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The Scarab Collections at the University of Oslo, Norway (ZMUN) and the Institut Royal des Sciences Naturelles de Belgique, Belgium (IRSNB)

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In January 2016, I traveled to the University of Oslo in Norway to serve as an external examiner for a dissertation defense (on scarabs!) and took the opportunity to study the scarabs in their research collections (Zoological Museum, University of Oslo; ZMUN; http://www.nhm.uio.no/english/). The curator is Vladimir Gusarov (Fig. 1), who is a specialist in Staphylinidae. These collections are of moderate size, and, as you might expect, their holdings are primarily Palearctic and divided into Norwegian and World collections. The specimens are arranged well and housed in modern cabinetry (Fig. 2). Unit trays are employed in the drawers (Fig. 3) for facilitating curation.

Fig. 1. Vladimir Gusarov, Curator, Zoological Museum, University of Norway.

The Norwegian collection documents species distribution within the country in detail, and the number of drawers is Lucanidae (1), Trogidae (1), Geotrupidae (3), Scarabaeidae (15). The World collection is essentially an amalgamation of a handful of beetle collections with most of the western Palaearctic specimens from the Thomas Münster collection http://www.nhm.uio.no/english/research/collections/zoological/insect/contributors/muenster/. These specimens were collected a century ago and locality label data are often not detailed. Ejnar Fischer http://www.nhm.uio.no/english/research/collections/zoological/insect/contributors/fischer/ donated an excellent collection of Australian beetles. The specimens were collected from 1912 to 1925

and were identified by leading beetle experts of the time, particularly those based in Australia and at the Natural History Museum in London. Leif Reinhardt Natvig donated his cetoniine collection of 55 drawers, which has global coverage. The number of World Collection drawers is Lucanidae (7), Passalidae (5), Trogidae (1), Glaseridae (1), Geotrupidae (4), Bolboceratidae (1), Ochodaeidae (1), Ceratocanthidae (1), Hybosoridae (1), Glaphyridae (1), and Scarabaeidae (136).

During the last 10 years the beetle collection has been substantially expanded thanks to recent collecting efforts in east Africa, western Europe and America north of Mexico. The main focus of these collecting efforts was staphylinids. The majority of specimens collected today are preserved in DNA-grade collection in 100% ethanol. The sorted part of this collection includes 37,000 samples with 180,000 specimens. Among them are 350 scarab (*sensu lato*) samples containing 645 specimens. All this material is preserved in freezers at -80°C. Thousands of additional specimens are still to be sorted.

There is space for visitors to work, either in the collection room or in a nearby office/lab area (Fig. 4), and a microscope is available. The collections are just a five-minute walk from the nearest metro stop, although you would need some guidance on which ways to turn out of the station in order to find the museum.

From Oslo, I flew to Brussels in Belgium for a couple of days of collections work in the Institut Royal des Sciences Naturelles de Belgique

Fig. 2. Insect collection range at the Zoological Museum, University of Oslo.

Fig. 3. Large drawers with unit trays in the scarab holdings, Zoological Museum, University of Oslo.

Fig. 4. Lab/office area for visitors, Zoological Museum, University of Oslo.

Fig. 5. Alain Drumont, Collections Manager, Royal Belgian Institute of Natural Sciences, Brussels.

(https://www.naturalsciences.be/en/science/collections). My host was Alain Drumont (Fig. 5) whose title is Expert in Collection Management and who is responsible for Scarabaeoidea, Caraboidea, Histeridae, Cerambycidae, and Buprestidae. His main interests are Palearctic scarabs and Oriental dynastines, but he also is a specialist on Palearctic cetoniines. The museum's collections date from the independence of Belgium in 1830, and the city of Brussels donated the collections to the Belgian government in 1846, which is the official start date for the museum. The current name of the museum, Royal Belgian Institute of Natural Sciences, dates from 1948.

The Museum collections number an estimated 37 million specimens, making them one of the ten most important natural history collections in the world, as well as the largest in Europe after Paris and London (Anonymous 2016). The insect, spider mite, and centipede collections contain about 15 million specimens (with at least 15,000 type specimens) and are worldwide in scope. The entomology collections are housed in 75,000 large, glass-topped drawers in more than 800 oak cabinets (Figs. 6–7). The alcohol collection contains about 5,000 jars of spiders, scorpions and centipedes. The scarabs are contained in 48 large, oak cabinets each containing 100 drawers for a total of 4,800 drawers (not counting Lucanidae). Each drawer is organized in the older European fashion of rows of specimens with empty spaces left for new acquisitions accord-

ing to catalog listings of what might ultimately become available (Fig. 8). The level of curation for these collections was quite good, and there remains plenty of unidentified material in which to possibly find some nice surprises. I came to study their New World Gymnetini (and, of course, Dynastinae), the former of which also contains the large and important personal collections of Robert Alexis (deceased December 2015) and Jean Rouch. There is also the Gillet collection of dung beetles that is important for anyone studying Scarabaeinae and the Ley collection of Melolonthinae. They also maintain the types of Pol Limbourg's African Ruteliane. Pol is a specialist at the museum who works on Afrotropical Rutelinae, especially Anomalini, and he has been on the staff there for the last 15 years.

If you need to study these collections, I recommend you go anytime but winter since the particular collection room I was in (Fig. 9) was unheated! The microtherms emanating from a 60-watt bulb above the work desk were feeble, and by lunchtime or quitting time my fingers were numb. Fortunately, I was able to have a brief respite and have lunch with Alain in his heated office. At the end of the first day, Paul Schoolmeesters (Fig. 10) came by to take my wife and I to his home in Leuven (about 16 miles east of Brussels) for a glass of wine with his wife, Nicole. Paul has a surprisingly small print library considering he is the god of scarab literature. We then had a pleasant evening walking tour of Leuven before going to a restaurant for dinner.

The express trains from the airport to the city in both Oslo and Brussels are

Figs. 6-7. Views of part of the scarab range, Royal Belgian Institute of Natural Sciences, Brussels.

Fig. 8. Drawer arrangement for lucanids, Royal Belgian Institute of Natural Sciences, Brussels.

Fig. 9. Visitor work area in the collection room, Royal Belgian Institute of Natural Sciences, Brussels.

Fig. 10. Paul Schoolmeesters at his home in Leuven.

very quick, easy, and convenient. From a hotel in central Oslo, the metro is fast and takes you to a stop within a five-minute walk of the Museum of Zoology. Depending on where you stay in Brussels, the train or bus might be convenient, but I stayed near the central train station and relied on a taxi rather than navigate the more complex public transport system in the city center.

Lastly, as a cultural aside, you must decide on your next priority after scarabs while in Brussels, which has a reputation for two very important products. Is it to be the multitude of Trappist-produced fine beers (Fig. 11) or world-famous Belgian chocolates (Fig. 12)? The answer is quite easy. Both . . . although perhaps not at the same time.

Acknowledgments

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References

Anonymous. 2016. Royal Belgian Institute of Natural Sciences. Available at: https://www.naturalsciences.be/en/science/collections. Accessed 26 February 2016.

Fig. 11. The choices for Belgian beers seem endless.

Fig. 12. The choices for Belgian chocolates are possibly even more endless.