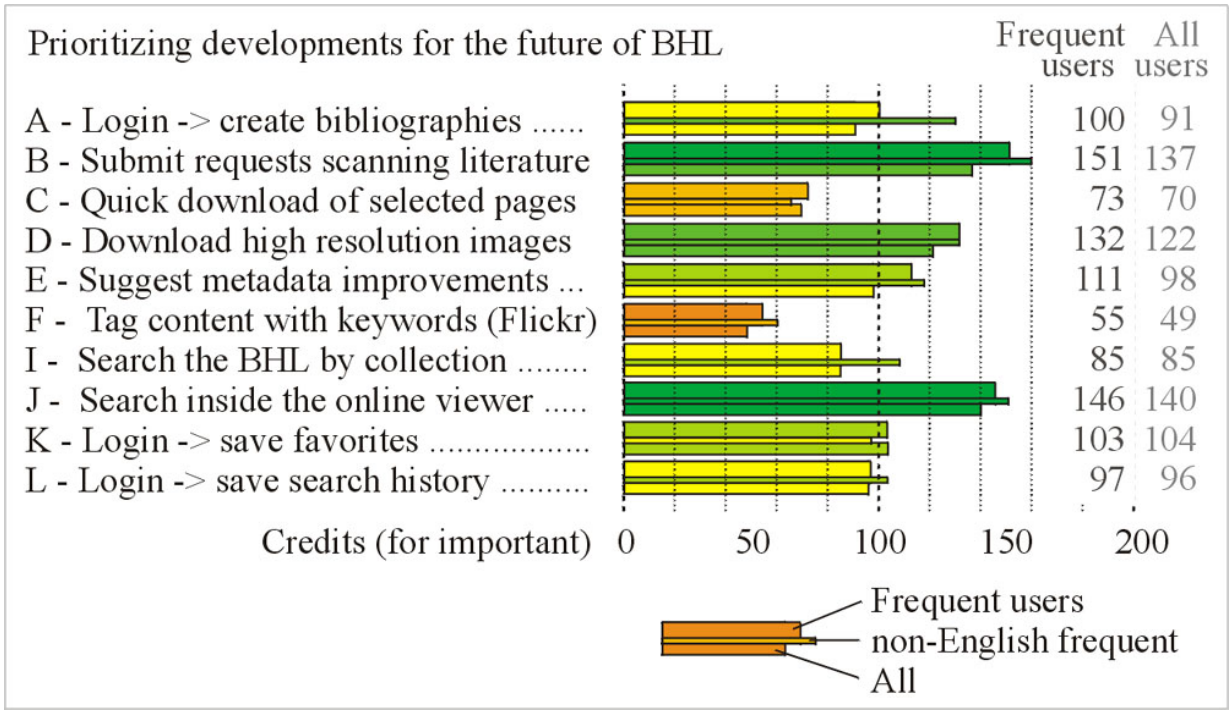
Frequent users total (bullet point A): 372

5.7 Future developments

Question 7: Help us prioritize developments for the future of the Biodiversity Heritage Library.

[Scale: very important, quite important, moderately important, slightly important, not at all important, no opinion, I don't understand]

- A - I would like to log-in to BHL and participate collaboratively with other scientists, scholars, and researchers on the development and refinement of taxonomic/research bibliographies.
- B - I would like to nominate/submit requests for public domain literature to be scanned.
- C - I would like to download PDFs of selected pages more quickly, resulting in low(er) resolution PDFs.
- D - I would like to download a single or selected high resolution page images (vs. downloading high resolution images of ALL the pages within a book).
- E - I would like to suggest improvements to BHL book information. For example, submitting corrections of OCR text, suggest changes of bibliographic data, and add page numbers to unnumbered pages, plates, figures, etc.
- F - I would like to tag BHL content with my own keywords, like Flickr for example.
- I - I would like to search the BHL by collection, for example "Darwin collection" or "Lepidoptera collection".
- J - I would like to search within the full-text of a publication in the online viewer ("search inside the book").
- K - I would like to log-in and save a book or article as a favourite in order to access the content more quickly when I return to BHL.
- L - I would like to log-in and save my searches or access my search history.



Frequent users tended to rank priorities for improvements slightly higher. Non-English users tended to rank priorities higher.

Highest priorities had proposals to submit requests for scanning literature, improvements of the online viewer and high resolution downloads.

Proposals for improving metadata were rated higher by non-English participants (121 credits by all non-English users, 92 by English occasional users).

Login functions ranked considerably lower, the majority rated these as not very important. Highest rates had 7K (saving favourites), obviously in line with responses from other questions that the search function in BHL is not optimal. Weakest values had search by collection, quicker download of low resolution PDFs and (extremely low) tagging content with keywords.

Conclusions and thoughts

Submit requests for scanning literature was the most preferred item for improving BHL. As a quick solution to the problem, BHL set up a scanning request form in BHL that allows users to nominate items for the scanning queue (http://www.biodiversitylibrary.org/Feedback.aspx). Our long-term solution for this problem is the Global References Index to Biodiversity (GRIB). This is a compound index that eventually refers to all of the worlds published biodiversity literature. Here users can pick items they find in the catalogue and nominate them for scanning. The nominated items will be stored in the system to help our partners to manage their scanning projects.

Requests for **download of high resolution images** go in line with improving the create-my-own-pdf service. The big problem is that high resolution images will mostly be requested from colour plates - which in turn have not been marked in the page-level metadata. So there is a question how to realize this. Suggesting metadata improvements is the next important item - and a prerequisite for downloading high-res images on demand.

Quick download of low resolution PDFs had low ratings. This is in contrast with personal feedback, and possibly based on misunderstandings. Users desire a well readable text, independent from the image resolution. Experienced users criticized that text pages scanned often brown on tan, instead of black on white. The tan is not needed for understanding the text, neither is the brown colour of the letters. It would be possible to convert these pages into black-on-white; this would automatically concord with a significant reduction in file size, and also in much faster loading times in the online viewer.

Login functions ranked generally lower. Users prefer a powerful service by default, not restricted to users who are logged in. Login has several disadvantages. Occasional users tend to forget their passwords. Even if the password is known, it takes time to login and enter the password. "Another account, another password", said one participant in the free text answers. Many participants may also have feared that login is the first step for ceasing the free service. But the results suggest that this was not so. The ratings for bullet points 7A, 7K and 7L did not differ in the "sceptical users" group. We analysed 223 persons who responded positively (radio button options 1 or 2) to Question 4C "*I am sceptical that free access will be long lasting*". These had 99 credit points in 7A, 103 in 7K and 95 in 7L, so no visible differences.

Total number (bullet point B): 1029

Frequent users total (bullet point B): 358

5.8 Default portal language

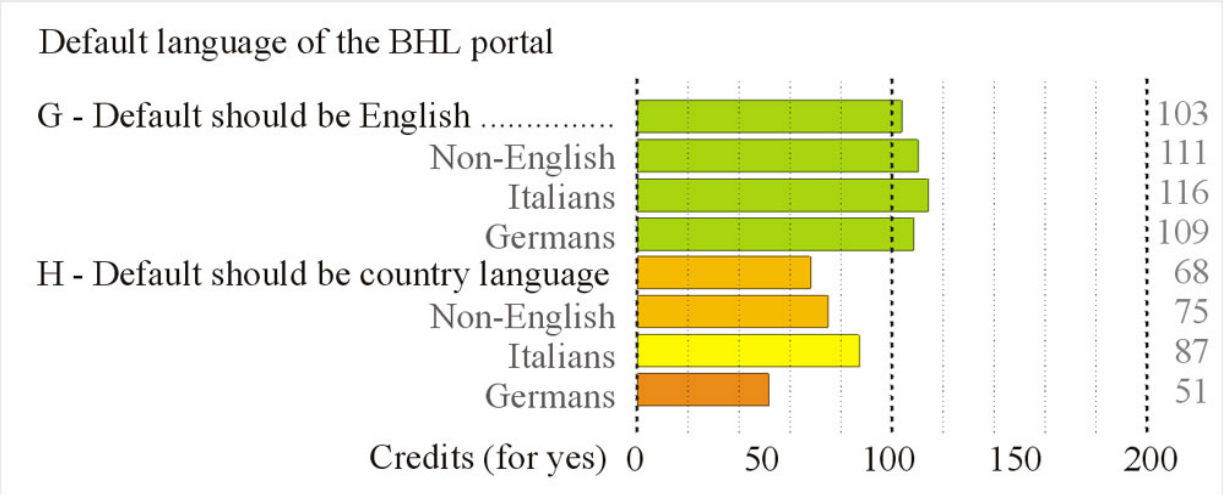
Question 7: Help us prioritize developments for the future of the Biodiversity Heritage Library.

