GBIF
3rd Year
Review

February 2005

Executive Summary

Global Biodiversity

The GBIF 3rd-Year Review
Report from the Review Committee

Executive Summary

28 February 2005

Preface

The Review Committee and the Review Team present this report convinced that the Global Biodiversity Information Facility (GBIF) is "the right initiative at the right time with the right goals." At the same time, as is predictable for any new, ambitious, and complex program, there are several areas that warrant attention. We have learned a great deal about the way that this unique international enterprise is developing, the ways it currently is perceived, and what its future promises. We have done extensive investigation and analysis, and we present a lengthy series of recommendations and their rationales. We have tried to make our review, done early in GBIF's 'life', as useful as we could, although GBIF's youth means that we have not yet been able to fully ascertain how some aspects might be better implemented. GBIF's development and growth make it a "moving target", in the best sense.

We appreciate the cooperation of everyone associated with GBIF, especially the members of the Secretariat, in answering our questions and providing other information, and in being adroit in their responsiveness, even adjusting some operations during the review process!

We trust that our recommendations will be received in the spirit that we intend them—that of thoughtful and constructive suggestions.

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The Review Committee

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Executive Summary

I.   Introduction

There are few more pressing endeavors in science or society than understanding the nature and scope of our planet's biosphere. Despite the importance of the world's plants and animals—and microorganisms—in our common destiny, we know surprisingly little about all the beings with which we share our existence. Only about 1.75 million out of an estimated 10 million or more species have been identified and the information on less than 10% of all the collected specimens has been digitized. Much of the information that has been compiled resides in museums and other research institutions that are willing to share it, but have lacked the means to do so in a well organized and globally accessible manner. Improved access to those information resources will help make us better stewards of our environment and can ultimately yield substantial social and economic benefits.

In view of this imperative, the purpose of the Global Biodiversity Information Facility (GBIF), which was launched in March 2001, is to promote and implement the compilation, standardization, digitization, and global dissemination of the world's primary biodiversity data. This work is to be done in close cooperation with established programs and organizations that compile, maintain, and use biological information resources. The countries and organizations that formally participate in GBIF are collaborating on the development of a distributed, online information system that will enable users to access and use increasing volumes of biodiversity data freely and openly on a global basis. In early 2004, GBIF launched its portal, gbif.net, which quickly began to provide integrated access to millions of these distributed biodiversity data records.

According to GBIF's Memorandum of Understanding (MoU), an independent review of GBIF's operations, financial mechanisms, legal basis, governance structure, and links to other organizations was to be conducted in GBIF's 3rd year of existence to determine if any changes are needed. The lessons learned are to be used to evaluate the effectiveness of the governance structure and to recommend any necessary changes. This

Executive Summary—and the full report—respond to GBIF's formal review requirement.

The review was conducted by a committee of six independent scientific experts appointed by the international Committee on Data for Science and Technology (CODATA). The Review Committee was supported in its work by a Review Team of three professional consultants. The review was performed between April 2004 and February 2005, using a combination of empirical and qualitative analytical approaches, which are described in some detail in the first chapter of the report.

Despite the fact that GBIF was established less than three years ago, our fundamental conclusion is that GBIF constitutes an essential step forward in global systematics, and in related biodiversity and ecological research and applications. In our view, if it did not exist, it would need to be created.

The remainder of this Executive Summary presents a condensed version of our principal conclusions and recommendations. Because the full report is over 200 pages, these extracts are highly selective and of course are not able to convey the full meaning or the nuances contained in the body of the report. The next section presents a table with all the review questions from the MoU, which are coupled with our summary conclusions and a reference to the place in the report where the full discussion is located. The final section of the Executive Summary contains our abridged set of recommendations.

II. Review Questions and Summary Conclusions

2 Has GBIF made sufficient and appropriate progress toward getting established as a mega-science undertaking and thereby making scientific biodiversity data freely and openly available over the Internet?

Section 2.2

Whether GBIF has already achieved "mega-science" status or will someday is perhaps a less relevant question than whether it should exist and continue, to which the answer is clearly "yes." Nevertheless, based on the six main criteria that we have selected for analyzing whether GBIF has made "sufficient and appropriate progress toward getting established as a mega-science undertaking," we have made the following conclusions:

- GBIF has made sufficient and appropriate progress toward getting established as a mega-science undertaking in terms of the numbers and distribution of participants and with regard to its core facility in Copenhagen, but has achieved uneven progress in the distributed facilities of its Participants.

