

**Accompanying document 1:
Terms of Reference for establishing Scientific Collections International (SciColl)**

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A. PREAMBLE

Governments, museums, universities, research institutes, foundations and other organizations support scientific collections because they are the critical infrastructure of many research fields as well as essential for many areas of government regulation. This support promotes the long-term conservation of these collections and the ability of researchers to physically access specimens in their repositories and to retrieve their related information in digital form. Research in the 21st century is increasingly interdisciplinary, creating a pressing need for interoperability among databases associated with specimens in different types of scientific collections.

National governments, individual scientific institutions or international organizations willing to become members of Scientific Collections International (hereafter abbreviated as "SciColl") recognize the need for increased international coordination among these institutions and with their stakeholders in order to increase the return on the investments that governments, research organizations and donors make in scientific collections.

The Need for International, Interdisciplinary Coordination of Scientific Collections

Scientific collections form a research infrastructure that is critical to scientific research in many fields. Within each discipline, new types of collections have emerged in response to new research opportunities (e.g., the Age of Exploration; the Space Age; current bio- and nanotechnology). Hundreds of millions of specimens accumulated in thousands of collections, each contributing to a growing body of scientific knowledge..

At the same time, the barriers to accessing them also grew. Collecting and studying new specimens was/is often a higher priority than documenting, curating, and preserving the specimens in existing collections. Scholars in a discipline could have a good understanding of the collections in their respective fields up until the mid-20th century, but that soon changed. The post-war explosion of publicly-funded research led to the rapid growth of collections in all fields, but was not matched by improved methods in record-keeping. In the computer age before the 90s, collections and their associated data had become an enormous but largely undigitized treasure trove. Knowledge of and access to specimens within a research community had become difficult, and access across disciplinary boundaries was essentially non-existent.

Over the past 20 years, significant progress has been made toward documenting collections and improving access within disciplines. The steady growth of digitised specimen and related observational data is increasingly revealing new patterns and allowing new questions to be addressed. Local specimen databases have sprung up, data standards have been established, networks of databases have flourished, and community standards that promote public data access are taking hold.

Access to specimens and data within fields has now improved to the point that we can now see a new and larger research opportunity – and an obstacle blocking the way forward. We now see that collections in different disciplines are complementary in the scientific impact they can have. The greatest research challenges before us are interdisciplinary in nature, requiring collaborations that cross traditional boundaries. The deep-sea cores, ice cores, and fossil plants, animals and microbes that are stored in collections all give testimony to the changes that have taken place on earth. Anthropological artefacts, ice and sediment cores, biomedical samples and samples of biodiversity all contribute to our knowledge of human history.

SciColl was envisioned as the first step toward enabling international, interdisciplinary research based on collections and collection-based information that are currently isolated from each other.

Paragraph 1

Definitions

Associate Member: An international organization that has signed SciColl's Memorandum of Cooperation but does not vote

Collection management: The oversight of specimens to:

- ensure their long-term conservation,
- develop and disseminate documentation of the specimens,
- provide access to the specimens by qualified researchers, and
- carry out other responsibilities that accompany ownership of the specimens.

Curation: The processes involved in documenting and preserving specimens and accessioning them into scientific collections.

Establishment phase: The period of time during which Full and Associate Members sign SciColl's Memorandum of Cooperation until there are an adequate number of Full Members to form an Executive Board and provide an operating budget.

Full Member: A government, institution, or consortium of institutions that signs the SciColl Memorandum of Understanding, provides SciColl with the annual membership fee appropriate for an institution or government of that size, and has voting rights.

"Object-based scientific collections": Natural and man-made objects and their associated data and archival material that are used for scientific research and have been accessioned into repositories for long-term preservation.

Research specimens: Natural or man-made objects that are used for scientific research that are either discarded at the conclusion of a research project, remain in a research lab for future study, or are accessioned into an object-based scientific collection for long-term preservation and access by researchers in the future.

Scientific Collection: Used here as synonymous with "object-based scientific collections".

SciColl : Scientific Collections International, an international coordinating mechanism developed and proposed under the auspices of the OECD Global Science Forum.