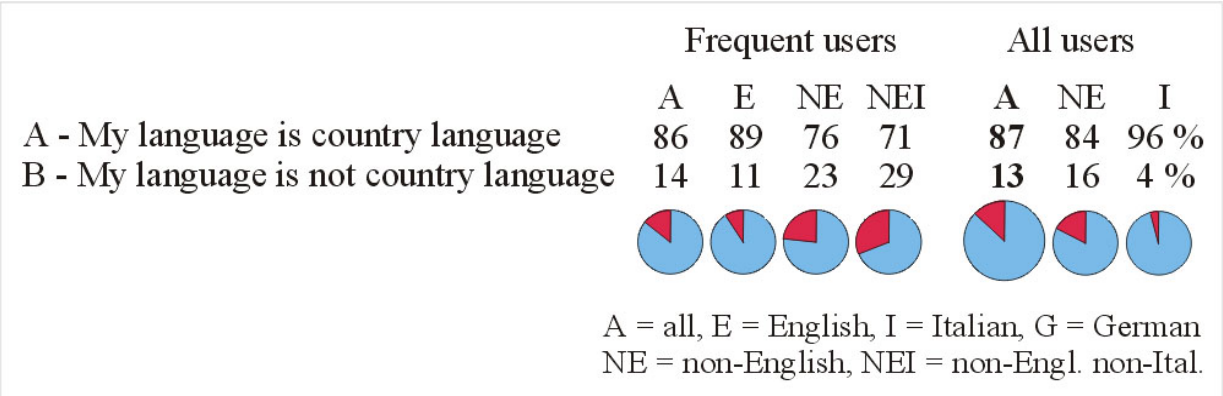
[Scale: very important, quite important, moderately important, slightly important, not at all important, no opinion, I don't understand]

- G - The website language should by default be in English with an option to change the language.
- H - The website language should by default be in the language of the country where I am working with an option to change the language.

Question 16: My language is that of the country where I am living/working.

- A - Yes
- B - No





All user groups ranked English default considerably higher than local language default (except the 37 Spanish participants who ranked 111/109). German native speakers ranked local language extremely low. English native speakers ranked English-default slightly lower than non-English users.

No visible difference was spotted between frequent and occasional users.

Total number (Q7 bullet point G): 1039

13% of the participants worked in countries where a different language was official. This applied less to Italian and English native speakers, and considerably more to German, Spanish and French native speakers.

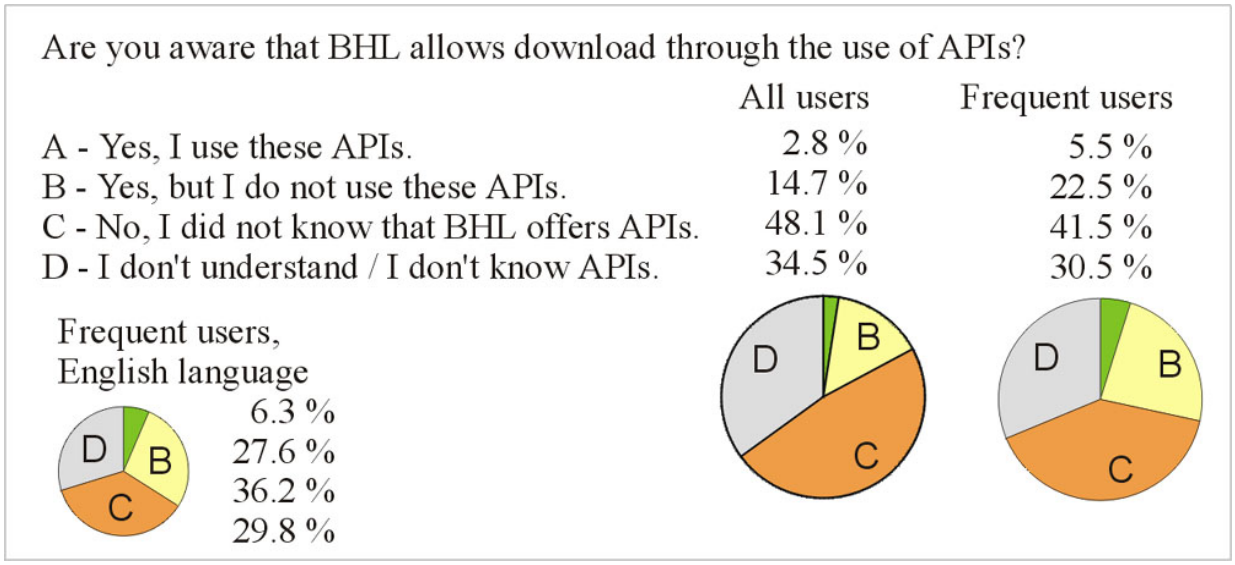
The results suggest that from all points of view and in all countries, English should be the default language of the BHL portal.

Total number (Q16): 1113

5.9 APIs

Question 8: Are you aware that BHL allows you to download all of the data on taxonomic names and book information (such as titles and authors) through the use of APIs (application programming interfaces) and other exportable formats?

- A - Yes, I use these APIs.
- B - Yes, but I do not use these APIs.
- C - No, I did not know that BHL offers APIs.
- D - I do not understand this question / I do not know what APIs are.



APIs were only used by very few participants. Only 30 persons were recorded who actually used APIs. 48% responded that they did not know that BHL offers APIs. Frequent users knew slightly better that BHL offered APIs.

English native speakers understood better what APIs were and more frequently knew that BHL offered APIs, but only 6% (12 recorded persons) actually used these APIs. The ratings for A and B among Germans, French and Italians were below 10%, less than average (17.5%).

53% of the Italian, Spanish and French participants did not understand this question, many more than average (35%).

Total number: 1071

Frequent users total: 364

5.10 Free text answers

Question 9: What features do you find most helpful to use in other digital library websites such as Google Scholar, Google Book Search, Gallica, Botanicus, AnimalBase, etc.?

[Free text answer]

Question 10: Please provide any additional comments you may have about the Biodiversity Heritage Library.

[Free text answer]

These questions were mainly thought to detect new ideas and items we have missed to ask in the questions above.

We received several 100 answers. Most participants either praised our work, or gave a comment that they were not able to give a comment here, or repeated or refined/explained in more detail aspects or subjects rose in the above questions.

The latter comments can be important to understand better the results of the above questions. Most concerned the **search options**. The problem with the **scan quality** presentation was more explicitly explained, several users expressed that they would prefer to read a textbook "black on white" instead of "brown on tan".

New ideas that were brought up by several participants were restricted to the following points:
Content: the need to **fill gaps in serial runs**, and the need to expand the digitized contents to **paleontological works**.

Better access to articles of serials: metadata should be present for articles; articles should be searchable/be returned in result sets.

