



# Collections Acquisition Strategy Natural History Division

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## **Collections Acquisition Strategy of the Natural History Division**

**This strategy operates within the framework of the NMI Collections Acquisition Policy as determined by the Board of the National Museum of Ireland.**

### **1 Introduction**

The Natural History Division cares for the National Collections in the scientific disciplines of Zoology, Entomology and Geology. Until 1970 this also included the other main natural science – Botany. The Herbarium of the Royal Dublin Society (RDS) established in 1847, was transferred to the National Botanic Gardens (NBG) in 1970, along with the economic botany collections. The Natural History Division does not acquire botanical specimens and leaves the collection and management of state botanical collections to the NBG.

Current holdings of the Natural History Division are estimated to be in the order of two million specimens. These collections are not fully catalogued and are maintained by a small staff. This document is based on imperfect knowledge of these collections and is an attempt at an overall development strategy aimed at building on existing strengths, filling gaps and setting boundaries that recognise our resource limitations. There is also a need to explore collecting policies with other state bodies, museums, universities and private individuals in Ireland to avoid unnecessary duplication and to identify gaps in coverage, which may be our responsibility to address. The history of development of the collections over two centuries has included significant acquisitions of specimens from other countries, the former British Empire in particular. This high proportion of non-Irish material has significance for various policies, including that of acquisition.

### **2 Life Sciences – Zoology, Entomology, Botany**

#### **2.1 Definition**

The biological sciences incorporate all living things, be they animal or plant. The full range of life on earth is very extensive, with millions of organisms recorded in scientific literature and estimates of many tens of millions of species alive today which have yet to be studied and properly described in publications. Many organisms are difficult or impossible to maintain in museum collections without significant outlay and are not included here. Examples include collections of tissues stored in frozen condition in other specialised institutions. Our existing collections and current strategy recognise resource limitations in not including certain categories of organisms that involve such overheads. This museum no longer includes responsibility for the National Collections in the field of botany, and plants (apart from fossil examples) are not included in our acquisition objectives.

#### **2.2 Irish biodiversity**

It is a primary aim to ensure that the zoological collections represent Irish biodiversity (a term used to describe the variety of animals and plants found in a

given area). Ireland is a relatively small island but with considerable biodiversity, both on land and in our surrounding seas. For example the estimate of the variety of insects in Ireland gives a figure of over 30,000 species. Because of our island position, and the effects of ice ages in clearing the landscape of fauna until about 10,000 years ago, such figures are in fact below those of many other European countries. This diversity is still considerable, particularly when our attempts to represent this in the museum collections are taken into account. Males, females and juveniles are required as a reference collection to support identification of each species, and in some cases many specimens are required to account for diversity within species or to hold sufficient material to allow for certain types of destructive analysis. Also the distribution of species in the landscape will result in a number of specimens of each species being acquired to represent their spatial distribution. In this way an estimate of the size of collection required to fully represent Irish biodiversity may be calculated and indications are that this would significantly add to our existing holdings.

Our geographic position on the western edge of Europe, adjacent to a major ocean (with its own great biodiversity) also places us in a special position in terms of the interest in the Irish fauna for research by scientists from many other countries, particularly in Europe. The significance to Ireland of agriculture, forestry and fish stocks makes the understanding of our biodiversity critical to national development. The collections support investigation of pests and parasites, many of which have significant potential impact on these natural resources. Current understanding of global climate change highlights the value of the existing collections from earlier centuries and the need to continue to collect as a way of monitoring climate changes on our fauna.

### **2.3 Global biodiversity**

The existing collections included specimens from many parts of the world. While it is not our intention to fully represent global biodiversity, it is our responsibility to place the Irish fauna in context. The primary aim in acquiring specimens from other countries is to put Irish material in context and to maintain our exhibition as an illustration of a global fauna. The existing collections have particular strengths in demonstrating biodiversity of other countries and are of considerable importance for international researchers. It is not envisaged, however, that these would be a significant target for further general acquisitions.

Animals from other countries do have relevance in a number of areas that will be developed. Invasive alien species are a major threat to Irish wildlife and a collection of the potential pests will be a target for acquisitions. The museum will also aim to build a reference collection of species that are illegally traded, through liaison with the Customs and Excise section of Revenue. Species kept as pets will also be considered for acquisition as part of a reference collection for students of veterinary anatomy and to aid in the identification of exotic animals brought in by the public.