- The level of funding is the area in which GBIF has had the greatest difficulties in establishing its mega-science status, and falls short of what is needed even if all the in-country contributions of its Participants are taken into account.

- GBIF is a complex undertaking from many perspectives—organizational, political, technical, scientific, or other applications—consistent with other similar mega-science endeavors.

- GBIF has not yet achieved a level of scientific importance and relevance of a mega-science undertaking, but it has made more than sufficient and appropriate progress toward those goals, consistent with its length of operation and level of funding.

- GBIF has not yet made sufficient and appropriate progress in its importance and relevance to other significant social applications for policy making, education, and general public use, with most of its progress being in the identification of future objectives rather than in actually implementing them as of this early date.

- GBIF is a public mega-science infrastructure project that has made important progress

	in promoting public access to biodiversity data. In summary, GBIF has made sufficient and appropriate progress toward getting established as a mega-science undertaking according to all our criteria, except in its level of funding and in its current importance and relevance to other significant social objectives.
i. IPR: has GBIF developed sufficient and appropriate ways to deal with IPR, access, and benefit sharing issues? Section 2.3	We conclude that GBIF's policy of free and open data access, coupled with proper attribution of the source(s), is well justified and should remain the default rule. Its implementation has resulted in "sufficient and appropriate progress toward making biodiversity data freely and openly available on the Internet." This policy is appropriate for a publicly funded network for data outside market forces, it implements the main requirements set out in the MoU, and is essential to GBIF's leadership and long-term success in public science and public-interest applications. We also conclude that GBIF is developing "sufficient and appropriate ways of dealing with IPR, access, and benefit sharing issues." However, there are several concerns that need to be highlighted. The GBIF policy of free and open access to the data it serves on the Internet is viewed by some potential data providers and Participants as an entry barrier, although GBIF's overall efforts nonetheless are certain to greatly increase open availability of biodiversity data. There also is insufficient understanding of and expertise about IPR issues among GBIF's Participants and data providers, and to some extent even within the Secretariat itself, potentially undermining the organization's data policy implementation and exposing it to possible disagreements. Finally, enforcement of GBIF's attribution policy is difficult under its present implementation.
a. Work Programme: is GBIF making sufficient and appropriate progress in carrying out each of the components of the Work Programme? Chapter 3	There are several cross-cutting and overarching issues identified by the Review Committee that affect the Work Programme. These include the lack of sufficient funding to make as rapid progress as desired on all of GBIF's objectives, the related problem of having only one staff member for each major component of the Work Programme, and the inadequate involvement in many cases by GBIF's Voting Participants and Associate Participants in supporting and implementing GBIF's objectives and Work Programme elements. Also, a lack of benchmarking in the Work Programme was noted by many Governing Board respondents to our questionnaire. With regard to the individual components of the Work Programme, we conclude that GBIF is making sufficient and appropriate progress in carrying them out. This progress is understandably uneven, as the more detailed analysis in the full report describes.

g. Links to International Conventions: has GBIF developed sufficient and appropriate links to the various international conventions dealing with biological diversity? h. Links to Other International Organizations: has GBIF developed sufficient and appropriate links to other intergovernmental, non-governmental and other scientific organizations dealing with biological diversity and informatics (e.g., Biosis, IUBS, CODATA)? Section 3.6	We conclude that GBIF has developed sufficient and appropriate links to the Convention on Biological Diversity, but less so to the other conventions dealing with biodiversity issues. Similarly, GBIF has developed sufficient and appropriate links to its highest priority external organizations, but considerably less so among organizations of less central importance. GBIF has been successful in its communication and outreach to all types of external organizations to the extent that there do not appear to be any strong negative views about GBIF among them. Nevertheless, more visibility of GBIF internationally would be desirable. GBIF ultimately will need to establish relations with a broader and more diverse set of organizations and to make its connections to them (e.g., to the biomolecular community) more visible.
e. Nodes: have the Participants made sufficient and appropriate progress toward setting them up and sharing data through them? Section 3.7	The Review Committee concludes that the progress of the Participants toward setting up nodes and sharing data through them is highly variable and cannot easily be summarized. A number of strengths and weaknesses of the Nodes activities are presented in the report.
3. Has GBIF achieved sufficient profile and uptake within its target audiences? (focus on gbif.net users) Chapter 4	We obtained a fragmented picture of what the actual and the potential uses of the portal are, but the support seems to be strong in the GBIF community as well as among most experts and users. Of course, it is important to emphasize that the portal is still just a prototype, but the overall experiences with the portal have been generally positive even though the content and the functions there are incomplete. The knowledge of GBIF is quite high and increasing among its primary audience in the scientific community, but still low among its secondary audiences, including the broader scientific community. The Review Committee finds it acceptable that GBIF is not very widely known beyond its core scientific base, since the portal is still a prototype. Nonetheless, it indicates the need for much more vigorous outreach activities in the future. It also underscores the need for more demonstration projects that show the potential of gbif.net and the various applications of the data accessible from there. More important, it also emphasizes the need for developing features and interfaces targeted to the specific user groups in order to reach them properly. The perceptions of the existing outreach activities are varied, but can be summarized as follows: • GBIF is still not very active in its outreach to potential users beyond the immediate systematics community, where outreach has had an impact. • This lack of broad outreach is generally considered acceptable in the short run, since the portal is currently aimed at a highly expert audience. As long as gbif.net lacks user-friendliness and broad applicability, outreach to non-expert users should remain limited. • The nodes are crucial for further outreach – especially for the broader scientific communities in the participant countries and organizations. • There is an apparent need for good examples – demonstration projects – showing the

