ChalcIS-D: Information System
Chalcidoidea Germany (Hymenoptera)
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Project aims
• Clarifying the depositories of primary types of Chalcidoidea in German museums and insect collections.
• Creating a web-served database of primary types of Chalcidoidea.
• Establishing a database of corresponding literature references.
• Creating digital images of all primary types of Chalcidoidea.

Project terms
April 2003 – December 2004

Introduction
Chalcidoidea is a very large group of parasitic wasps which is well represented in all parts of the world, except the antarctic region. As many as 400,000 species may exist worldwide [3], but only about 22,000 species have been described [4]. Chalcidoids are small to minute wasps, ranging from 0.11–45 mm, but usually averaging 2–4 mm in body length. The group includes the world’s smallest winged insect which is only 0.11 mm long. Chalcid wasps exhibit amazingly diverse life histories and profoundly influence all types of ecosystems. Many of them are important biological control agents in sustainable agricultural systems of agricultural pests, with over 800 species associated with biocontrol programs throughout the world. On the other hand, more than 80 species are known as pests themselves [2]. The Chalcidoidea taxonomy is still highly problematic because original descriptions are poor and often not diagnostic, and identification keys are available for only a few groups. It is estimated that fewer than 5% of the described species can be named without comparison to the type specimen [1], and this demonstrates the critical importance of accessible type information, which in this group is probably more important than in any other group of insects.

Based on a preliminary search of literature, primary type specimens of 200-400 chalcid species were expected to be deposited in insect collections of German institutions. These institutions are:

- Biologische Reichsanstalt für Land- und Forstwirtschaft, Naumburg (BRNG)
- Deutsches Entomologisches Institut, Münchenberg (DEI)
- Institut für Forstzoologie der Universität Göttingen (IFUG)
- Museum für Naturkunde, Humboldt-Universität, Berlin (ZMHB)
- Senckenberg Museum, Forschungsinstitut Senckenberg, Frankfurt (SMUF)
- Staatliches Museum für Naturkunde Stuttgart (SMNS)
- Staatliches Museum für Tierkunde Dresden (SMTD)
- Zoologisches Institut und Zoologisches Museum, Universität Hamburg (ZFMH)
- Zoologisches Institut der Universität Köln (IUKG)
- Zoologische Staatssammlung München (ZSM)

Results
The search for type specimens in museums and natural history collections in Germany revealed the presence of 778 primary type specimens of 484 Chalcidoidea species. Major depositories of primary types of Chalcidoidea in Germany are given in the table below.

<table>
<thead>
<tr>
<th>Number of</th>
<th>Author</th>
<th>A. L. Girault</th>
<th>L. Masu</th>
<th>E. Strand</th>
<th>J.T.C. Ratzeburg</th>
<th>A. Förster</th>
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<tbody>
<tr>
<td>species</td>
<td>68</td>
<td>52</td>
<td>50</td>
<td>48</td>
<td>44</td>
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</tbody>
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The database
The Chalcidoidea database was created using FileMaker® with the field structure according to the field definition standard of the SysTax system [5]. Each primary type specimen was assigned a unique ID and the type information was entered into the database.

The taxonomic database includes the following information:
• Presence of type, sex, type status, and condition of type
• Original and currently valid name
• Notes on original and current classification
• Original type information based on the original description
• Current type information, including the depository
• Photographic documentation of all specimen labels
• Facsimile of the original description (if copyright-cleared)
• Literature reference

Insect collections
A well maintained and curated insect collection is an irreplaceable scientific resource. Insect collections represent the most important basis for systematic and biodiversity investigations and provide research opportunities for a broad range of entomological studies.

Arrangement of the type material of Chalcidoidea in ZSM.

Chalcidoidea specimens, including a holotype in ZSM.

Facsimile of the original description of Torymus chalybeus Ratzeburg, 1844 with original illustration.

Taxonomists
The five most important authors of Chalcidoidea species with types deposited in German insect collections are given in the table below.

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Original descriptions
Facsimile of the original description of Torymus chalybeus Ratzeburg, 1844 with original illustration.

References

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