## **2.4 The zoological collections**

There are approximately 800,000 specimens in these collections. These are arranged on a taxonomic basis, with related species housed together. For many groups of animals there may be more than one method of storage and one type of preparation involved. Modes of preservation are normally subdivided into wet and dry. Wet preservation is achieved in a mixture of 75% industrial methylated spirit with 25% de-ionised water. Dry preservation for a mammal could be as a mounted skeleton, mounted skin (“stuffed”), disarticulated skeleton or as a study skin. About 9,000 specimens are on exhibition, the rest in storage at the Collections Resource Centre, Beggars Bush, or in the Natural History Museum. Coverage is worldwide with particular strengths in Irish material, which has been the main area of active acquisition through staff fieldwork and regular donations by zoologists working on the Irish fauna.

## **2.5 The entomological collections**

Entomology is a subset of zoology but because of the significant scale of the insect collections, this is considered separately here from the rest of zoology. There are approximately one million insects in the collections. Most are mounted on pins and stored in cabinets in the Natural History Museum. In addition, there are slide-mounted specimens prepared for study using microscopes and some collections preserved in spirit. These various forms of preservation are necessary for particular insect groups or to provide specimens in varying states of preservation in order to be fully representative of the species concerned. Approximately 1,000 pinned specimens are included in the exhibitions in the Natural History Museum. Coverage is worldwide with particular strengths in Irish material, which has been the main area of active acquisition through staff fieldwork and regular donations by entomologists working on the Irish insect fauna.

# **3 Earth Sciences – Geology, Palaeontology**

## **3.1 Definition**

The earth sciences incorporate the study of our planet, its origins, composition, history, structure and processes. In a museum context this is reflected in collections of minerals, rocks and fossils. Minerals are the basic building blocks of all rocks and may range from the familiar diamond to less known mineral barite – a dense white material used on this page to enhance the quality of paper. Rocks are composite materials that are formed from a range of over 3,000 minerals in various combinations. Fossils are the remains of animals and plants preserved in rocks and they record a wide variety of organisms over almost four billion years of evolution.

## **3.2 Irish geodiversity**

For a small island Ireland has a very diverse geology, many similar sized areas of the earth’s surface are much less varied. A wide range of rock types of a considerable range of ages represent much of earth history. This makes it a very good place for the teaching of geology and for field-based research. Irish geology has also been studied for over two centuries, is one of the first countries in the world to be

completely mapped (published 1838) and has contributed significantly to the history of the science in Europe.

### **3.3 Global geodiversity**

The collections hold specimens from many parts of the world. These are necessary to place Irish geology in context and to illustrate phenomena that are not evident in Ireland. For example, Ireland has no active volcanoes, and volcanic rocks from other countries are needed to illustrate the full range of rock types, which are not all present in our extinct volcanic districts such as Antrim and Limerick. The same is true of minerals and fossils (for example, Ireland has no noteworthy dinosaurs). Representative specimens from other countries will continue to be acquired in order to demonstrate global geodiversity.

### **3.4 The mineral and rock collections**

Irish minerals are very much under-represented in the collection of 4,000 specimens. Many are of historic significance. The 20,000 or so foreign minerals are more representative of the diversity of mineral species and form a good general reference collection suitable for exhibition and research. Rock collections are less well known, but are being catalogued, with 10,000 of the 15,000 or so specimens databased to date. There is good general representation of various rock types.

### **3.5 The fossil collections**

The fossil collections are better known than the mineral or rock collections, major acquisitions are listed in publication (Monaghan 1992 *Geological Curator* 5 (7): 275-282). There are considerable strengths including Ice Age material from Irish caves, large Jurassic reptiles, and many significant fossils in these collections. The 4,500 specimens in the Griffith collection underpin the stratigraphy of the first geological map of Ireland (published from 1838-1855). This collection was the basis for 522 new species in publications of 1844 and 1846. In addition to research strengths the collections are broadly representative and well suited to exhibition. The galleries housing the collection were demolished in 1962 to make way for Dáil expansion. Few specimens have been exhibited since.