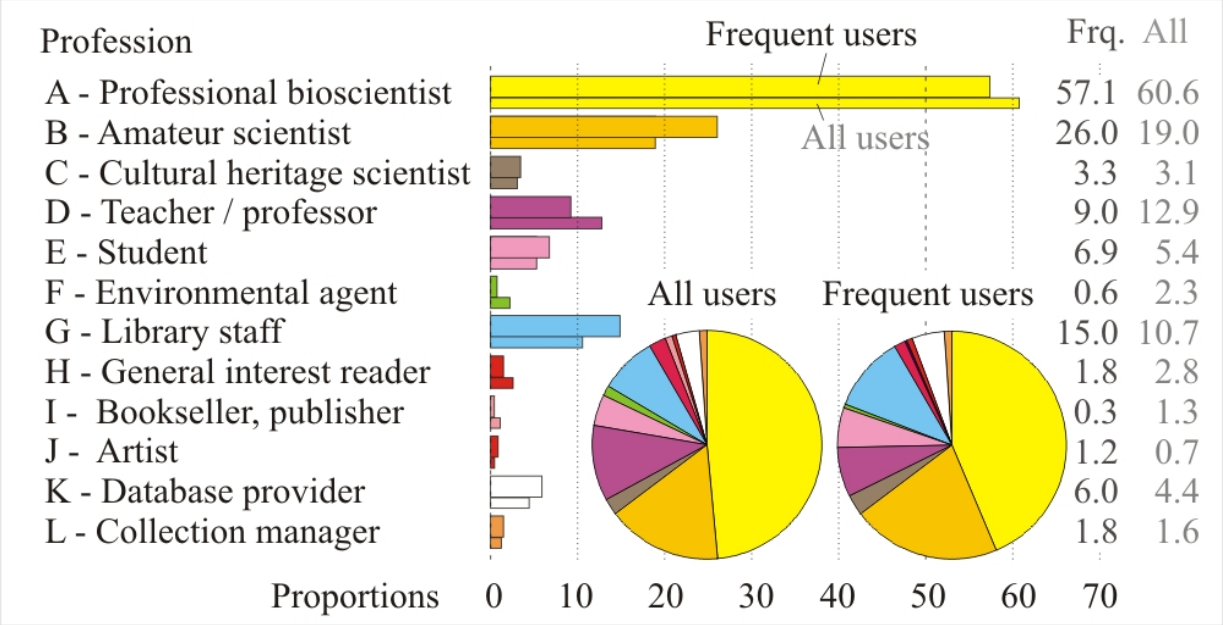
Some other items that were brought up concerned functions that are already available at BHL but users just did not know them, which we identified primarily as a problem of communication.

5.11 User profile, profession

Question 11: In the context of your research needs, what best describes your profession?

[Check-boxes that allow respondents to select multiple options]

- A - Professional bioscientist / researcher (paid)
- B - Amateur taxonomist, hobby scientist (unpaid)
- C - History/cultural heritage scientist
- D - Teacher / professor / educator
- E - Student / school student
- F - Environmental agent, government official, policy maker
- G - Library staff
- H - General interest reader
- I - Bookseller, publisher
- J - Artist
- K - Database provider
- L - Other [free text answer]



Most participants were bioscientists, either paid or unpaid (many professionals added comments that they were retired, others worked full-time but were unpaid due to the lack of funding, and did not miss to complain about that). Multiple answers were possible in this checkbox question.

The proportion of unpaid amateur researchers was considerably higher among frequent users (16% vs. 21%).

Teachers, librarians and students were moderately important groups. Students were more important in the frequent users group.

Database providers, librarians and students had higher proportions among frequent users. All other target user groups participated in low numbers (artists and publishers had less than 10 persons).

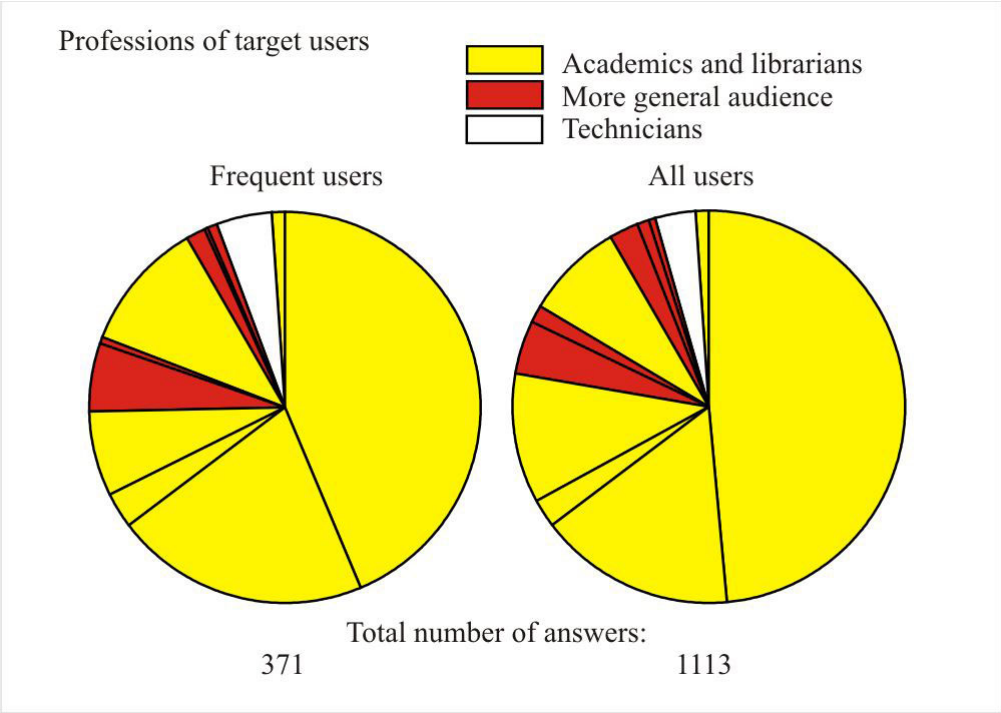
Library staff was a special target user group largely restricted to North America. All languages: all users: 11%, frequent users: 15%

English natives: all users 19%, frequent users 25%

Non-English natives: all users 3%, frequent users 5%

See also the library staff figure under Question 14.

Diagram highlighting the more generally interested readers:



More general audience we targeted reasonably well, although our first user survey was not focused on them. In both groups, frequent users and all users show proportion of 10.2%. We consider as general audience also students, artists and booksellers. We also estimate that some general users are among amateur scientists (the group of amateur scientists was not clearly defined and constrained in the present survey).

Total number of answers: 1335

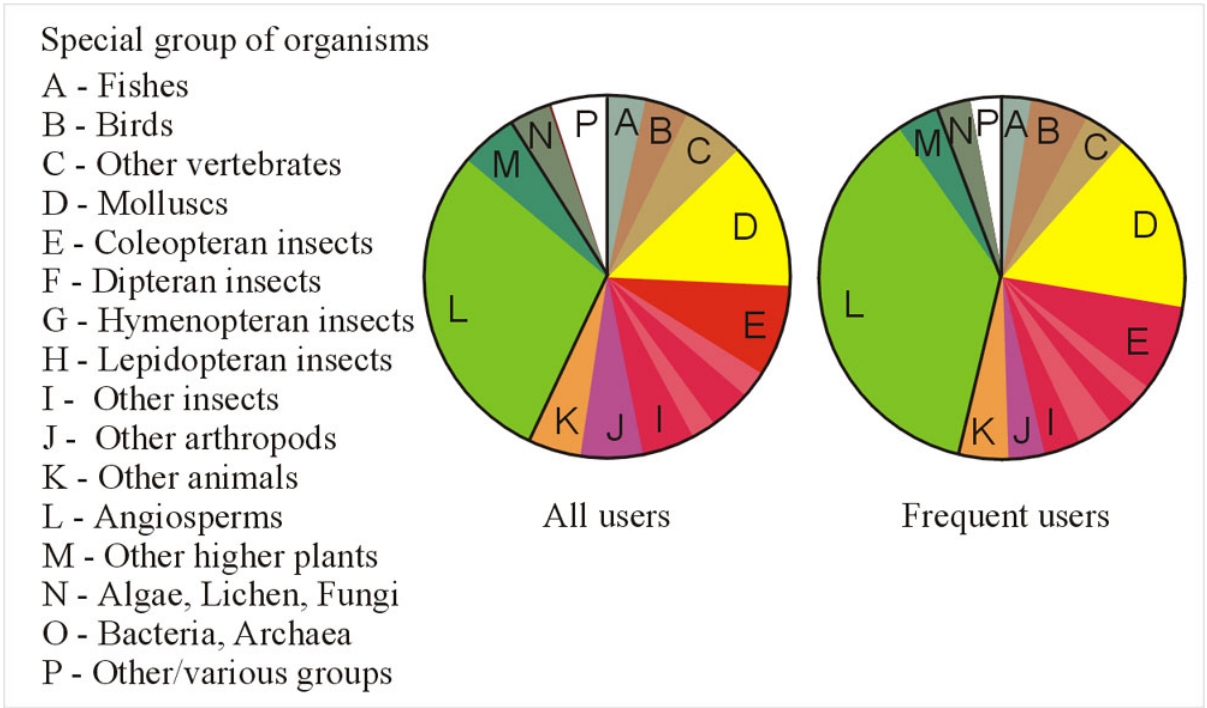
Frequent users: 431

5.12 User profile, specialisation

Question 12: My special group of organisms:

[Select one]

- A - Fishes
- B - Birds
- C - Other vertebrates
- D - Molluscs
- E - Coleopteran insects
- F - Dipteran insects
- G - Hymenopteran insects
- H - Lepidopteran insects
- I - Other insects
- J - Other arthropods
- K - Other animals
- L - Angiosperms
- M - Other higher plants
- N - Algae, Lichen, Fungi
- O - Bacteria, Archaea
- P - Other/various groups
- Q - I have no special group



This question was important to know which kind of literature should be digitised.

