

Is Interest in Dynastine Beetles Really Uniquely Japanese and of Little Interest to People in Western Countries?

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Abstract The popularity of dynastine beetles in Japan and the Western countries (France, Germany, United Kingdom and USA) was investigated to examine whether interest in dynastine beetles is uniquely Japanese and of little interest to people in Western countries. Popularity was assessed by the Google search volume of common dynastine species names in each country, using the Keyword Tool of Google AdWords, and the search volume was standardized by the number of Google users estimated by the population, percentage of individuals using the Internet and the percentage of Google market share in each country. As a result, the relative search volume for “*Kabuto-mushi*”, which means the rhinoceros beetle or dynastines in Japanese, was 0.00428 searches, the highest of the dynastine names in the official language of the countries examined. The relative search volume for “*Kabuto-mushi*” in Japanese was 51.2 times as high as the relative search volume for “rhinoceros beetle” in USA, which was second highest (0.00008 searches) in the official language of Western countries. As a whole, the search volume for “*Kabuto-mushi*” was extremely high relative to that for the common names in the official languages of all Western countries examined. These results indicate that the Japanese have extraordinary interest in dynastine beetles relative to people in the Western countries examined, although these results should be carefully interpreted because the estimated number of the relative search volume is thought to be somewhat lack in accuracy due to the methodological problem.

Keywords: Cultural entomology, Japanese culture, Western countries, Interest in dynastine beetles

Intorduction

Japanese interest in dynastine beetles has been frequently mentioned in the field of cultural entomology (e.g. KONISHI, 2007; KAWAHARA, 2007; TAKADA, 2010 a, b, c). Indeed, dynastine beetles (“*Kabuto-mushi*” in Japanese), especially Japanese rhinoceros beetles *Trypocylus dichotoma* (LINNAEUS 1771), are popular with the general public as pets (LAURENT, 2000; KONISHI, 2007; KAWAHARA, 2007; TAKADA, 2010 a, b), with the result that dynastine beetles are often represented in Japanese culture (KAWAHARA, 2007; HOSHINA *et al.*, 2010; TAKADA, 2010 c), and the interest in dynastine beetles has assumed to be uniquely Japanese in contrast to the little interest of the general public of other countries, especially Western people, in dynastine beetles in general. However, it has still not been well proved and examined whether contemporary Japanese are strongly interested in dynastine beetles relative to people in Western countries, because the popularity of dynastine beetles have never been assessed quantitatively across countries.

The popularity of dynastine beetles was therefore investigated in Japan and Western countries to examine whether interest in dynastine beetles is uniquely Japanese in contrast to the little interest of Western people in dynastine beetles. The popularity of dynastine beetles in each country was assessed by the Google search volume of group names. The search volume is used as a yardstick to measure a term's intention, interest or popularity, and thus can be applied to investigate the popularity of insects (TAKADA 2010 b; 2011; 2012 a), as well as internet marketing, search engine optimization and public responses to social problems (BATTLELLE, 2005; RANGASWAMY *et al.*, 2009; GOEL *et al.*, 2010; CHAY &

SASAKI, 2011).

Materials and methods

A survey was conducted on the popularity of dynastine beetles in Japan and Western countries on 26 April 2012, assessing the local monthly search volume using the Keyword Tool in Google AdWords (https://adwords.google.com/o/Targeting/Explorer?__c=1000000000&__u=1000000000&ideaRequestType=KEYWORD_IDEAS). The local monthly search volume shows the approximate average monthly number of search queries matching each keyword result for each country selected. This statistic (called “search volume”) applies to searches performed on Google and the search network, which includes the sites managed by Google company such as Google images, Google Maps and Google Shopping and the other search engine that Google company cooperate as search partners, over the past 12-month period. When Google AdWords has insufficient data on a particular keyword, it returns “–” (not enough data). This statistic is considered a reliable indicator of a term’s popularity, if the Internet is in widespread use in the country. In fact, CHAY & SASAKI (2011) assessed public responses to climate mitigation policies in Japan using search volumes for the related Japanese terms retrieved by the Keyword Tool in Google AdWords. Also, TAKADA (2010 b; 2011) assessed the popularity of different coleopteran groups and different lampyrid species in Japanese culture using this Internet tool.

Common names of dynastine beetles in the official language used in each country [e.g. “rhinoceros beetles” and “dynastines” in English, “*Kabuto-mushi* (カブトムシ)” in Japanese] were used as keywords to evaluate the search volume of dynastine beetles in each country (Table 1). Specific Western countries, the USA, United Kingdom, German and France, where the Internet is widespread (74.0–85.0%), were chosen to compare the search volumes between Japan and Western countries. The search volume was standardized by the estimated number of Google users in each country. The number of Google users was calculated by the latest population data in 2010, the percentage of individuals using the Internet in 2010 and the percentage of Google market share (including the result from Google and the sites managed by Google company such as Google images, Google Maps and YouTube) in 2008 in each country, and each statistic was from the United Nations [<http://www.un.org/en/index.shtml> (accessed on 28 Aug. 2012)], ITU [<http://www.itu.int/en/pages/default.aspx> (accessed on 28 Aug. 2012)], and comScore [<http://www.comscore.com/> (accessed on 28 Aug. 2012)], respectively. For the percentage of Google market share, we had to use the data from 2008, because the data published by comScore was only complete for 2008.