## **4 Acquisitions**

### **4.1 General**

With the great diversity of existing collections, the wide scope of the natural science disciplines covered by the Museum and the unpredictable future of the sciences involved, it is not advisable to be proscriptive in determining future acquisitions. The lack of secure futures for a number of collections in private hands suggests that major acquisition opportunities may arise in coming years. There is also a potential future problem for universities and some government agencies that may have significant collections, but fail to meet the requirements for their curation and look to us as an alternative home, something that experience has already demonstrated. Research is required into such collections and discussions needed with their owners in order to plan for the long-term.

Each collection is discussed below in light of our current understanding of our own holdings and future potential. Some guiding principles are also required in relation to quality.

#### **4.2 Data**

The value of a museum specimen to a scientist is greatly influenced by information accompanying the object. Priority will be given to specimens or collections that are well labelled, with data appropriate to their category.

#### **4.3 Reference and voucher specimens**

Priority will be given to material that forms the basis of publications as these support data that is already in the public domain. This includes type specimens, specimens that have been illustrated ('figured specimens') and representative voucher material that supports lists of species mentioned in a publication. Great significance in science is given to 'type' specimens. These are the fossils used to define a particular named species for the first time.

#### **4.4 Survey collections**

A number of projects include collection of specimens as part of their activities. These may be major surveys (*e.g.* the BioMar baseline survey of coastal marine biodiversity) or small-scale environmental impact assessments. Acquisition of such material will be made in light of resource implications for accessioning and maintenance. It is likely that only representative material may be acquired and that the onus for its documentation, conservation and storage materials will be placed on the organisation responsible for the survey. In this regard it will be necessary to press for funding agencies to include these costs in the project budget. As many are State or EU funded this is a realistic ambition.

#### **4.5 Unpublished collections**

Material which has not been published prior to acquisition will be judged on its future potential for research, exhibition or teaching. Priority will be given to:

**4.5.1 Irish material:** In this instance Ireland is considered as the entire land mass, offshore islands and surrounding seas. The geology is contiguous and the fauna does not confine itself to any political boundary. The logical scientific unit is Ireland as a whole. The existing collection was developed on an all-Ireland basis before the establishment of the Ulster Museum, but that organisation is now seen as the most appropriate repository for material from Northern Ireland.

**4.5.2 Well-documented reference collections:** A primary role of a natural science collection is to assist in the identification of specimens. It is important to have examples of animals, fossils and minerals to act as a reference collection. It is important that specimens in these collections have been identified by experts in relevant fields.

**4.5.3 Specimens already named by experts over unidentified material:** A specimen without identification is often of little use, particularly if the small scientific staff of the museum has neither the time, library, nor the specialist expertise to identify it readily.

**4.5.4 Rare species:** Some specimens are encountered by chance and would be very difficult to collect again. For example, this applies to deep-sea animals, which are recovered accidentally during commercial fishing.

**4.5.6 Foreign species of potential future occurrence in Ireland:** Pests are a particular concern to the Irish economy. As an island we are particularly prone to the effects of alien invasive species. It is important to have reference material available for use by Irish scientists in recognising exotic animals with potential for significant environmental impact.

**4.5.7 Good quality of preservation:** Specimens should be in good physical condition to ensure potential for long-term storage in the museum. Minerals and rocks may contain pyrite or salts that have begun to decay before arriving in the museum, so this is not just an issue for animals.

**4.5.8 Specimens associated with significant individuals:** The museum already holds specimens associated with Roger Casement, Charles Darwin, Nathaniel Hone, Charles Haughey, William Wilde, to name but a few. The specimens may not necessarily be of great scientific significance in their own right, but can be used in small thematic exhibitions.

#### **4.6 Archives and ephemera associated with collectors and collections**

Aside from documentation about particular collections it is desirable to acquire personal effects directly related to collectors and collections of note, for both historical context and potential value in interpretive exhibitions. Such objects might include books, notebooks, equipment, manuscripts and instruments.