Of those who worked on special groups, most participants had only one special group (97% of the frequent users). Zoology had 54%, botany 40% (among the frequent users). Other

organisms (algae, lichen, fungi, bacteria) taken together had ratings below 5% of all users (bacteria only 0.2%).

Botanists worked mostly on angiosperms (36% of the frequent users). Zoologists were specialized in insects (19% of the frequent users), molluscs (16%), vertebrates (12%), and others (8%). The proportion of entomologists was lower than it could be expected from the number of species they have to deal with (75-80% of the animals). Most entomologists worked on Coleoptera, but the other insect groups were also important, there were no exceptions.

It is possible that BHL is considerably weaker in providing insect literature, than for other animal groups. It is also possible that the importance of pre-1900 literature is lower in insects than it is in vertebrates and molluscs.

Total number: 917

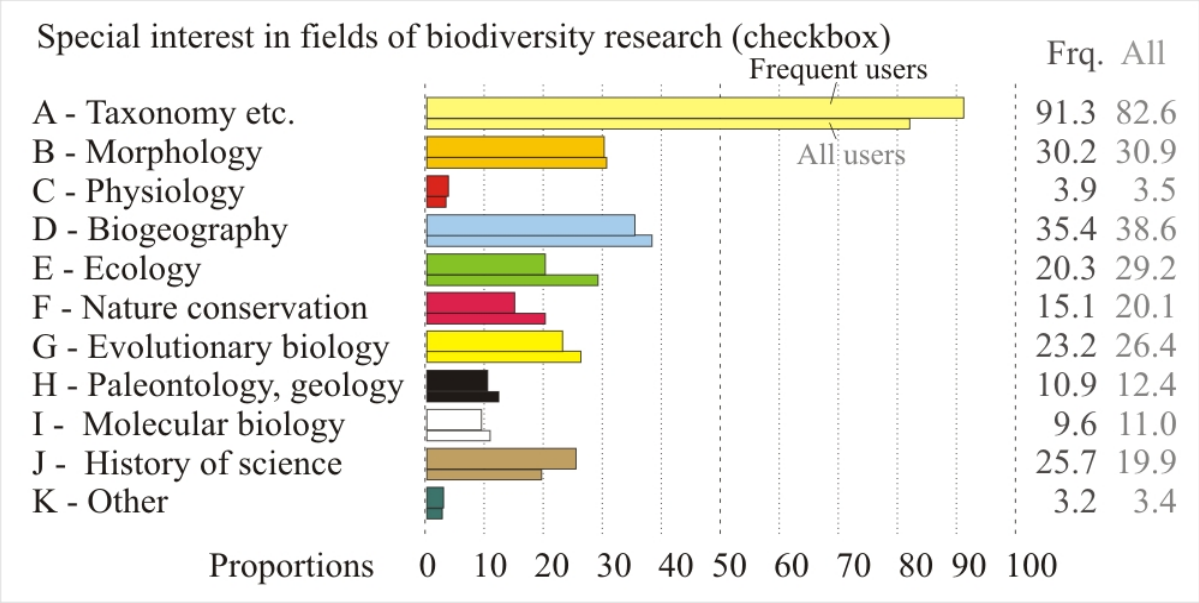
Frequent users total: 311

5.13 User profile, disciplines

Question 13: My special interest is:

[Check-boxes that allow respondents to select multiple options]

- A - Taxonomy/systematics/nomenclature
- B - Morphology
- C - Physiology
- D - Biogeography
- E - Ecology
- F - Nature conservation
- G - Evolutionary biology
- H - Palaeontology, gEOLogy
- I - Molecular biology
- J - History of science
- K - Other [free text answer]



Checkbox options allowed multiple answers. Figures for all users and frequent users exclude the participants of the German survey (because the German survey had a scroll box instead of checkbox options).

The "Other, please specify" option was an open textbox, employed to more potential user groups.

The participants were interested in various different fields of biodiversity research. More than 80% were interested in **taxonomy, systematics and nomenclature** (91% of the frequent users). Many participants selected more than one option (average 3.0 options were selected, 2.8 by frequent users, 3.3% by German users when they had checkbox options). Next to taxonomy, participants were mainly interested in biogeography, morphology, history of science, evolution and nature conservation, more rarely in palaeontology and molecular biology, only very few in physiology and other fields (informatics, ethnobotany, bibliography,

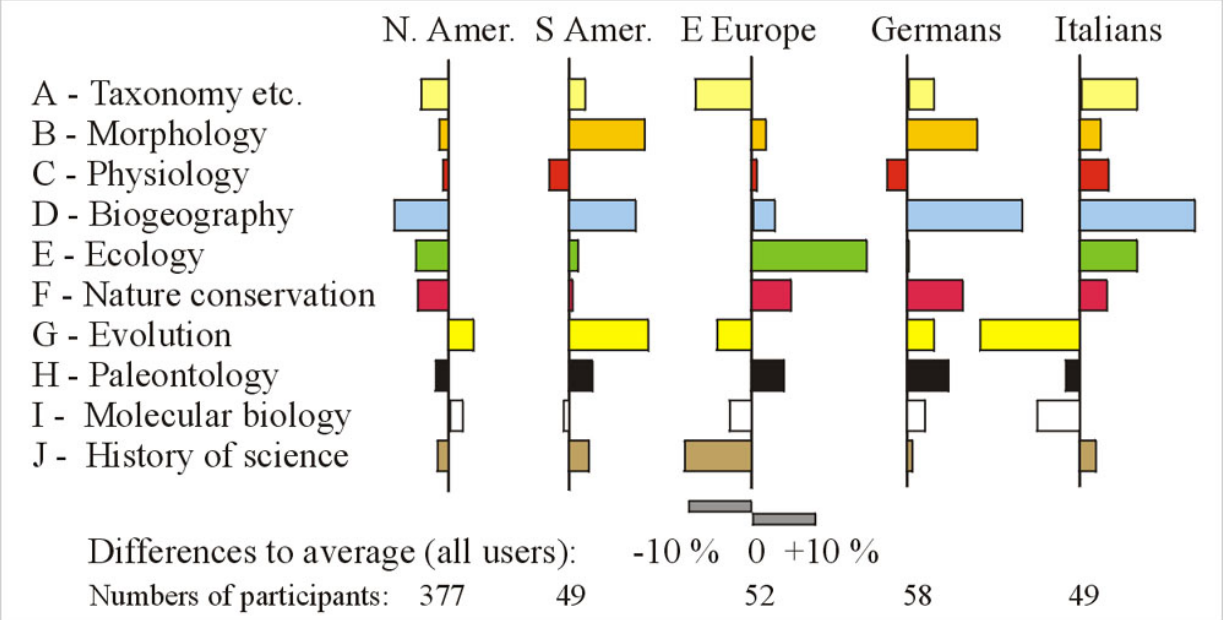
horticulture, archaeology/anthropology, developmental biology and ethology - these disciplines would probably have yielded more responses, had we explicitly given these as options).

We observed differences between various user groups.

Frequent users were much more interested in taxonomy (and nomenclature) than occasional users (only 9% of the frequent users were not interested in taxonomy, 18% of all users, 36% in the 166 participants of the "I have not used BHL before" group). Besides taxonomy, only in history of science the proportion was higher in frequent users (26%) than in the occasional users group (20% in all users).