full potential and usefulness of GBIF data. In general, demonstration projects have lacked sufficient attention and resources.

- No user group surveys have been conducted (and our questionnaire was very limited). Therefore, it seems that there is only a limited knowledge of the demands for functions among the different groups of users outside the GBIF community. The needs from a nodes perspective have been surveyed, however.

In summary, the Review Committee encourages GBIF to be cautious in its outreach to users due to the near-term deficiencies of gbif.net. We nonetheless expect that preparations for comprehensive outreach activities will be made soon, focusing on users in the scientific communities, education, and policy making.

Conclusions on Participation in GBIF:

1. Have the present organizational structure and funding been sufficient for GBIF to achieve its goals?

b. Governance Structure: Should GBIF continue with two kinds of Participants?

f. Voting Participation by Intergovernmental, Non-governmental and Other Organizations: the Rules of Procedure do not currently allow these organizations to be Voting Participants, and state that the possibility of offering Voting Participation to these entities should be considered in the third-year review.

Section 5.2

The Review Committee recognizes the value of the current categories of Participants in GBIF. The categories – Voting and Associate participation – are well adopted in the GBIF community and also widely accepted. However, the information and opinions presented by the GBIF community raise some concerns in the Review Committee. We conclude that the two existing kinds of participation are not sufficient to cover the relevant stakeholders of GBIF and it will be necessary to formally recognize other sorts of participation.

The committee is uncomfortable with the stagnation in the addition of dues-paying country Voting Participants coupled with a steady increase in Associate Participant countries and organizations that do not pay dues (although many do provide some in-kind support), since the total number of Participants is a cost driver for GBIF.

It is clear to us that the GBIF community generally accepts and supports: (1) the distinction between Voting and Associate Participant status, notably that only contributing countries have voting rights, (2) the presence of both countries and international organizations as a prerequisite for implementing the vision of GBIF, and (3) the current link between the payment of dues and voting. However, the difference between Voting and Associate Participant status appears to be rather insignificant, because most decisions are taken by consensus.

The GBIF community clearly accepts that countries can be Voting Participants and that non-governmental organizations can be Associate, but not Voting, Participants. It is not appropriate, however, that countries are able to maintain their status as an Associate Participant indefinitely. We also conclude that non-governmental and other organizations should not be allowed to gain Voting Participant status, whereas inter-governmental organizations should be.

The legitimacy of GBIF is based on having truly global support, as well as on a highly usable portal. Thus, bringing more Participants into the GBIF community is vital for the organization. Seeking new sources of funding and restructuring its governance will be necessary for GBIF regardless of whether there is an increased number of Participants. This is needed because GBIF is changing organizationally from a developing mode to an operational status.

Conclusions on GBIF's Governance:

b. Governance Structure: do the Rules of Procedure serve GBIF well?

c. Legal Basis: GBIF is an independent organization, based on a non-binding, voluntary MOU. Is this basis sufficient and appropriate?

d. Operations of the Governing

The Rules of Procedure (RoP) generally serve GBIF well and are by and large supported by the GBIF community. Nevertheless, the Review Committee concludes that the MoU and the RoP in several respects need to be better aligned with each other and with the operational considerations that have become evident since the establishment of GBIF. The areas that may need modification are described in the report.

With regard to the question of legal instruments on which to base GBIF, we are convinced that the choice of an MoU instead of a treaty was correct and explains why GBIF was formed rather quickly. A non-binding, voluntary MoU is not only sufficient and appropriate; we also believe that it will not be possible to find support for elevating this legal status to a binding agreement.