Paragraph 2

Understandings

- 2.1. SciColl will be established as an open-ended international coordinating mechanism for scientific collections and its relevant stakeholders.
- 2.2. SciColl membership will be based on a future non-binding "Memorandum of Understanding" with no effect as a legal or political precedent, to be developed by the SciColl Secretariat once established.
- 2.3. The involvement of Members in this Memorandum of Understanding will be subject to the goodwill and appropriation or allocation of contributions by the appropriate authorities, and to the applicable laws and regulations of the Country Members.
- 2.4. Nothing in this MoU will be read to contradict relevant national legislation and provisions related to mandate, of scientific collections.
- 2.5. The signatories to this MoU will agree to the general purposes, objectives and organizational principals of SciColl and rules of operation as laid out in this Terms of Reference document.

Paragraph 3

Aims and Strategic Objectives

3.1. SciColl is an international coordinating initiative devoted to increasing the benefits that object-based scientific collections and their associated information produce for scientific research and some of the major challenges facing society. SciColl's dual mission is to:

- help scientific collections and their host institutions to increase their effectiveness and the return on investment from the long-term management of collections; and
- catalyze ground-breaking interdisciplinary research that relies on access to scientific collections.

3.2. SciColl will pursue this mission by:

- Providing an international coordinating mechanism that will enable and energise collaborations across the scientific disciplines that rely on object-based scientific collections, including but not limited to anthropology, archaeology, biology, biomedicine, and the earth and space sciences;
- Identifying and opening up new and exciting areas of research that rely on scientific collections and their associated information distributed across disciplines and countries;
- Creating unprecedented access to collections and their associated information in different scientific disciplines;
- Increasing the impact that scientific collections and their associated information have on evidence-based policy development; and
- Raising the community standards of specimen curation, collection management, and the training of collection professionals.

3.3. SciColl is built on the following foundational principles:

- Object-based scientific collections and their associated information are global public goods. Free and open access to scientific collections by qualified researchers is fundamental to achieving research excellence;
- Scientific collections are an essential infrastructure for many research disciplines;
- Scientific collections are a distributed asset, housed in institutions around the world. No one country can provide the collections and trained collection management staff needed by a research community. International and interdisciplinary cooperation is therefore essential in providing research communities in different countries with the access to collections that they need;
- International coordination of collections can reduce duplication of effort among collections and unnecessary expenses, and can optimize the impact of new collecting efforts by identifying critical gaps.
- Spreading of excellence in collections management and the training of collection professionals is needed to redress the imbalance between collections held in industrialized and developing countries.

SciColl's program of work has two major components: improving the management of collections and expanding their research impact. First, scientific collections are not only resources for research; they can also be the subjects of research by the community of collection repositories. SciColl will convene international, interdisciplinary groups for:

- Compilation of best practices in collection management, performance-based budgeting, models of administration and governance, and other dimensions of organizational efficiency;
- Research and development of data standards and database interoperability that will expose collections and specimens more effectively on the web, thereby increasing access and use; and
- Discussions and formation of networks on new types of collections (e.g., frozen tissues and DNA), emerging technologies for digitization and analyses, workforce training, use of collections for education and public engagement, and other issues of interest to SciColl members.

The second component of SciColl's work program will catalyze new interdisciplinary research programs and projects. SciColl will convene meetings and online discussions of research communities that rely on scientific collections in different disciplines and the funding agencies that support them. The goal will be to identify high-priority research topics that require access to scientific collections and coordination across disciplines. Research funding agencies that are members of SciColl will have first-hand involvement in these discussions while leverage their investment through international partnerships brokered by SciColl.

Paragraph 4

SciColl Organization and Membership

4.1. SciColl is a free-standing international organization, globally oriented and open to any interested country, relevant organization or institution from around the World.

4.2. SciColl is composed of Full and Associate Members having signed the Memorandum of Understanding, and other non-member Partners.

4.3. Full Members of SciColl are entitled to voting rights in the General Assembly and representation in the Executive Board, and are expected to pay an annual financial contribution according to the provisions of Paragraph 11 below or as determined by the General Assembly. Full members shall be either (a) national governments or (b) institutions:

a) National governments

A Full Member of SciColl can be a national government authority, organization, or institution acting as a representative of that government, which has signed the Memorandum of Understanding and represent national science policy interests (e.g., science coordination or science policy offices, national research councils, public science funding organizations, etc).

National membership would be initially sought for a period of three years, with the possibility to withdraw under exceptional circumstances within one year.

b) Institutions

A Full Member of SciColl can be private or public institution, in particular those holding or being involved in the management of large scientific collections, which has signed the Memorandum of Understanding.