In other words, BHL is also consulted by people interested in biogeography, ecology, evolution and nature conservation, but visibly less frequently. Those who are interested in taxonomy and history of science consult BHL more frequently than the others.

Regional differences in fields of interest:



Germans, South Americans and Italians had a broader range of fields of interest than average (and selected more checkboxes - this is why the average in each line is not zero), North Americans selected less checkboxes than average in this question.
North Americans were slightly less interested than average in biogeography, ecology and nature conservation, slightly more in evolution and phylogeny.

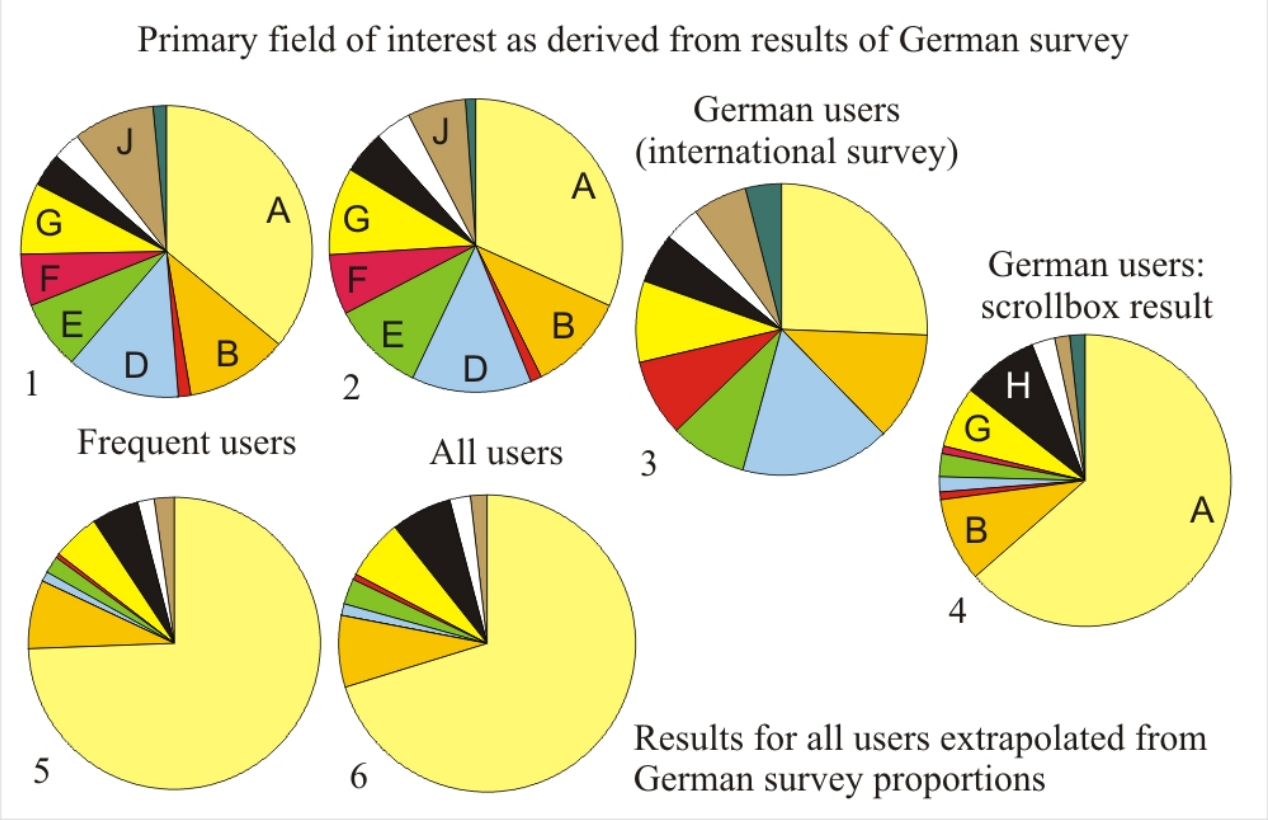
South Americans were more interested than average in evolution, morphology and biogeography.

Eastern central Europeans and Russians were much more interested in ecology, also more than average in nature conservation and palaeontology, and less than average in history of science, taxonomy and evolution.

Germans (when they had checkbox options) were more interested than average in biogeography, morphology, nature conservation and palaeontology.

Italians had their special interests in biogeography, ecology, taxonomy and physiology, and were much less interested than average BHL users in evolution and phylogeny.

Primary field of interest:



In the **German survey** no checkbox answers were possible and participants were forced to select only one item in a scroll box. This allowed us to determine the primary field of interest of these researchers.

Many participants (38, = 33% of the 116 German participants) felt forced to add other fields of interest in the free text box below.

73% of the Germans saw themselves primarily as being interested in taxonomy/nomenclature (64%) and morphology (9%).

The third most important field was palaeontology (8%), which ranked much lower in the overall image above (3-5%).

The proportions derived from the German survey were taken to recalculate the other surveys, and to answer the question *what was their primary field of interest?*. Among the frequent users group we would thus expect that 74% see their primary interest in taxonomy and nomenclature, 8% would have their primary interest in morphology, 5% in evolution/phylogeny, 5% in palaeontology, 2% in history of science, ecology and molecular biology, and only 1% in biogeography and nature conservation.

This suggests that we have four major independent groups among BHL users, accounting for 93% of the audience:

1 - Taxonomists (74%)

2 - Researchers studying morphology, presumably species identification (8%)

3 - Researchers studying evolutionary biology and phylogeny (5%)

4 - Palaeontologists, palaeobotanists (5%)

Total number of answers: 2212

Frequent users answers total: 731

Total number of users excluding German survey: 920

Total number of frequent users excl. German survey: 311

German users English and international survey: 58 persons, 191 answers

German survey participants: 116

Fields of interest and organism groups

Special analysis: distribution of disciplines (fields of interest) among specialists of certain organism groups.

Five groups of specialists were selected for a closer analysis to know more about the distribution of the fields of interest among bioscientists: fishes (29 persons), birds (34 persons), molluscs (119 persons), coleopteran insects (73 persons) and angiosperm plants (262 persons).

Table: proportions listed by specialists, "all" means all users average (from the above Q13 figure), in bold proportions recorded above the average values.

Taxonomy: all 83%, **insects** 100%, **plants** 89%, **molluscs** 85%, fishes 72%, birds 62%

Morphology: all 31%, **fishes** 38%, insects 26%, molluscs 25%, plants 23%, birds 15%

Biogeography: all 39%, **insects** 45%, fishes 38%, birds 38%, molluscs 38%, plants 33%

Ecology: all 29%, **birds** 29%, **molluscs** 29%, insects 26%, plants 22%, fishes 21%

Nature conservation: all 20%, **fishes** 31%, **plants** 21%, birds 18%, insects 16%, molluscs 15%

Evolution: all 26%, **molluscs** 29%, plants 25%, fishes 21%, insects 21%, birds 18%

Palaeontology: all 12%, **molluscs** 27%, fishes 10%, birds 9%, insects 7%, plants 6%

History of science: all 20%, **birds** 24%, plants 17%, molluscs 16%, fishes 10%, insects 10%

Verbal interpretation of these data:

Taxonomy: strongest in insects, above average in plants and molluscs, much less in birds and fishes.
Morphology: above average in fishes, the others slightly below, very weak in birds.
Biogeography: highest rating in insects, but not much lower in the others, least in plants.
Ecology: most interesting for birds and molluscs, but not much less for the others.
Nature conservation: most important in fishes, average in plants, slightly less in the others.
Evolution and phylogeny: molluscs slightly above average, the others slightly below.
Palaeontology: most interesting and much above average in molluscs, much less in the other groups. Should also be high in dinosaurs and trilobites.

History of science: most important in birds, less interesting in the others.

Fields of interest and professionalism:

Special analysis: distribution of special interests among professional and amateur bioscientists. This analysis has the general problem that the border limit between amateur/hobby scientists and professional scientists is poorly defined. Retired scientists did not know how to define themselves (considering their skills they should have selected professional, but since they were unpaid many selected amateur/hobby scientist).