GBIF's governance system has been sufficient thus far to achieve the organization's goals.

Board: are they appropriate and efficient? Section 5.3	There are basically two ways to go with the governance structure: (1) keep the existing governance structure, in which the Governing Board is the main forum for handling political, managerial, and programmatic issues, or (2) redefine the governance structure by decoupling the politics and science. The principal argument for keeping the existing structure is that it is established and is generally considered to work well. However, we acknowledge the concerns presented to us regarding the absence of 'real' science in the Governing Board, the difficulties in segregating Voting Participants from non-voting, the increasing difficulties in stimulating discussions as the number of Participants accumulates, and the related expectation that the efficiency of the Governing Board will diminish.
Conclusions on GBIF's Funding k. Financial Mechanisms: should the Financial Contributions for Voting Participants and procedure to handle those (Annex I of the MOU) be changed? l. Additional Funding: has sufficient and appropriate progress been made by the Participants in increasing their in-country or intra-organizational investments in biodiversity information infrastructure in support of GBIF, as the Memorandum of Understanding encourages them to do? Section 5.4	The present funding has been sufficient for GBIF to achieve its goals in the initial phase of establishing GBIF and the Secretariat. It is obvious to us, however, that the next phase will require an increased level of funding in order to be able to continue the activities laid out in the Work Programme and to stabilize the present development of GBIF. A very acute need for increased funding is in the Secretariat, which is too thinly staffed even for its present level of activity. Although there are various barriers to increasing the total level of funding, as discussed in the report, we conclude there are a number of options for doing so. These include: more vigorously recruiting new Voting Participant countries and inter-governmental organizations; converting Associate Participant countries to Voting Participant status; increasing the level of financial contributions for Voting Participants; taking inflation into account in the dues structure; and changing the currency in which dues are paid from the US dollar to the Euro. These measures together can help stabilize and improve GBIF's finances significantly. We have not been able to uncover fully whether participants have made sufficient and appropriate progress in increasing their in-country or intra-organizational investments in biodiversity information infrastructure in support of GBIF. Clearly, efforts are being made – although very unevenly. One indication is the number of nodes. Another is the significant amount of data already provided to the network. However, too many Participants have not yet been able to establish the internal structure and support necessary to provide data and resources.
Conclusions on the Operational and Financial Management of the Secretariat: d. Operations of the Secretariat…: are they efficient? Section 5.5	GBIF's finances are currently stable, with a substantial amount of savings in hand that provides some room for manoeuvre by the Governing Board and the Secretariat. Improving the finances by cutting costs and by reducing staff or program activity will not increase the efficiency or effectiveness of GBIF. On the contrary, cutting down on the number of employees will either mean that the already overworked staff will have to each handle even more activities, or that activity in GBIF's core Work Programme will have to be reduced. Although GBIF basically has a sound financial position at this time, the organization has experienced some financial difficulties due to the fact that its income is in USD and a large proportion of its expenditures is in DKK. The Secretariat has been right to buy forward contracts, as recommended by the auditors, and the approval to do so is documented through the revisions made to the Financial Regulation agreed to at GB9. We must emphasize, however, that this approach should only be seen as a stop-gap measure and that a much preferred solution to this exchange problem is recommended in the section on Funding above. The financial reporting system and progress reports that GBIF and the University of Copenhagen jointly produce can be improved in several areas. Some key Secretariat staff members have indicated that they are unlikely to renew their contracts, leaving substantial uncertainty as to succession, continuity, and retention of corporate memory.

The existing strategic plan for GBIF does lay out the future challenges of GBIF, but the plan lacks specific considerations for the transition of GBIF into its next phase of development. This 3rd-year review should provide the opportunity to develop such a plan. One area that needs to be considered is expansion of GBIF's physical facilities. Another is the possible future decentralization of the Secretariat as the organization grows.

III.   Recommendations

The recommendations presented below are extracted from those made in the full report. In most cases, they are only summaries of the full set of recommendations in each section. In the case of the individual Work Programme components, we have only provided the recommendations specifically germane to the questions posed in the Content of Review.

Recommendation on the Status of GBIF as a Mega-Science Undertaking

Because GBIF is a mega-science undertaking that will provide an essential informatics infrastructure for future biodiversity research and applications activities worldwide, we recommend that it be fully supported and continue, with due regard to those areas identified as needing more attention.

Recommendations on GBIF's Data Policy

1. GBIF needs to be much more proactive about explaining and promoting its data policy to its Participants, data providers, organizational partners, and users. GBIF cannot assume that all, or even most, of its potential data providers subscribe to the free and open access ethic. GBIF also needs to promote a better understanding of the broader underlying intellectual property rights (IPR) issues and policies among its Participants and users.

