

A short overview of the entomological collections in Estonia

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The Estonian entomological collections include approximately 1.8-1.9 million specimens. Of these about 3200 are types. The largest state collections are housed at three institutions: the Estonian Museum of Natural History (Tallinn), the University of Tartu, and the Estonian University of Life Sciences (Tartu). This review reviews these collections and discusses some of the most notable sub-collections. Some further perspectives for entomological collections are outlined.

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Introduction

Insects, with roughly one million named species represent 70-75% of all animal species (e.g. Chapman 2005) dominates zoology. A similar proportion is also observed in zoological collections within Estonia, with three quarters of the deposited zoological specimens being insects. Entomological collections in Estonia date back almost two centuries with specimens that were collected by Gottfried Albert Germann from the beginning of the 19th century. The various Estonian collections have grown enormously since then as a result of the collecting activity both professional and amateur entomologists. The material collected by professionals traditionally belongs to a museum and/or department the collector worked for. Amateurs were able to keep their collections private but, in the past century, several of these insect collections have been donated to or purchased by state collections.

The collections

Today, the largest entomological state collections in Estonia are housed in three institutions: University of Tartu, the Estonian Museum of Natural History (Tallinn) and the Estonian University of Life Sciences (Tartu).

There are also some small collections at lo-

cal museums (totalling fewer than 10 thousand specimens). The most important of these smaller collections are the Lepidoptera collections by Th. von Polli in the Saaremaa Museum (located in Kuressaare), and collections by M. Tõnopa and H. Raudsepp in the Museum of Viljandi. A small part of the insect collection owned by Middendorff's family (collected and determined mostly by Paul Lackschewitz) has been housed in the Tartu County Museum (at Elva).

University of Tartu

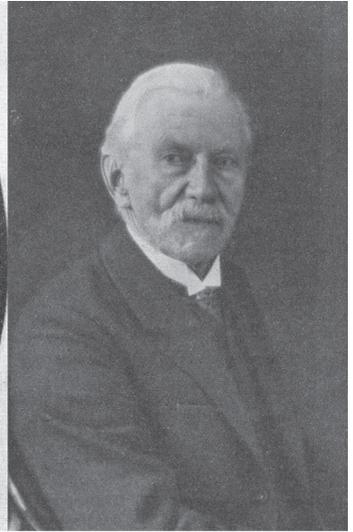
The Museum of Zoology of the University of Tartu (Vanemuise 46, Tartu; acronym TUZ) was founded in 1822 as University of Tartu's Cabinet of Zoology by the initiative of Prof Johann Friedrich Eschscholtz. Active collecting of zoological material begun in the 19th and the first half of the 20th century, including material by several outstanding specialists including M. Asmuss, G. Flor, and J. von Kennel amongst others (cf. Ling 1972). The largest collection from those days, preserved up to the present day in the museum, is that of the Palearctic Lepidoptera by F. A. Hoyningen-Huene. The main collections of the Zoological Museum of Tartu University were damaged by the fires in 1829 and 1944, and a water accident in 1988 (Ling



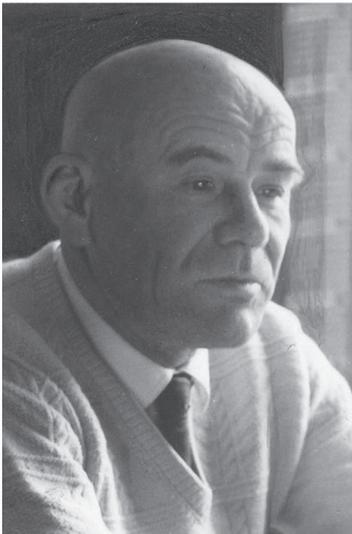
Gustav Flor
1829-1883



Franz Sintenis
1835-1911



Wilhelm Petersen
1857-1933



Harald Haberman
1904-1986



Juhan Vilbaste
1924-1985



Hans Remm
1929-1986

Figure 1. These men have left prominent footprints to Estonian entomology.

1972, Ilisson 1999). Since then, most of the collections have been stored in the exposition room. Today, the collections contain approximately 90 000 pinned and labelled insect specimens. In addition, there are approximately 200 000–300 000 further specimens determined by H. Remm (1929–1986; see Fig. 1), which are not fully curated and stored in small boxes and/or on cotton. Types of about 100 species, mostly ceratopogonid flies described by H. Remm, are also deposited in the museum. Since the beginning of 2005 the Zoological Museum has belonged to the Natural History Museum of Tartu University.

Estonian Museum of Natural History

The Estonian Museum of Natural History (Lai 29a, Tallinn; acronym EMNH) houses, among other collections of natural history, an entomological collection of approximately 90 000 specimens. The museum was set up in 1941 incorporating the natural science collection of the Provincial Museum, by the Estonian Literary Society, which itself was founded as early as 1864 (cf. Jõe 2001). Today, four subcollections can be distinguished: the main collection and the private collections by V. Soo (Coleoptera), M. Metsaviir (Lepidoptera) and G. Reindorff (Lepidoptera). The material had mainly been collected in Estonia but recently material has also come from several biodiversity “hot spots” in the world. About 20 000 specimens of tropical Lepidoptera and Coleoptera are deposited in the collections, including a holotype of a recently described moth species *Oospila orula* (Viida-lepp 2003).