## **5 Existing strengths and development priorities**

### **5.1 Invertebrates – general**

All major invertebrate groups are well represented in the collections, with particular strengths in Irish material. The level of representation of Irish species is variable, depending on the efforts of particular researchers and staff. With dry Mollusca (shell collections) up to 95% of Irish species are represented. The figure is similarly high for crustaceans with up to 60% of Irish species represented. Some animal groups have seen much less research and collection activity, less than 5% of Irish species of parasitic worms are represented in the collections. Priorities for continued development include support of fieldwork by staff. As for other collections, much material is freely donated by amateur and academic zoologists. It is intended to acquire representatives of every major invertebrate family, many of which will be foreign and require development of networks with other zoologists to achieve.

## **5.2 Invertebrates – insects**

The principal strengths are in Irish material, which includes a large proportion of specimens that have been published, either as type specimens or as voucher material supporting species lists. This is the most significant collection of Irish insects in the world. Priorities for continued development include support of fieldwork by staff and their research associates who collaborate on numerous publications. Most acquisitions are voluntary donations by entomologists who have used our collections in their research and see us as a logical repository for their own specimens.

## **5.3 Vertebrates**

All major vertebrate groups are well represented in the collections, with particular strengths in Irish material. Up to 95% of known Irish fish species are represented in the collections. Recent work on the bird collections indicates that there are 12,500 study skins of which 3% or more represent very rare or extinct foreign species. While vertebrates may be the most visible grouping in the collections, because of their sheer size (whales, elephants, antelopes) and exhibition profile, they are numerically much smaller than the invertebrate collections. Development opportunities include encouraging the donation of selection of specimens from research projects. It is also intended to continue to add to the representative specimens of bones of mammals, which are used as a reference collection by archaeologists.

## **5.4 Fossils**

Research collections will be actively sought, although it should be borne in mind that there are museums in most university departments of geology. An exception is University College Dublin where research students have donated collections over the years, and the entire UCD Geological collection has been transferred to NMI. The concern is that most university museums are poorly funded with no trained curators. This issue may apply to most categories of natural science material. Some fossils will be acquired to complement the existing broad coverage and fill gaps in the collection with future exhibition in mind. In many cases these will be replicas (*e.g.* the woolly mammoth skeleton acquired in 1990, or dinosaur skeleton in 1994), particularly if the public demand for dinosaurs is to be met.

## **5.5 Minerals**

The range of species represented needs to be expanded. This is a relatively straightforward exercise, purchasing specimens from international dealers has been a practice for over a century. Irish specimens should be acquired through staff fieldwork and by development of contacts with Irish geologists.

## **5.6 Rocks**

These collections need to be better understood before decisions are made regarding acquisition strategy. It would certainly be worthwhile and relatively simple to build a collection of building stones, including materials commonly used in industry. Collections forming the basis of research projects will also be acquired.



## **6 Support Materials**

### **6.1 Models and replicas**

Biological and geological models will be acquired primarily for exhibition. Palaeontological replicas have a research value and will be acquired for this purpose as well as for exhibition. In many cases it is not possible or affordable to acquire original specimens of certain fossils and replicas will serve the needs of the museum.

### **6.2 Manuscripts, archives, illustrations, photographs and personalia**

Collections do not stand alone, isolated from the context in which they were accumulated. Where possible the manuscripts, archives, illustrations, photographs and personalia relevant to the collection of specimens will also be acquired. Such objects may also be acquired if they have scientific merit in their own right, for example illustrations by a scientist may be available in cases where no specimens have survived. These will be targeted as priorities for acquisition through the Museum library under the **NMI Archives Policy**.

### **6.3 Books**

The library is a key tool in supporting the understanding of the collections. Many publications in the existing holdings are not available in other Irish libraries. Works which are outside the copyright agreements of major Irish libraries need to be acquired as reference not only for staff, but also for visitors. For each category of collection advice will be sought from relevant experts on the essential reference works for their discipline. These will be targeted as priorities for acquisition through the Museum library under the **NMI Library Policy**.

### **6.4 Popular natural history ephemera**

To enhance the options for making displays, and particularly temporary exhibitions, relevant, accessible and engaging it is intended to selectively acquire popular ephemera with geological or zoological themes as opportunity arises. Examples of such objects may include dinosaur related items, books, films and film related merchandise, phone cards, first day cover postage stamps, toys and models etc. This category of 'merchandise' objects also helps chart the development of popular natural history awareness through mainstream media.