Professional bioscientists (paid):
- Taxonomy: 85.9%
- Morphology: 32.8%
- Biogeography: 38.2%
- Ecology: 26.3%
- Nature conservation: 16.4%
- **Evolution and phylogeny:** 29.4%
- **Molecular biology:** 12.4%
- Palaeontology: 12.0%
- History of science: 14.0%

Amateur/hobby bioscientists (unpaid):
- **Taxonomy:** 90.7%
- Morphology: 30.6%
- Biogeography: 41.5%
- Ecology: 30.6%
- Nature conservation: 17.6%
- Evolution and phylogeny: 16.1%
- Palaeontology: 13.0%
- Molecular biology: 6.2%
- **History of science:** 20.7%

Major differences (> 5%) are marked in bold. There were hardly any differences between the two groups, except that professional scientists were more interested in phylogeny/evolution and molecular analyses (presumably because they have the funds to study on a molecular basis), and that amateur scientists were even more interested in taxonomy, systematics and nomenclature than the professionals. History of science had a higher rating in amateur scientists, possibly due to the fact that many retired scientists defined themselves as amateurs.

Fields of interest and general interest users

Special analysis: distribution of special interests among general interest readers and artists (29 persons) (all = all users for comparison).
- Taxonomy: all 83%, gen. int. = 48%
- Morphology: all 31%, gen. int. = 28%
- Physiology: all 4%, gen. int. = 17%
- Biogeography: all 39%, gen. int. = 52%
- Ecology: all 29%, gen. int. = 41%
- Nature conservation: all 20%, gen. int. = 41%
- Evolution and phylogeny: all 26%, gen. int. = 24%
- Palaeontology: all 12%, gen. int. = 24%
- History of science: all 20%, gen. int. = 40%

General interest readers were much less than our average audience interested in taxonomy/systematics/nomenclature, and much more in nature conservation, history of science, ecology, palaeontology, biogeography and physiology. The needs of this group would be met in a greater extent if more modern literature containing information on ecology and the conservation status, and more palaeontological literature would be provided.

Conclusions

Specialists of various groups of organisms use BHL for slightly different reasons. Those who are interested in birds use BHL more for gaining information on the ecology and history of science, in fishes information on the morphology of the species is very important, malacologists have a broader variety of interests, entomologists are almost all taxonomists who are much interested in biogeography, and botanists are mainly interested in taxonomy and systematics.

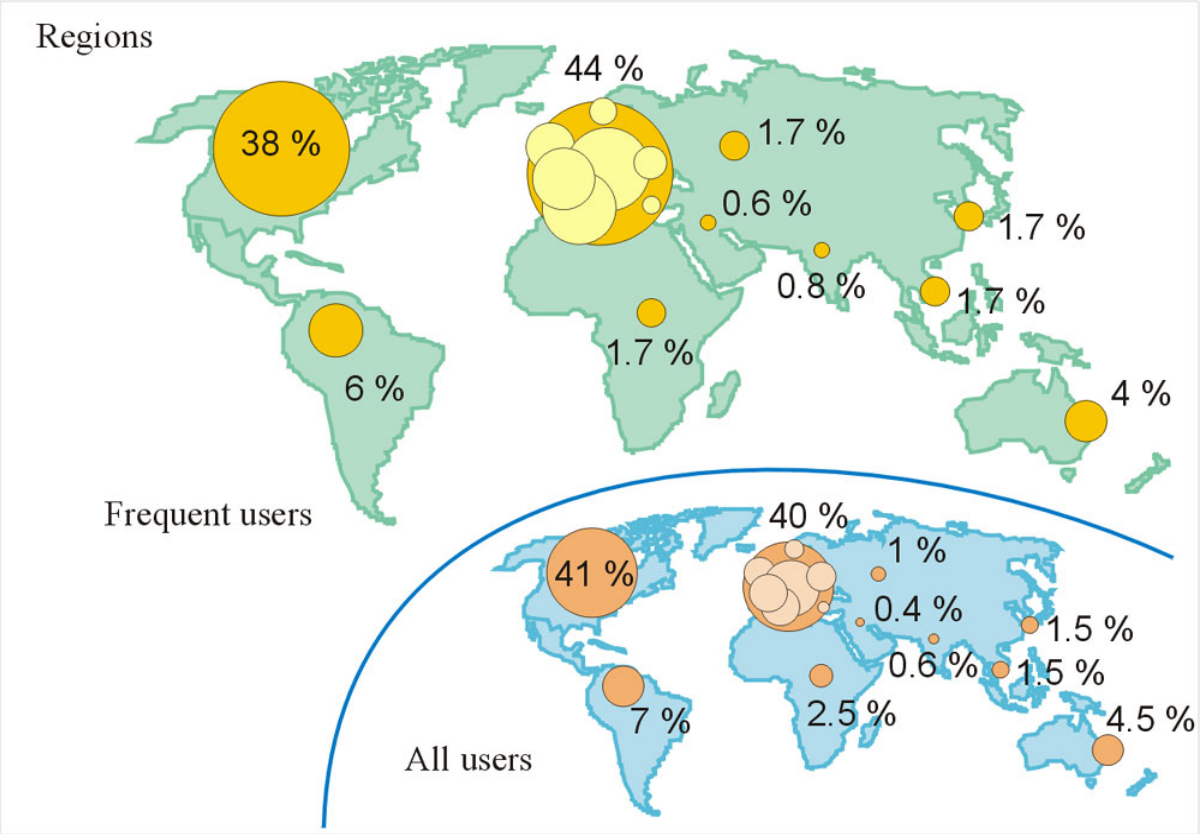
If the data represent the community adequately, then this would suggest for example, that more ornithologists could be attracted if more modern literature would be available with ecological information, more ichthyologists could be attracted by including red data lists and other information on nature conservation, and more entomologists could be attracted by more efficient analyses of the digitized literature in terms of geographical data.

5.14 User profile, regions

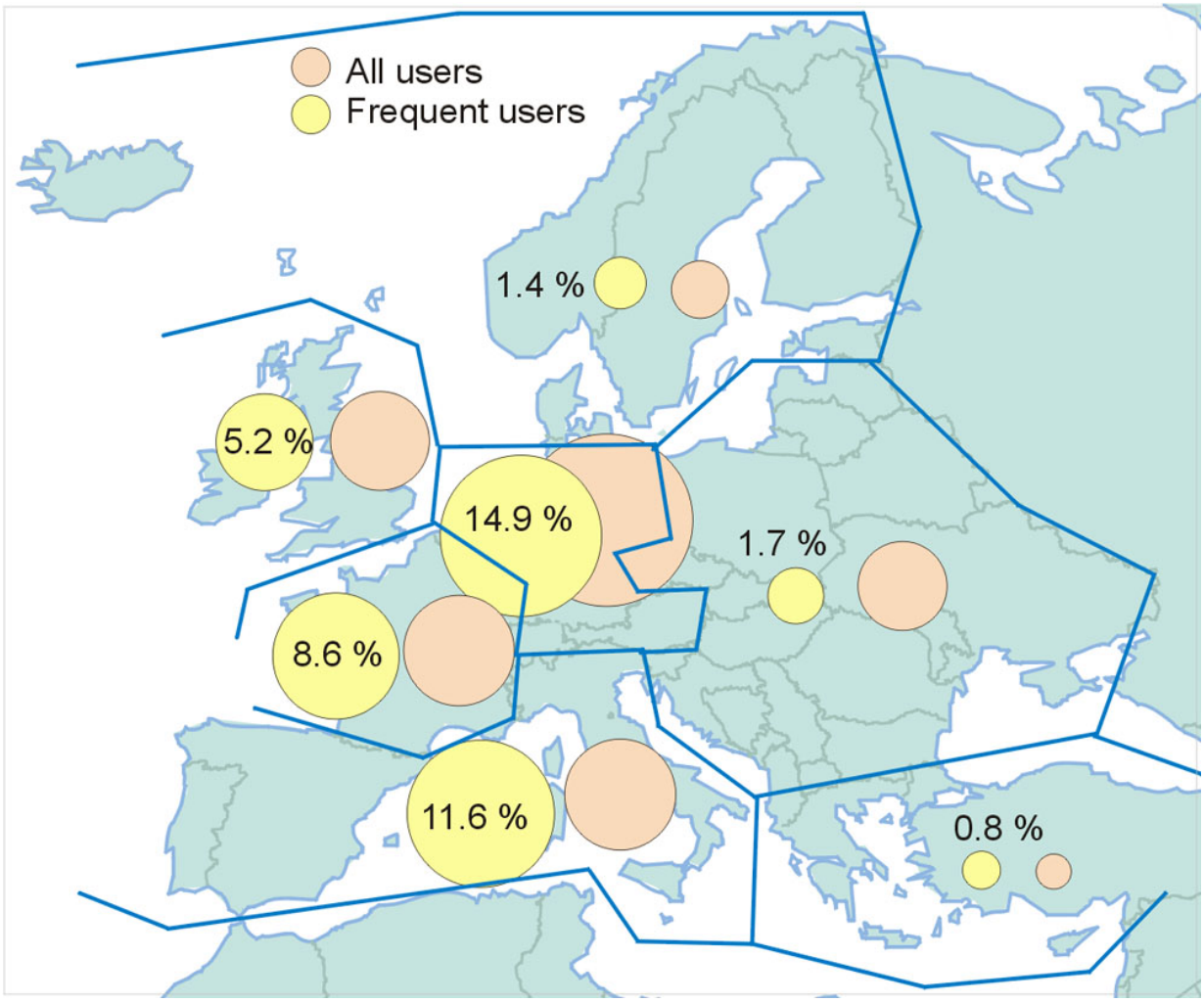
Question 14: The region where I am working is:

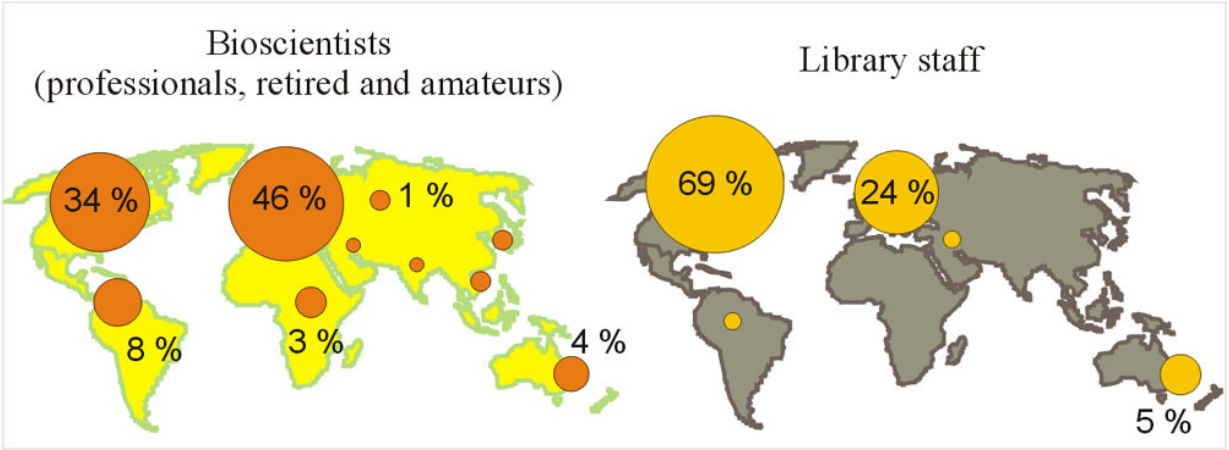
[Select one]

- S Pacific, Australia, New Zealand
- China, Korea, Japan
- South Asia
- Southeast Asia
- Near East to Iran
- Russia and central Asia
- Greece, Turkey, Cyprus
- E Central Europe and SE Europe (Latvia to Bulgaria)
- Italy, Spain, Portugal
- France, Belgium
- Netherlands, Germany, Austria, Switzerland
- British Isles
- N Europe (Scandinavia, Estonia)
- Africa
- USA, Canada
- South America to Mexico, Caribbean



Most participants came from North America and Europe. Europeans tended to consult BHL slightly more frequently than North Americans.





Within Europe, participants came from various countries in Britain and central and southern Europe (Germany, Netherlands, France, Spain and Italy). Less participation was recorded from Scandinavia, Eastern Europe, Greece and Turkey.

Most eastern Europeans were occasional users. The proportion of frequent users was unusually high among participants from Spain and Italy.

We detected two main groups of users: **bioscientists** and **librarians**. Their distribution was globally unevenly distributed.

Librarians came mostly from North America, some from Europe and Australia, while bioscientists came from various different regions, many from Europe, one-third from North America, also many from South America.

Total number: 892

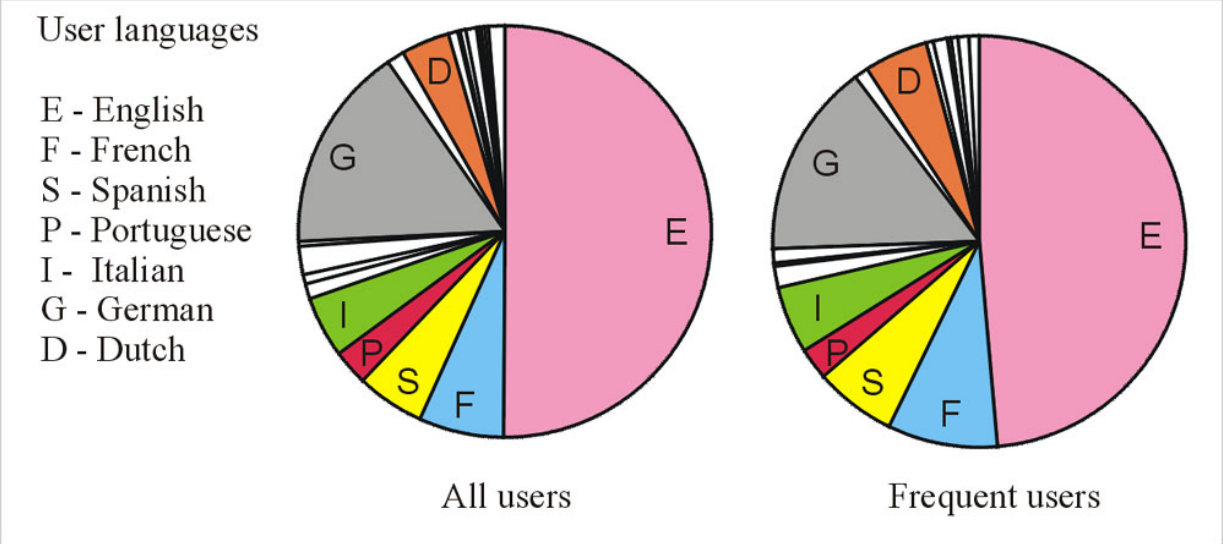
Frequent users total: 310

5.15 User profile, languages

Question 15: My native language is:

[Select one]

- English
- French
- Spanish
- Portuguese
- Italian
- Russian
- Polish
- Czech
- Other Slavic
- German
- Swedish, Danish, Norwegian, Icelandic
- Dutch
- Hungarian
- Finnish, Estonian
- Other European
- Chinese
- Japanese
- Other East Asian
- Arabic
- Turkish or central Asian
- Hindi or other south Asian
- Other