Estonian University of Life Sciences

The Estonian University of Life Sciences houses three entomological collections. Two of them, considerably small collections, are kept at the Institute of Agricultural and Environmental Sciences and at the Institute of Forestry and Rural Engineering, the Kaarel Leius collection (34 300 specimens) and a collection of bark beetles (5209 specimens), respectively. These two collections contain mainly specimens collected from within Estonia and no type material.

The third one is the largest entomological collection in Estonia, located at the former Institute of Zoology and Botany (Riia 181, Tartu; acronym IZBE). This collection now also belongs to the Institute of Agricultural and Environmental Sciences. The collection was founded in 1948, when the

entomological collections of the Estonian Naturalist's Society were given to Institute of Zoology and Botany (cf. Kongo 2003). During the first couple of decades, the collection was arranged, developed and supplemented under the supervision of H. Haberman (1904–1986; see Fig. 1), a coleopterologist and the first Director of the Institute. An essential part of Coleoptera in the main collection (see below) were collected and/or arranged by him. Today, the IZBE contains material from most insect orders collected not only from Estonia but also from the temperate region of Eurasia and from tropical areas of the world. The collection, with approximately 850 000 items, including 3006 types (holo-, para- and lectotypes) is divided into six sub-collections: the main collection and five personal collections. The main collection comprises of more than 730 000 insect specimens, most of which are mounted and labelled, and with Lepidoptera, Diptera and Coleoptera being best represented. A large part of material has been collected from poorly described faunal regions of the former Soviet Union (the Russian Far East, Siberia, Central Asia etc.) and is therefore especially important. The main collection also includes part of the material (mostly Diptera) collected by F. Sintenis (1835–1911; see Fig. 1) at the end of 19th and beginning of the 20th century from Livonia (the area currently divided between Latvia and Estonia). Unfortunately, the Sintenis collection has been split up: part of the material is kept in a different collection in Tartu (IZBE, TUZ, K. Leius collection), while another part is in Riga and Warsaw (cf. Elberg & Kaavere 1985). The main collection includes the most valuable material of Palaearctic Homoptera with about 33 000 specimens collected by Juhan Vilbaste (1924–1985; see Fig. 1) after World War II and containing 173 holo- and 2694 paratypes. The collection of Estonian arachnids by Asta Vilbaste includes about 41 000 specimens. IZBE also contains international sub-collections from several notable private collectors. One is by the well-known Gustav Flor (1829–1883; see Fig. 1) of European Hemiptera with about 11 000 specimens from the middle of the 19th century. Twelve lectotypes have been designated from this material.

A second important personal collection is from Wilhelm Petersen (1857–1933; see Fig. 1) containing both micro- and macrolepidoptera collected at the beginning of the 20th century from various parts of the Palaearctic Region. This sub-collection has approximately 55000 specimens and includes six

holotypes and 15 paratypes. IZBE is also the home for personal collections of mainly national importance, viz. collections by R. Sülla (about 4300 specimens of Estonian Lepidoptera), A. Suurpere (about 12 000 specimens of Estonian Lepidoptera), J. Miländer (33 970 specimens of Estonian Coleoptera). In addition to the state collections, some 25 private collections (each over or equal to 5000 specimens) are known in Estonia. The largest is the private collection by A. Selin (Tallinn) with about 300 000 prepared and labelled specimens from most insect orders, with a further few million in the freezer.

Overall, entomological collections in Estonia (i.e., state + private collections) contain about 1.8-1.9 million specimens, that is 1.3-1.4 prepared and labelled insect specimen per capita, a rather low ratio with regards to the European perspective.

Conclusive remarks, financing and some further perspectives

Overall, the main objectives for the collections are to ensure their preservation and development, the modernisation of their curation according to international standards, and to allow use of the collected materials for regional, national and international scientific research and education. A part of these objectives should be the development of databases (especially online) and making them accessible to users at home and abroad. One of the priorities enhancing the collections should also be an increased openness of the Estonian collections, including active communication with other entomological collections and museums around the world.

With specific reference to the state entomological collections, further reorganisation should not be excluded. This may, for example, include the amalgamation of the collections at Tartu into one well-organised collection or museum instead of several small ones with different structures and objectives. The process has already started in a virtual form. From 2008, collections records from the IZBE and TUZ in Tartu and EMNH in Tallinn populate a common database, which today contains more than 46 thousand collection specimen records (http://unite.ut.ee/eesti_loomakogud/index.php).

At present, the zoological collections (including entomology) in Estonia are mainly financed by the state programme "Collections of Humanities and Natural Sciences. 2004 - 2008". Further minor

support comes from the basic finances of the Institutions and from other funds. The state programme supports the collections through project-based financing, i.e. every January reports from the previous year are delivered and finances for new/existing projects are sought. In 2008 five projects, a total of 1.04 million Estonian kroons (= □ 67 000) were funded. In the case of positive results, financing hopefully continues at the end of each project. A more suitable solution in the future would be the financing of the research institutions rather than the present system of project-based initiatives to ensure the development of the overall collections rather than sections within them.

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