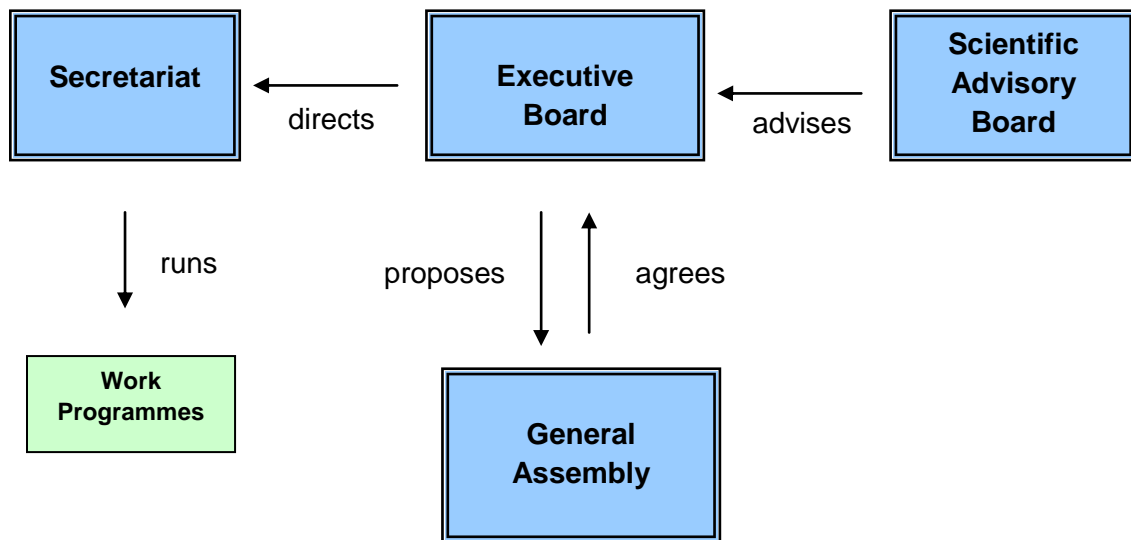
Institutions may form consortia for joining SciColl. Such consortia may consist of a limited number of small institutions, usually from the same country. Applications for membership as a consortium will be considered by the Executive Board. Consortia are entitled to a single vote in the General Assembly.

4.4. Associate Members of SciColl are institutions or organizations which may participate in all SciColl activities and the General Assembly; they are expected to pay a nominal annual financial contribution according to the provisions of Paragraph 11 below or as determined by the General Assembly but are not entitled to voting rights. It is expected that they will be mostly academic societies or international organizations interested in scientific collections and their use; they will not be collection holding institutions or national government authorities. Associate Members could bring financial support for specific SciColl work programmes or activities, in which case they would be entitled to taking part in decisions affecting that specific program or activity.

4.5. Non-member Partners to SciColl can be international or other organizations with a direct interest in SciColl, but which do not sign the MOU. Non-member Partners are expected to have reciprocal

arrangements with SciColl by which they share experiences and are involved in each others' activities. Agreements for non-member partnerships will be considered by the Executive Board and approved by the General Assembly. Non-member partners can participate in meetings of the General Assembly as observers.

SciColl – Organisation and Governance



Paragraph 5
The General Assembly

5.1. The General Assembly represents the entire SciColl membership, including all Full and Associate Members, and is the ultimate decision taking and governance body for SciColl.

5.2. The General Assembly shall have the authority, among other tasks, to:

- elect the Executive Board;
- to agree on SciColl strategies and work programmes as proposed by the Executive Board;
- to agree on budget, and approve financial reports and audits;
- to approve the selection of the Secretariat Host and, if necessary, to replace the Secretariat Host;
- to approve rules of -procedure, regulations, policies and such subsidiary bodies as it may be necessary for its proper functioning and the achievement of SciColl goals;
- to agree, by two thirds majority, the scales of the annual financial contributions by members;
- to consider any matters pertaining to SciColl or its operations submitted to it by the Executive Secretary, the Secretariat Host, or by any Participant;
- to modify, by two thirds majority, these Terms of Reference and SciColl's Memorandum of Understanding .