2. In view of the complexity and importance of the underlying IPR issues regarding its free and open data access policy, including potential liability concerns, GBIF needs to outsource some of its legal work to external legal experts. Also in the near term, a small pro bono legal advisory committee consisting of several government and academic lawyers should be convened for a limited time to provide a sound basis for GBIF staff and Governing Board members to understand their options, and to make better informed decisions about implementing GBIF's data policy and in concluding agreements with its data providers.

3. To more fully and fairly implement its attribution policy and encourage the equitable sharing of the benefits from participation in its portal, GBIF should promote greater recognition of its data providers and their original data sources.

Overarching Recommendations on GBIF's Work Programme

1. Each component of the Work Programme depends almost entirely on the work of one key staff member, potentially exposing the organization to damaging disruptions in the event of a sudden departure, or even one with some notice, in light of the time needed to train a replacement. The GBIF Secretariat must develop a contingency plan to address those eventualities successfully. GBIF also should examine options for outsourcing certain specialized functions and discrete tasks, and for hiring more staff when additional stable funding becomes available.

2. The GBIF Secretariat and Governing Board need to encourage a much greater level of participation by the immediate and extended GBIF community in the development of all its Work Programme components and related objectives.

3. In order to have a more thorough understanding of the progress on various tasks within and across the Work Programme, the GBIF Secretariat, working with its Science Committee and Subcommittees, should develop a comprehensive benchmarking process. GBIF also should consider adopting an independent, periodic review function of each major component of the Work Programme (in addition to the broader 3-year reviews of the entire organization, which are necessarily not sufficiently detailed).

4. Because the overall Work Programme is evolving in its focus and scope, the Secretariat and the Governing Board need to review staff assignments and position descriptions on an annual basis in relation to their portfolio of actual activities.

5. In consultation with GBIF, its Participants should adopt a broad range of incentives (both monetary and professional) and methods for recognition of outstanding contributions (e.g., new prizes at the national and institutional levels) to promote work on GBIF's goals and program objectives.

Recommendations on Outreach and Capacity Building

1. We recommend that GBIF reorganize OCB into two separate areas, with clearly delineated functions. Outreach functions should be performed by an Outreach Programme Officer and focus on recruitment of new Participants (in all the membership categories suggested in section 5.2), relationships with all external organizations and user groups, and the management of IPR and demonstration projects in support of the other functions. The Outreach Programme Officer would need to work on the recruitment of new Participants in close coordination with the leaders of the Governing Board and the top managers of the Secretariat. The current suite of capacity building activities, including training, education, and mentoring, would all naturally fit within the portfolio of activities of the proposed new Nodes Liaison Officer.

2. With regard to GBIF's outreach to organizations, a strategic marketing approach is necessary, similar to the approach we recommend with the user groups (see text for details).

3. In capacity building, there needs to be much more emphasis on having Participants and nodes help each other instead of having the Secretariat as the focal point. This is consistent with our recommendations in other sections of the report to devolve more responsibilities and functions on a regional basis. Other recommendations for training are to develop more distance learning training approaches, and to identify organizations with similar goals with which GBIF can plan and run training activities together. Finally, the managers of GBIF should not undertake educational activities that are not closely coupled with other major goals of the organization.

Recommendations on Nodes

1. Many of the GBIF nodes have technical development programs with overlapping functions and activities. These programs need to be better coordinated to increase their efficiency and effectiveness in the nodes and in the broader GBIF community.

2. In order to meet its future challenges, we recommend that GBIF develop a strategy for the long-term support of nodes under which a typology of nodes is created with the purpose of setting clear guidelines for them. In particular, the possibility for a more regionalized support structure should be investigated, especially when more nodes are established and GBIF's annual level of funding is increased.

3. In order to help the nodes that are struggling to get established in developing countries, GBIF should consider obtaining targeted financial help for the developing countries that have demonstrated sufficient initiative to set up a node, but are being hampered by obsolete equipment and slow communication networks. This could be a relatively low-cost but effective investment. GBIF could partner with some of the many inter-governmental and private-sector donor institutions that focus on improving ICT infrastructure in developing countries. The current United Nations World Summit on the Information Society will likely provide some near-term opportunities in this regard.

4. GBIF should complete the Best Practices Handbook for the benefit of all the nodes as soon as possible. Subsequent updates should be the responsibility of the new Nodes Liaison Officer.

