

## Construction of Asian Xylocopa Specimen Database BeeAXylo

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## Construction of Asian *Xylocopa* Specimen Database BeeAXylo

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**Abstract.** A new specimen database of KONCHU, BeeAXylo based on Asian carpenter bees was constructed. Each record consists of scientific names (family, genus and species), locality, collection date, collector, etc., according to the format of the Darwin Core of the Global Biodiversity Information Facility (GBIF). At this time the collection of Asian *Xylocopa* specimens preserved in Naturalis (The National Museum of Natural History in Leiden, the Netherlands) is available to the public via the Internet. We will continue to accumulate Asian *Xylocopa* data. In this paper, we present the home page of the file BeeAXylo. The database is administered by a SIGMA management system.

**Key words:** Bioinformatics, KONCHU database, specimen database, *Xylocopa*, Naturalis, Asia, SIGMA.

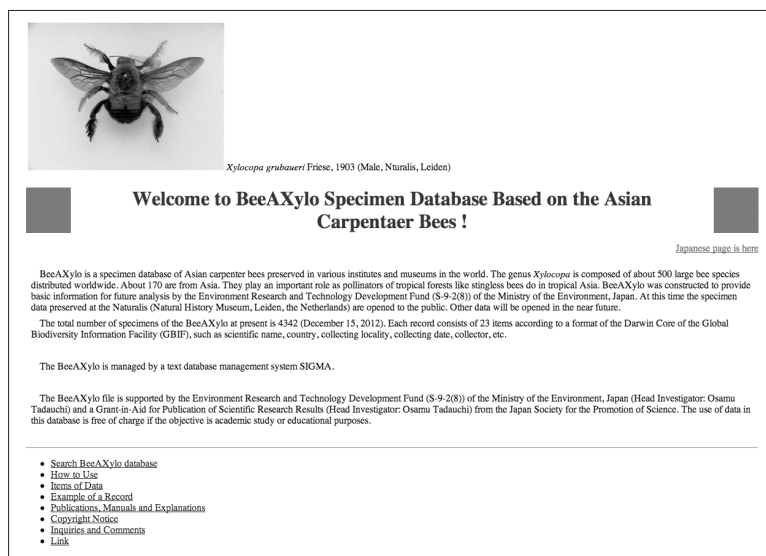
We have already produced various specimen and bee related database files based on the Collection of Kyushu University and other institutes and they have been opened to the public via the Internet (Tadauchi et al., 2001; Tadauchi et al., 2009). We recently produced a new specimen database file, BeeAXylo. It is a file of Asian carpenter bees preserved in various institutes and museums in the world. The genus *Xylocopa* is composed of about 500 large bee species distributed worldwide. About 170 are from Asia. They play an important role as pollinators of tropical forests like stingless bees do in tropical Asia. BeeAXylo was constructed to provide basic information for future analysis by the Environment Research and Technology Development Fund (S-9-2(8)) of the Ministry of the Environment, Japan. At this time the specimen data preserved at the Naturalis (National Museum of Natural History, Leiden, the Netherlands) are constructed. We will continue to accumulate data from other institutes.

In this paper, we present the top page of the file (Fig.1). The database is administered by a SIGMA management system. The total number of specimens in BeeAXylo at present is 4342 (December 15, 2012). Each record consists of 23 items formatted according to the Darwin Core

of the Global Biodiversity Information Facility (GBIF), such as scientific name, country, collecting locality, collecting date, collector, etc. The database is written in English and is administered by a SIGMA text database management system running on a workstation in the Research Institute for Information Technology, Kyushu University. Operation of the SIGMA system is explained in Arikawa et al. (1987, 1988).

Each record is composed of 23 items selected from the Darwin Core format of the GBIF. Data and tags are the following 23 items.

- |           |                    |
|-----------|--------------------|
| 1. (BOX)  | Box                |
| 2. (DATE) | Date Last Modified |
| 3. (INST) | Institution Code   |
| 4. (COLC) | Collection Code    |
| 5. (NAME) | Scientific Name    |
| 6. (BR)   | Basis of Record    |
| 7. (KING) | Kingdom            |
| 8. (PHY)  | Phylum             |
| 9. (CL)   | Class              |
| 10. (OR)  | Order              |
| 11. (FAM) | Family             |
| 12. (GEN) | Genus              |



**Fig. 1.** A home page of a specimen database file BeeAXylo in the KONCHU in English version.

13. (SP)	Species	Locality	Nakon Sri Tamtrat, Khao Luang,
14. (AU)	Scientific Name Author		5800 ft.
15. (COL)	Collector	Longitude	N 17° 4' 11"
16. (COL)	Collecting Date	Latitude	E 99° 10' 9"
17. (C)	Country	Sex	F
18. (LOC )	Locality	Relationship Type	
19. (LONG)	Longitude	Notes	Naturalis
20. (LAT)	Latitude		
21. (SEX)	Sex		
22. (REL)	Relationship Type		
23. (NOTE)	Notes		

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An example of the data in BeeAXylo is as follows:

Box	A-1
Date Last Modified	2012/2/29
Institution Code	Naturalis
Collection Code	BeeAXylo
Scientific Name	<i>Xylocopa</i> ( <i>Hoplaxyllocopa</i> ) <i>acutipennis</i> Smith
Basis of Record	S
Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Hymenoptera
Family	Apidae
Genus	<i>Xylocopa</i>
Species	<i>acutipennis</i>
Scientific Name Author	Smith, 1854
Collector	H. M. Pendlebury
Collecting date	27/03/1922
Country	Thailand

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