5.3. The General Assembly is composed of representatives from the different SciColl members, and non-member partners as observers. SciColl members may send more than one representative to meetings of the General Assembly, but Full Members will have one vote only.

5.4. The General Assembly will have an ordinary meeting at least once every two years. An extraordinary meeting may be convened upon the request of at least a quarter of full members (in good standing!). Meetings are preferably held each time in a different geographical location hosted by a Full Member.

5.5. The meetings of the General Assembly will be chaired either by the Chair of the Executive Board or a meeting chair specifically elected at the meeting.

Paragraph 6

The Executive Board

6.1. The Executive Board oversees the day to day work of SciColl and monitors the operations of the Secretariat in implementing the Work Programme and budget.

6.2. The Executive Board acts on behalf of and reports to the General Assembly by:

- Selecting the host country and institution for the Secretariat Office;
- Choosing the Executive Secretary;
- Making arrangements for his/her appointment; ... Approving the staffing structure (reporting hierarchy, number of staff, titles, salaries, and responsibilities) for the Secretariat Office proposed by the Executive Secretary.

6.3. During the establishment phase, the Executive Board will be composed of one representative from each national government that is a Full Member, and up to an equal number of institutional Full Members. The institutional members of the Executive Board will be a balanced representation between large (i.e., categories I+II) and small (i.e., categories III+IV) institutional Full Members. The timing of the first ordinary meeting of the General Assembly will be determined by the rate at which members join SciColl. It is anticipated that the first General Assembly at which the full Executive Board will be elected will be called when the number of full members exceeds twenty/20.

6.4. After the establishment phase, the Executive Board will be elected as a group by the General Assembly, following a proposal by the Executive Board ensuring a balance in terms of size, geography and disciplines, with up to 1/3 of its members composed of national representatives. The Executive Board is elected generally for a 4 years term, with a mechanism for rotation.

6.5. The Executive Board will have a Chair and two Vice-Chairs. During the establishment phase, the Chair and Vice-Chairs are elected by the Executive Board. If the Chair is a national government representative, then at least one of the Vice-Chairs should be from an institutional member. After the establishment phase, the Chair and Vice-Chairs will be elected by the General Assembly, following nominations by the Executive Board.

6.6. The Executive Board should meet regularly (at least 3 times/year), usually with the Executive Secretary in attendance. As a general rule, it will meet at the Secretariat location. The expenses for the Chair are covered from the organization's budget, but no salary or remuneration is paid.

Following the establishment phase, the General Assembly would elect institutional members to fill half the seats on the Executive Board. The entire Executive Board would be elected by the General Assembly thereafter with a designated division of seats between national and institutional members.

Institutional members are eligible for a seat with voting rights on the Executive Board (not more than 10% of total membership). Associate members would not be eligible for representation on the Executive Board

Paragraph 7

The Scientific Advisory Board

7.1. The Scientific Advisory Board is to provide high level advice on scientific issues to the Executive Board and the Secretariat, especially in further developing the programme of work. It proactively develops visionary themes and agendas for wider science involving scientific collections, and makes proposals how better to manage and engage scientific collections in ongoing research activities.

7.2. The Scientific Advisory Board is composed of up to 10 individuals with a senior science background ("national academician" level), to be chosen on the basis of their individual capacity and expertise. Membership is for a 2-year term, renewable once. Candidates for the Scientific Advisory Board are nominated by the General Assembly, and members will be appointed by the Executive Board. The Scientific Advisory Board elects a Chair from among its members.

7.3. Operating costs for meetings (travel, logistics) of the Scientific Advisory Board are supported by the SciColl budget. The Secretariat will provide secretariat support to the Scientific Advisory Board.

Paragraph 8
The SciColl Secretariat Host

8.1. The SciColl Secretariat Host is to provide the location, facilities and services for the SciColl Secretariat agreed to in an arrangement between it and the SciColl Executive Board.

Expected services include, but are not limited to, staff management, financial management, human resource management, accountancy, legal services, Internet access, IT capabilities, and logistical & technical assistance. The SciColl Secretariat Host is to house the SciColl Secretariat and manage it in accordance with domestic laws. The SciColl Secretariat Host is to also obtain or provide legal status for SciColl. Subject to the laws of the country in which it is located, the Secretariat Host will be accountable to the Executive Board and General Assembly for all matters pertaining to SciColl, except as otherwise provided in the Terms of Reference.