Recommendations on GBIF's Profile and Uptake by Users

gbif.net

Our discussions and the comments we received from many respondents resulted in many suggestions for improvements to gibf.net, some of which are summarized here:

1. Because having comprehensive biodiversity data on gbif.net is essential for the success of GBIF, the emphasis continuously should be on identifying new data providers and building an ever larger data inventory. No matter how impressive the effort has been over the past year, the amount of data served through the portal is (understandably) still far short of being sufficient.

2. Many respondents wanted analytical tools to be provided through the portal. We strongly support this and note that gbif.org already provides links to several tools developed in the biodiversity community. We encourage GBIF to be involved increasingly in the development of analytical tools that are integrated with the portal. The integration of such tools is essential for attracting a broad range of users to gbif.net.

3. With a constantly increasing number of users, GBIF will have to establish a user support infrastructure for effectively handling their questions and concerns. A partly centralized solution is necessary, but in the future a more distributed support structure will be needed as well to handle linguistic and other specializations. The best functioning nodes may very well be important for this purpose.

4. More specific content-related technical recommendations are described in the full report.

Outreach strategy

1. At this stage of the evolution of GBIF, it is most important to demonstrate to scientists that GBIF will serve their interests. Other user groups will have to wait until suitable content and interfaces are developed. Nonetheless, it is essential to begin developing an outreach strategy focused on all the users. Outreach efforts need to be very well aligned with the development of the portal, for example, with the evolution in data quality, number of records, and interfaces. The user outreach strategy should have an analytical foundation that clearly identifies and prioritizes the various user segments and their needs, so that it establishes effective approaches for serving these various constituencies, which are partly or wholly disparate from one another.

2. Any outreach activity to a specific group of users should rely on a strategy based on: a survey of user needs; an explicit prioritization of responses to user demands; a technically mature and tested user interface on gbif.net; and a clear division of responsibility between the Secretariat and the nodes for implementing the strategy.

3. What is not as clear to the Review Committee is the situation when gbif.net is no longer a prototype and more extensive outreach activities to users in the scientific community need to be implemented. This should be considered carefully by GBIF when developing its user outreach strategy. Specific communication activities are recommended in the full report.

4. The nodes should play an especially crucial role for GBIF's outreach to users. The nodes represent the main link between GBIF and the different user communities and a user outreach strategy will need to clarify their functions. The nodes can provide one of GBIF's main goals to encourage a greater level of in-country participation in GBIF and coordination with local user groups. We realize that not all nodes are in a position to deal effectively with this or have the resources to do so, but nevertheless GBIF's strategy must clarify how the nodes can support this in the future.

5. When developing its user outreach strategy, GBIF needs to avoid some common errors, which are presented in the full report.

Demonstration projects

The Review Committee strongly supports demonstration projects as a means of presenting the vision of GBIF to providers, users, partners, and sources of funding. More effort should be put into increasing the number and scope of such projects so that they address different scientific and applications communities to help funding agencies and other stakeholders better understand the value of GBIF.

Raising visibility

1. The Secretariat has suggested in its self-assessment that a more extensive marketing of GBIF is being initiated. Based on the facts presented to us – mainly the undeveloped nature of gbif.net in its functionalities, the lack of documentation, and quality of the data – the Review Committee cannot recommend that more extensive marketing of GBIF is currently warranted. This is because the main product of GBIF – gbif.net – is not yet ready for broad advertising on mass media. Targeted advertising eventually could be important, but it would be costly and should not be implemented until gbif.net is sufficiently mature.

Recommendations on Participation in GBIF

1. We believe it is in GBIF's interest to build as many and as varied relationships as possible in order to be a truly open-ended organization, as stipulated in the MoU. In order to expand its relations beyond the existing ones we recommend that GBIF distinguish between the following different relationships and entities: Voting Participants; Observer Participants; Associate Participants; Affiliate Participants; Data Providers; Donors; Partners; and Friends of GBIF. These relationships and entities are described further in the report.

2. An entity may have – and some should have – several relationships to GBIF, such as Voting Participant, data provider, and donor. The reason why we recommend focus on the various relations and entities is to make sure that each of them is characterized properly and that consequently GBIF develops a separate outreach strategy for each. It also is important for GBIF to be able to have a formal affiliation to governmental or non-governmental institutions in non-Participant countries in order to promote in-country activities and support for GBIF goals, with a view to developing future national participation in GBIF.

3. Finally, GBIF should consider adopting a simpler, more general MoU to be signed by all Participants as discussed further in our Recommendations on the Documents of Regulation below, as well as more specific agreements targeted at each of the entities and suggested categories of relationships to GBIF.