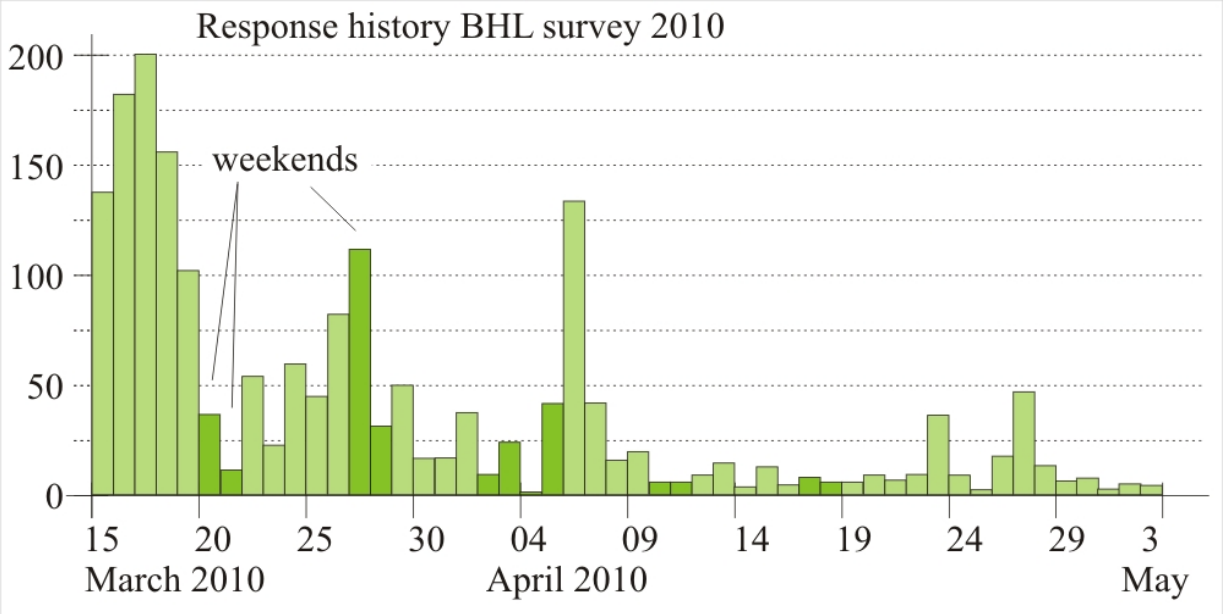
50% of the participants were English native speakers, 50% spoke other languages. There were only weak differences among frequent and occasional users.

Among the most frequently recorded other languages were German (16% all users, 15% frequent users), French (7 and 9%), Spanish (5 and 6%), Italian (5%), Dutch (4 and 5%) and Portuguese (3%). Czech and Russian had 1-2%, Scandinavian languages together 1%, Chinese 1%, all others together 5 and 3%.

Total number: 1082

Frequent users total: 360

5.16 Survey history: answers by date



Total number of answered surveys: 1716 (21 April) (1563 until 06 April)

Total number of successfully answered surveys: 958 (Question 1) (= 56%) (759 until 06 April)

Due to a bug in the Survey Monkey program, 50% of the answers until 06 April were not recorded by the program (and lost). We did not find the reason of this bug; the Survey Monkey support did not know the exact reason either. It had to do with the various different language versions and with the fact that some questions had to be skipped in the course of the language choices. After 06 April we set up one single English survey with some multilanguage components and removed the skip options. This brought the solution, the success rates increased immediately to more than 90%.

Total number of answered surveys after 06 April: 153

Total number of successfully answered surveys: 143 (Question 1) (= 93%)

5.17 Survey languages: levels of understanding

We analysed the survey in the objective to get to know if and to which extent non-English participants had more difficulties in understanding the questions of the survey.

Each bullet point of questions 2, 3, 4, 5, 6 and 7 had the option to select "*I don't know/I don't understand*". (We should perhaps have inserted somewhere a bullet point that gave no sense at all, to get a negative calibration to see how many actually liked to admit that they did not understand).

34.5% selected option D in Question 8 "*I don't understand/I don't know what APIs are*". Higher rates were recorded for this bullet option among Italian, Spanish and French participants, but this was combined with knowledge on APIs and did not exclusively refer to language.

Highest levels for not-understanding were recorded for bullet points **3J** (data mining, 33% of all participants), **4E** (full text not searchable in online viewer, 25%), **3I** (create-my-own-PDF, 23%), **3G** (download OCR file, 23%), **3C** (taxon name finding functionality, 15%), **3H** (download high resolution images, 14%), **3F** (download PDF, 11%), all others were below 10%. Surprisingly, the equivalent bullet points in Question 7 did not obtain high rates for *I don't know/I don't understand* (worst understood in this question was bullet point 7F (tagging BHL content with keywords like Flickr, 6%)).

Bullet points 2B-2G, 6A and 7G obtained below 1% and were best understood. Average levels of non-understanding regarded by question were the following: Question 2 (2%), Question 3 (14%), Question 4 (3%, excluding 4E), Question 5 (2%), Question 6 (2%), Question 7 (2%). Question 3 "how satisfied are you with BHL features" was worst understood.

6 Conclusions

With this survey we were able to reach 1877 users of the BHL portal (1563 until 06 April; 314 after 06 April; total number of successfully answered surveys: 1063; 759 until 06 April. They answered 15 questions. Their answers generated the following outputs:

1) The **search function** should be improved (and we have a precise guide how).
2) The **set of results** should be refined and **metadata** improved.
3) The **default language** of the portal should be English in all countries.
4) The **online viewer** is important and should be improved.
5) The main target user group is **taxonomists** (55% zoologists, 40% botanists).
6) Scientific users come from **Europe** (45%), **North America** (35%), South America (8%) and Australia (5%).
7) For attracting new user groups it is indispensable to scan more recent literature, published after 1920.
8) The **Google** search engine is an important referrer.
9) Google books and Google scholar are important competitors.

The results of the user survey and its impact on our development goals and project plans will be considered alongside the various influences listed in 2.1. This will feed the BHL-Europe use case development over the next weeks. The IT development team will take the use cases for the portal and system implementation work. A refined workplan will be developed this summer to incorporate short-term goals and high priority functions for the BHL-Europe prototype to be delivered this fall. The following table gives an overview of short term and long term collection and technical development goals based on the survey data (Table 2).

Table 2: First draft of short-term and long-term project development goals based on the survey data alone. This list is neither comprehensive nor does it consider the other influences listed in section 2.1.

Question	Goal
1	News about collection and technical developments should be expanded in order to better reach users who use BHL and BHL-Europe occasionally or rarely.
1	Effective use of social media to disseminate BHL-Europe to the public.
2, 3 & 6	Improve the OCR text especially for historic works or items with non-standard typeface to enable the taxonomic name finding service to identify and index the taxa within these works.
2 & 7	Allow users to download selected high resolution images from a book/volume.
3	The current BHL search functionality is satisfactory for over 2/3 of users. Establish an improved search functionality on the BHL-Europe portal that is satisfactory for at least 3/4 of users.
3	Users are mostly satisfied with the quality of page images, but there is a need to provide updated documentation on digitisation standards. This documentation will be provided with the BHL-Europe best practice guide.
3 & 4	Prioritise the delivery of PDF documents for the available content. Continue to make improvements to the "select pages to download" PDF service based on documented user feedback.
3 & 4	Allow for the download of B&W PDFs for 96% of the collection.
6	Users reported that they most prefer searching by author name. Establish mechanisms to facilitate this.

6	Enable faceted searching to allow users the flexibility to filter search results by various bibliographic parameters such as title, date, author and subject.
7	Allow users to request a book for scanning. The Global References Index to Biodiversity (GRIB) will have this functionality. BHL currently has incorporated a scanning request form into the feedback functionality.
7	Enable the ability for users to "search inside the book", requiring the full text indexing of all content.
7	Enable users to address errors in OCR, book pagination and/or metadata, for example.
7	Enable the ability for users to log-in and save books/volumes or articles to their favorites.
7	BHL-Europe portal will be in English as the default with the option to change the language.
13	Collection development should prioritize content that support scholarship for the following subjects, in ranked order: 1) Taxonomy, systematic and nomenclature 2) Biogeography 3) Morphology 4) Ecology and Evolutionary biology 5) History of Science
13	Create lists of priority taxonomic works for Zoology and Botany and ensure that all public domain works are entered into the BHL-Europe acquisitions queue. The Global References Index to Biodiversity (GRIB) will be this priority list.

For our next user survey in 2011:

1) We will repeat the questions from this survey and compare responses, to see if eventual improvements will have been acknowledged.
2) We will be able to see if new target user groups will have been attracted.
3) We would not need to set up several different language versions of the survey, but it would be convenient to allow free text responses in various languages.
4) To know more about our potentials to attract general interest readers, and to know more about our limits, we maybe ask a question, from which time period do you currently use material digitised by our partners, and which time period would you need material.

We will also focus on the following items:

1) Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the portal?
2) Efficiency: Once users have learned the portal, how quickly can they perform tasks?
3) Memorability: When users return to the portal after a period of not using it, how easily can they re establish proficiency?
4) Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
5) Satisfaction: How pleasant is it to use the portal?