The services may cover staff management, financial management, accountancy, legal assistance, etc.

8.2 The Secretariat host will be selected following a bidding process as outlined in the “Request for proposal to host the SciColl Secretariat” accompanying document by an Interim Executive Board composed of representatives of those governments and institutions which have expressed their intention to become a member of SciColl through a letter of intent.

8.3 Neither the SciColl Secretariat Host, nor its employees, agents, representatives or contractors are entitled to commit the Members to any expenditure beyond what is available in the budget.

Paragraph 9

The SciColl Secretariat

9.1 The Secretariat acts as the SciColl international office, the organizations' main executive arm. It will also provide membership services and implement the Work Programme in accordance with the Strategic Plan, and spend the Budget, under the direction of the Executive Director.

The SciColl Secretariat will

- (a) employ the Executive Secretary and other SciColl Secretariat staff;
- (b) be the holder of the Central Fund described in Paragraph 10 (finances);
- (c) be responsible for developing financial arrangements with Members specifying how those Participants will make their financial contributions to the Central Fund; and
- (d) hold in trust, and for the benefit of the Participants, all assets which may accrue to or be acquired for SciColl.

9.2 It is hosted in/by a SciColl Full Member providing building/rooms, basic facilities & services [for detailed requirements, see accompanying document “Request for proposal to host the SciColl Secretariat”].

9.3 It is lead by an Executive Secretary, with a key senior role for leadership, management, representation, and diplomacy. The Executive Secretary is appointed by the Executive Board and confirmed by the General Assembly. He/she serves as secretary to the Executive Board. A performance evaluation is carried out by the Chair and Vice-chairs of the Board.

9.4 Additional staff: in addition to the Executive Secretary, the SciColl Secretariat will consist of such other staff as are judged necessary by the Executive Board / General Assembly. In its first 3 years phase, it is anticipated that the following staff will be needed: 1 Communication specialist, 1 executive assistant, 1-2 secretaries/administrative office help; 2 Program Officers (may be funded or seconded through SciColl activities); an ICT/web specialist, possibly part-time, who may be contracted out.

9.6 The Secretariat would sign a special agreement with the host organisation/institution, defining the mutual responsibilities.

9.7 The Secretariat host and the Secretariats location may be changed by a decision of the General Assembly.

9.8 Assuming that the budget will support an Executive Secretary and a Secretariat Office with approximately three support staff, the core services that will be provided to SciColl members will be to:

- Organize meetings of the Executive Board and General Assembly (not including cost of Board travel);
- Establish a website and online community network to facilitate communication among SciColl members and with their respective communities;
- Develop outreach material to disseminate information about scientific collections and their impacts, and about SciColl and its activities;

- Conduct a proactive outreach campaign to the scientific communities, institutions, professional associations, government agencies, IGOs, NGOs and others relevant to SciColl's mission;
- Establish those Working Groups, Networks, Programmes and other entities approved by the Executive Board for inclusion in the SciColl Programme of Work and budget;
- Seek project funding for priority activities identified by the Executive Board but not supported by the SciColl budget; and
- Monitor and report to the Executive Committee and General Assembly on the outputs, outcomes, and impacts of SciColl activities.

Paragraph 10
Budget, Finance

10.1. The core SciColl budget will be based on Member contributions, which are to support the SciColl Secretariat for the basic functionalities and duties mandated in Paragraph 9, the organizational operations of SciColl including basic information and communications services for Members, and the management of its work programs as approved by the General Assembly. Members contributions are to be held by the SciColl Secretariat in a core fund and used as stipulated in the annual budget approved by the General Assembly.

10.2. In support for the SciColl work programs, especially for implementing specific tasks and pilot research projects, supplementary budgets can be formed from additional financial contributions obtained from individual Members, funding agencies, relevant organizations, and other donors. Contributions to supplementary budgets from such funders can be linked ["earmarked"] to specific tasks and deliverables.

10.3. All Full Members of SciColl are required to contribute an annual financial contribution. For the first three years following the establishment of SciColl, the amount of the expected annual financial contribution is defined according to the scale in annex 1.

10.4. Following the establishment phase of SciColl, the General Assembly may choose to review the scales for the expected annual financial contributions.

10.5. Members to SciColl bear the costs to their own participation in SciColl, including the travel costs and other expenses related to attendance of their representatives to meetings of the General Assembly and other SciColl events and activities.