Firefox 12.0 was used to evaluate the search volume. The operating system was Windows 7 Home Premium Service Pack 1 (64 bit) installed on a Lenovo G570 4334CSJ [CPU: Intel Core i5 2410M (2.3 GHz)].

Results and Discussion

The relative search volume for “*Kabuto-mushi*”, which means the rhinoceros beetle or dynastines, was 0.00428 searches, the highest of the dynastine names in the official language of the countries examined (Table 2). The relative search volume for “rhinoceros beetle” in the USA was the second highest (0.00008 searches), and that in the United Kingdom and “*Nashornkäfer*” in German was the third highest in the official language of the countries (0.00005 searches). The relative search volume for “*Kabuto-mushi*” was 51.2 times as high as that for “rhinoceros beetle” in the USA. As a whole, the search volume for “*Kabuto-mushi*” was extremely high relative to that for the common

Table 1. Population, percentage of individuals using the Internet, percentage of Google market share, estimated number of Google users, official language and common terms for dynastine beetles in each country examined. Data on population, percentage of individuals using the Internet and percentage of Google market share in each country were obtained from the United Nations (<http://www.un.org/en/index.shtml>) (accessed on 28 Aug. 2012), ITU (<http://www.itu.int/en/pages/default.aspx>) (accessed on 28 Aug. 2012), and comScore (<http://www.comscore.com/>) (accessed on 28 Aug. 2012), respectively.

Country	Population (2010)	Percentage of individuals using the Internet (2010)	Estimated number of net users	Percentage of Google market share (2008)	Estimated number of Google users	Official language	Common terms for "dynastine beetles"
France	62,787,427	80.1	50,292,729	82.0 (Aug. 2008)	41,240,038	French	Scarabée rhinocéros Dynaste
Germany	82,302,465	82.0	67,488,021	79.8 (Jul. 2008)	53,855,441	German	Riesenkäfer Riesenkäfer
Japan	126,535,920	78.2	98,951,089	39.0 (Sep. 2008)	38,590,925	Japanese	カブトムシ カブトムシ
United Kingdom	62,035,570	85.0	52,730,235	75.3 (June 2008)	39,705,867	English	Rhinoceros beetle Dynastines
United States	310,383,948	74.0	229,684,122	63.1 (Oct. 2008)	144,930,681	English	Rhinoceros beetle Dynastines

Table 2. Relative search volume of the common term for dynastine beetles in each country examined.

Country	Official language	Rhinoceros beetles			Dynastines		
		Word	Search volume	Relative search volume	Word	Search volume	Relative search volume
France	French	Scarabée rhinocéros	720	0.00002	Dynaste	880	0.00002
Germany	German	Nashornkäfer	2,900	0.00005	Riesenkäfer	590	0.00001
Japan	Japanese	カブトムシ (Kabuto-mushi)	165,000	0.00428	カブトムシ (Kabuto-mushi)	165,000	0.00428
United Kingdom	English	Rhinoceros beetle	1,900	0.00005	Dynastines	0	0.00000
United States	English	Rhinoceros beetle	12,100	0.00008	Dynastines	0	0.00000

names in the official language of all Western countries examined. These results indicate that the Japanese have extraordinary interest in dynastine beetles relative to people in the Western countries examined.

These results should be carefully interpreted because the standardized search volume estimated by number of Google users is thought to be lack in accuracy as the strict number of standardized search volume which should be assessed, as the local search volume applies to searches performed on not only Google and the sites managed by Google company but also the other search engine that Google cooperate as search partners. However, it seems that degree of the inaccuracy is not so large, because of the large market share of Google in the Western countries examined (63.1–82.0% in 2008). In addition, in Japan, where Google market share is low (39.0% in 2008) relatively to the one in the other countries examined, Google company cooperate with major portal sites such as BIGLOBE and goo as search partners [e.g. <http://semblog.biz/?p=28> (accessed on 28 Aug. 2012)], but market share of each portal site is maximally 0.6 (as market share of NEC Corporation) and 1.4% (as market share of NTT group) in 2008, respectively.