Recommendations on the Governance Structure

1. The Review Committee suggests a significant change in the governance structure of GBIF, based on our findings and conclusions. The change should accomplish the following goals:

- Simplify the governance structure by segregating politics from operations;

- Enable an increased focus on the science aspects of GBIF;

- Create a stable structure independent of the number of participants;

- Enhance the open-endedness of GBIF in scientific and technical subjects, but not in governance subjects;

- Strengthen the responsibility and decision-making power of the Executive Committee.

2. The suggested revision to GBIF's governance structure is based on specific high-level considerations and design principles that are outlined in the report.

Recommendations on the Documents of Regulation

1. The documents of regulation should be aligned to the changing realities of the GBIF organization, which is one of the main reasons for clarifying the categories of participation as recommended above. Our recommendations are as follows:

- *The complex of regulations*. The new MoU could be shortened significantly, because a number of the existing provisions are no longer relevant. Content-related goals can be formulated and revised in the Strategic Plan and Rules of Procedure (RoP), and the Staff Rules and Financial Regulations can incorporate some of the provisions. A careful review by the Governing Board and the Secretariat of these various regulatory documents can simplify, clarify, and integrate them better.

- *Open-ended MoU*. The new MoU should not be limited in time, as the present MoU is, but should have an open-ended duration.

- *Future Reviews*. An external review should be conducted every three years after the new MoU has been established (i.e., with the next review coming five years from now and every three years after that).

- *Meetings*. As mentioned earlier regarding the reform of the governance structure, we recommend that the Governing Board meetings be fewer, more focused, and more prepared in the sense that problems be solved and discussed beforehand and in other relevant forums. Consequently, the mandates of the Executive Committee should be revised and extended significantly, and the other Committees need to meet prior to the Governing Board meeting, so that consultations by the GBIF community are comprehensive in preparation for the Governing Board meetings.

- *Voting*. The requirement of a supermajority and the convoluted process for voting for committee chairs and vice chairs is not efficient. We recommend decision making by a simple majority for chairs and vice chairs, based on one round of voting. Decision making by consensus should be the preferred method in GBIF whenever possible.

Recommendations on the Level of Funding

1. Consistent with GBIF's potential importance and relevance as described in this report, the Participants in GBIF must do more to ensure that their environmental and science policymakers understand the enormous value that GBIF could return to them if it were properly funded at both the global and in-country levels. Further, as the founding organization of this initiative, the OECD has a special responsibility to help ensure that GBIF obtains the commitments for the level of funding required to achieve its established objectives.

2. We recommend that the level of funding for GBIF be increased to a level similar to the level suggested in the 1999 OECD report that recommended the formation of GBIF– that is, in the area of 7-10 million USD. However, the drop in the USD in recent years means that the value of contributions at the 1999 level in USD is significantly lower now in the currencies most used by GBIF. Consequently, trying to reach the same Euro level as in 1999 would mean raising the USD level in 2004 to 9.7 and 13.9 million USD. We suggest a target level of 10 million USD (at the 2004 level) split according to 7 million USD in basic contributions from Voting Participants and at least 3 million USD from voluntary, supplementary sources.

3. We recommend that the increase in basic contributions be reached incrementally over a period of two or three years, and that the increase be clearly explained by specific allocations in programmatic activities. We also recommend that the Voting Participants each consider providing significant supplementary funding contributions. Flexibility in the allocation of additional supplementary funds is essential because donors generally have special interests in which activities they fund.

4. The efforts so far in attracting both kinds of funding have been poor. Nevertheless, we fully support GBIF's emerging plans to obtain additional funds and the ideas in the new fundraising strategy. Besides focusing on increasing the number of Voting Participants paying basic contributions, we recommend that GBIF's efforts to obtain more supplementary funding be focused on: government ministries, inter-governmental organizations, ad hoc consortia of nations, and philanthropic organizations and individuals. Additional funding also could be generated through a membership fee from "Friends of GBIF."

Recommendations on GBIF's Funding Mechanism

We generally support the concept of basic contributions from Voting Participants for GBIF's core funding as established in Annex 1 of the current MoU. We recommend that this mechanism be continued, but with the following suggested changes.

1. The increase in the level of funding, as justified above, should be supported by the following initiatives:

- The existing Associate Participant countries shift their status to Voting Participants, either immediately upon approval of the new MoU or

following a set period of time, thereby becoming paying contributors to the core fund.

- A continuous focus on recruiting new Voting Participant countries.