Paragraph 11

Association and Disassociation of Members

11.1. Association of Members

a. Full Members

i. Any government may apply to the Executive Board to become a Country Member, either directly or by way of any scientific or research institution within that country. Status as a National Full Member requires signing the Memorandum of Understanding, and payment of the voluntary financial contribution within three months of that signing.

ii. Any institution or consortium of institutions may apply to the Executive Board to become an Institution member. Status as an Institution Full Member requires signing the Memorandum of Understanding, and payment of the voluntary financial contribution within three months of that signing.

b. Associate Members

Any inter-governmental or international professional organization may apply to the Executive Board to become an Associate Member. Status as an Associate Member requires signing the Memorandum of Understanding, and payment of the voluntary nominal financial contribution within three months of that signing.

11.2. Disassociation of Members

Any Member may disassociate itself from SciColl by advising the Executive Board in writing of its intention to do so and of the effective date. Members who dissociate are not entitled to any monetary refund or reimbursement of funds already committed to SciColl.

In the event of disassociation of a Full Member, the Executive Board may decide by consensus to adjust the Work Programme and the Budget to take account of such disassociation or, again by consensus, may decide to adjust the scale of contributions of Members to the Budget.

Paragraph 12
Establishment, Duration, and Termination

12.1. Establishment

SciColl will be established only after at least 4 countries and 8 individual institutions have signed the Memorandum of Understanding and financial pledges totaling at least € 300.000. Pending establishment, initial SciColl activities will be conducted using voluntary contributions from interested countries and institutions.

12.2. Duration and Evaluation

SciColl will be established for an initial three-year period. The progress and operations of SciColl will be reviewed at the end of the three years, through an independent evaluation by a visiting committee. The Executive Board will appoint representatives to serve on the visiting committee from professional bodies representing the activities of SciColl.

12.3. Termination

SciColl Members may terminate SciColl's organization and activities at any time by a two-thirds vote of the General Assembly. Upon termination or expiration of the Memorandum of Understanding, and termination of each individual Sponsorship Agreement, the Secretariat, acting in accordance with the laws of the jurisdiction in which it is located, will arrange for the liquidation of the assets of SciColl. Property held by the Secretariat for the benefit of the Members is to be regarded, for this purpose, as assets of SciColl. In the event of such liquidation, the Secretariat, so far as practicable, will distribute any assets of SciColl, or the proceeds therefrom, in proportion to the financial contributions that each Members has made from the beginning of the operation of SciColl, and for that purpose will take into account the contributions of any former Members.

Annexe 1**Financial Contributions by Members****a) Full Members**

Full Member, national government contributions. For single national representation, an annual financial contribution will be requested for the first 3 years of SciColl, according to Gross Domestic Expenditure on Research and Development (GERD), divided into four proposed categories detailed below. It is anticipated that national representative contributions will be significantly reduced after 3 years by the General Assembly.

Category	GERD (latest available figs)	Countries (examples)	Expected contribution (€ p.a.)
1	> \$50 billion	USA, Japan, Germany, China	90 k€
2	\$18-50 billion	Canada, France, Italy, Korea, Russia, UK	40 k€
3	\$7.5-18 billion	Australia, Austria, Israel, Netherlands, Spain, Sweden, Switzerland	20 k€
4	< \$7.5 billion	Belgium, Finland, Singapore, South Africa, Portugal, Norway, Poland	10 k€

Full Member, institutional contributions. The expected annual financial contributions are determined by institutional size (operational budget including staff costs for collections), according to the four categories as indicated below:

Category	Operational budget, including staff [US\$]	Staff number on collections [additional indicator]	Institutions (examples)	Expected Contribution € (p.a.)
Large - 1	>\$5 million	>150	NHM, SI, MNHN, IODP	16,000
Medium - 2	\$1 million - \$5 million	50-150	MfN Berlin, Naturalis, NICL	8,000
Medium-small - 3	\$200k - \$1 million	10-50	INBIO, NMK, University of New Mexico	4,000
Small - 4	<\$200k	<10	Linnean Society London,	2,000

For consortia, the annual financial contribution will be determined in agreement with the Executive Board.

Institutions from developing countries (based on the UN definition) are entitled to a reduction of 50% from the proposed scale.

b) Associate Members

For Associate Members, the nominal annual financial contribution will be 500,- Euro.