The relative search volume for “*Kabuto-mushi*” is perhaps a low estimation of the popularity of dynastine beetles in Japan, because some slang words [e.g. “*Kabuto*”, “*Kabu-Kuwa* (which indicate dynastine beetles and stag beetles)”] or dialect words (e.g. “*Saikachi-mushi*”) for dynastine beetles exist in Japan. On the other hand, it is possible that the relative search volume for the terms of dynastine beetles in the official language of Western countries is also a lower estimate of their popularity, because of the possible existence of other terms that are more frequently used by the general public. However, this study at least shows the extraordinary difference in the search volume of common terms in the official language between Japan and the Western countries examined.

The extraordinary Japanese interest in dynastine beetles relative to Western countries can be explained by the Japanese unique aesthetic attitude toward dynastine beetles, because they are popular as pets and frequently represented in popular cultural media with a positive image, and it seems that the Japanese have many opportunities to be close to them and develop such an aesthetic attitude toward them because of the apparent morphological and non-harmful traits of the indigenous dynastine beetle and their occurrence around human habitation in traditional rural landscape of Japan. On the other hand, in the Western countries examined, dynastine beetles do not stimulate the aesthetics of the general public, and dynastine beetles are not used for practical purposes such as food and medicine. In

addition, dynastine beetles might not be considered as an important and common pest by the general public, or it is possible that dynastine beetles are not close to Western people because there is little or no occurrence around human habitation in their countries, although some dynastine species are distributed in European countries [e.g. The European rhinoceros beetle *Oryctes nasicornis* (LINNAEUS, 1758)] and USA (e.g. *Dynastes granti* HORN, 1870, *Dynastes tityus* LINNAEUS, 1763 and *Megasoma punctulatus* CARTWRIGHT, 1952). Thus, the general public perhaps has little interest in dynastine beetles in these countries.

It is known that the Japanese have developed an awareness of the beauty of nature not typically found in other countries, and most Japanese traditional unique aesthetics are derived from the Japanese indigenous Shinto religion, “the essence of which is the awe-inspired deification of nature” and Buddhism has been adapted it and enriched with new ideas (PRUSINSKI, 2012), and dynastine beetles will be recognized as an element of nature, which stimulate such aesthetic sense. Mono no Aware, which means fleeting beauty, is an essential Japanese traditional unique aesthetics to explain the Japanese interest in dynastine beetles (ORECK, 2011; TAKADA, 2012 b). In fact, in Japan, the emergences of adult fireflies and Japanese rhinoceros beetles has been perceived as a familiar seasonal event in early and mid-summer for many people, respectively and some authors have reported that haiku praises such insects as being synonymous with the summer season (TAKADA, 2012 a). In addition, in contemporary Japan, dynastine beetles (“*Kabuto-mushi*” in Japanese) have an attractive and cool image due to their distinctive horn and large body. Perhaps the Japanese people will regard dynastine beetles in the same light as warriors due to their biological attributes, and thus, dynastine beetles stimulate the Japanese unique aesthetic sense with an attractive image (TAKADA, 2012 c). This aesthetic sense can not be explained by their fleeting beauty but may originate from Japanese indigenous Shinto religion and Buddhism, both of which emphasize the spiritual harmony between people and nature (BERENBAUM, 1995).

Aknowledgement

I thank Prof. Shogo IKUTA (Kanazawa University) and Dr. Yozo KOSHIYAMA (Field Data Research Office) for offering valuable information for this study. I thanks also anonymous referees for their kind helves and valuable comments.

要 約

高田兼太：日本人は、本当に欧米諸国の人々と比較してカブトムシに対する関心が高いのか？——筆者は、本当に欧米諸国におけるカブトムシに対する関心が低いのかに対して、日本人がカブトムシに対して高い関心を持っているのかを調査するために、日本と欧米諸国（フランス、ドイツ、イギリス、アメリカ）におけるカブトムシの知名度を調べた。各国におけるカブトムシの知名度は、各国における公用語でのカブトムシの一般名称に対応したGoogleの検索数（各国内でインターネット・ユーザーが、GoogleおよびGoogleが提携しているサイトの検索エンジンを使ってキーワードを検索した回数）により評価し、Googleの検索数はGoogle AdWordsのキーワードツールを用いて査定した。また、それぞれの国における最新の人口、インターネット普及率、Googleシェア率のデータに基づいて算出したGoogleユーザー数によりGoogleの検索数を標準化した。調査の結果、日本における「カブトムシ」の相対的Google検索数が最も高く（0.00428回）、その数は2番目に高かったアメリカにおける「rhinoceros beetles」の相対的Google検索数（0.00008回）の51.2倍に達した。全体として、日本におけるカブトムシの一般名称の相対的Google検索数が、調査した欧米諸国と比較して極端に高かった。本研究で用いた方法により算出された相対的Google検索数は、方法論的な問題から

幾分か厳密性に欠けると考えられるので、結果の解釈には注意を要するが、これらの結果から、欧米諸国でのカブトムシに対する関心が低いのにに対して、日本人がカブトムシに対して極端に高い関心を持っていることが示された。

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Manuscript received 12 August 2012;
revised and accepted 2 November 2012.