- A continuous focus on maintaining existing Voting Participants, e.g., by GBIF actively supporting and offering guidance to countries on securing their funding.

- An incremental increase in total basic contributions.

2. We suggest two potential options for an incremental increase in funding. The principles in support of each of these options are described in the full report.

3. Because the existing funding mechanism is not adjusted for inflation, the value of each contribution diminishes every year. We therefore recommend an annual increase in the levels of contribution based on the projected rate of inflation in the country that is hosting the Secretariat (presumably Denmark). This projection should be made in three-year increments and should be accompanied by a budget forecast by GBIF for the same period.

4. The funding mechanism is based on USD, which has turned out to be a severe problem for GBIF. An essential purpose of the funding mechanism should be to maximize the stability in GBIF's funding by distributing as much of the risk of uncertainty among the Participants. We recommend that the levels of contributions be set in Euros and preferably be paid in Euros, although USD are acceptable for payment as is the currency of the country where the Secretariat is located. We believe that the Euro would provide the most stable basis for GBIF finances and that the practical implications for the Participants will be insignificant, after the adjustment is made.

Recommendations on the Operational and Financial Management of the Secretariat

1. GBIF should revise its financial reporting rules in a way that enables the management and the Budget Committee to show that money is spent on Work Programme components according to the established plans and budgets to more accurately reflect GBIF's program elements and to improve the utility of the budget as a management tool. There are two categories that are especially large – salaries and the Work Programme – and these categories ought to be broken up into the specific Work Programme components (DADI, DIGIT, ECAT, OCB, ICT, and now Nodes).

2. GBIF should establish an ad hoc committee in the Governing Board with the aim of analyzing the costs and benefits of a further decentralization of the Secretariat on a regional basis as a way of handling future growth. We do not suggest a greater decentralization of the Secretariat at the present level of funding and activities, however.

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List of GBIF Participants

Voting Participant …	Denmark (2001/01)) United States of America (2001/01) Australia (2001/02) Belgium (2001/02) Germany (2001/02) Japan (2001/02) Netherlands (2001/02) New Zealand (2001/02) Slovenia (2001/02) Spain (2001/02) Sweden (2001/02) Canada (2001/03) France (2001/03)	Mexico (2001/03) Finland (2001/04) Costa Rica (2001/05) Korea, Republic of (2001/05) Iceland (2001/06) Nicaragua (2001/06) Portugal (2001/06) United Kingdom (2001/08) Peru (2002/09) South Africa (2003/05) Estonia (2003/09) Norway (2004/03)
Associate Participants (Countries and economies) …	Switzerland (2001/02) Ghana (2001/03) Poland (2001/03) Bulgaria (2001/08) Pakistan (2001/08) Slovak Republic (2001/08) Austria (2001/09) Argentina (2002/03) Taiwan (Economy) (2002/09)	Tanzania (2002/09) Czech Republic (2002/10) Madagascar (2003/01) Morocco (2003/06) India (2003/08) Colombia (2003/09) Papua New Guinea (2004/03) Indonesia (2004/11)

Associate Participants (organizations) …	European Commission (2001/02)
	Expert Center for Taxonomic
	    Identification (2001/03)
	Integrated Taxonomic Information
	    System (2001/03)
	Species 2000 (2001/03)
	BIONET-International (2001/05)
	Inter-American Biodiversity
	    Information Network (2001/05)
	NatureServe (2001/05)
	UNESCO, Man and the Biosphere
	    Programme (2001/05)
	UNEP, World Conservation
	    Monitoring Centre (2001/05)
	Ocean Biogeographic Information
	    System (2001/06)
	CABI Bioscience (2001/09)
	All Species Foundation (2002/03)
	BIOSIS (2002/03)
	Taxonomic Databases Working
	    Group (2002/03)
	EASIANET (2002/09)
		ASEANET (2002/10)
		World Federation for Culture
		    Collections (2002/10)
		Société de Bactériologie
		    Systématique et Vétérinaire
		    (SBSV) (2002/12)
		Wildscreen Trust (2003/01)
		SAFRINET (2003/08)
		IUCN (2003/09)
		Freshwater Biological Association -
		    FreshwaterLife (2003/10)
		ASEAN Regional Centre for
		    Biodiversity Conservation
		    (2003/12)
		Finding Species (2003/12)
		International Centre for Insect
		    Physiology and Ecology (2004/03)
		Nordic Gene Bank (2004/03)
		Botanic Gardens Conservation
		    International (2004/08)
		Pacific Biodiversity Information
		    Forum (2004/09

Source: gbif.org – as of 7 December 2004