

# Significance of Extraregional Surveys

- Contribution to Comprehensive Historical Exhibition of the Regional Museum through Interregional Comparisons of "Familiar Insects"

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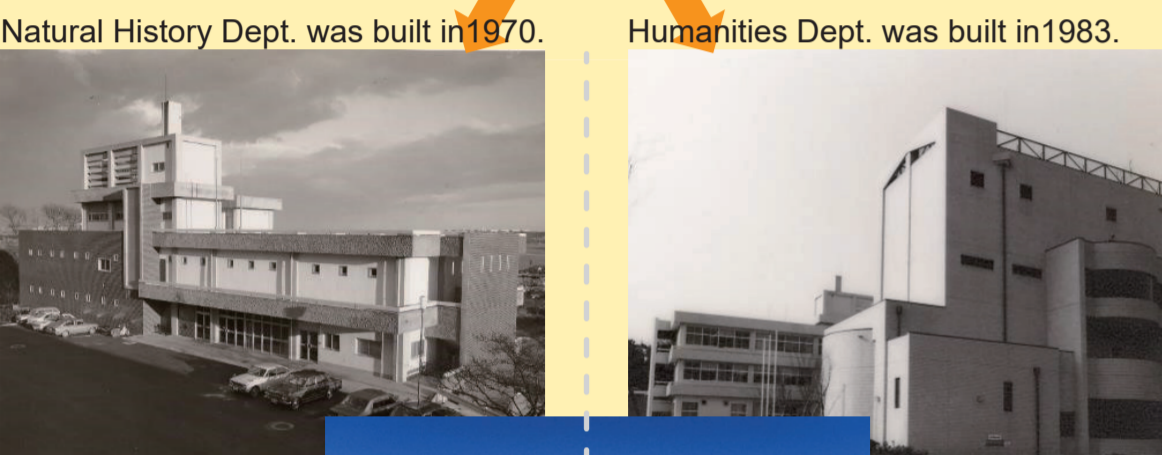
## Yokosuka, Kanagawa, Japan City Museum

Yokosuka City Museum (YCM) established in 1954. It was divided into two separate departments and moved in 1970 and 1983, respectively.



Yokosuka is on the Miura Peninsula in the Kanto region of the Pacific Coast in central Honshu. The peninsula is located at the entrance to Tokyo Bay and is mostly covered with hills and plateaus. It has a temperate climate belonging to an evergreen forest zone, where fishing and agriculture have been practiced since ancient times, and about half a century ago,

the hills and forests were developed as residential areas and the population had grown. Yokosuka has U.S. Naval installation (Commander, Fleet Activities Yokosuka), part of which was also the first modern naval shipyard in Japan.



The exhibition also was, and still is, divided between natural history and humanities (history and folklore). Each of two departmental regular exhibitions of the museum has never undergone a major renovation.

And Towards Renewal  
In recent years, the museum has been considering a major renovation of its regular exhibition for the first time in nearly half a century.

One of the challenges of this renewal is to integrate the two previously separated exhibitions, natural history and history & folklore, in a comprehensive and historical manner.

### Natural History Displays in General

In order for a local museum to exhibit natural history in a limited space, the following items should be prioritized in its animals and plants collection:

- animals and plants in each natural environment characteristic of the local area
- fossils and remains excavated in the local area
- animals and plants that have changed with the urbanization of the present day

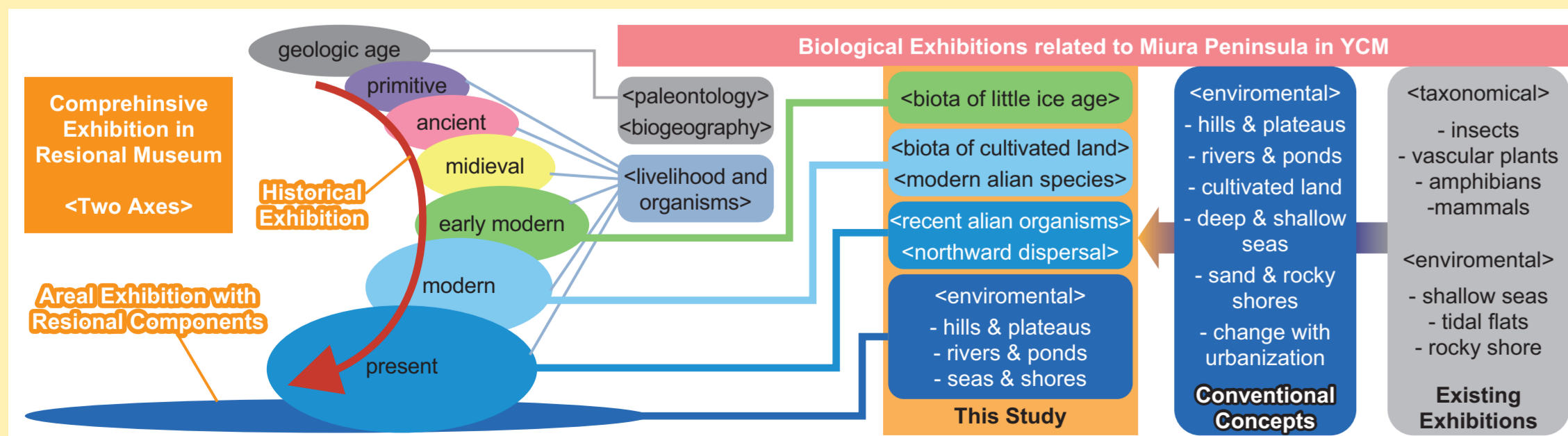
The flora and fauna found in each natural environment of the Miura Peninsula, as listed in the "Conventional concepts" section of the figure below, will be exhibited.

Materials from various parts of the Miura Peninsula corresponding to "paleontology" and "livelihood and organisms" in the figure below, will be exhibited.

The transition of the flora and fauna of the Miura Peninsula in modern times will be included in the "Conventional concepts" shown in the figure below.

Exhibit content contributing to "Areal Exhibition with Resional Components" shown below.

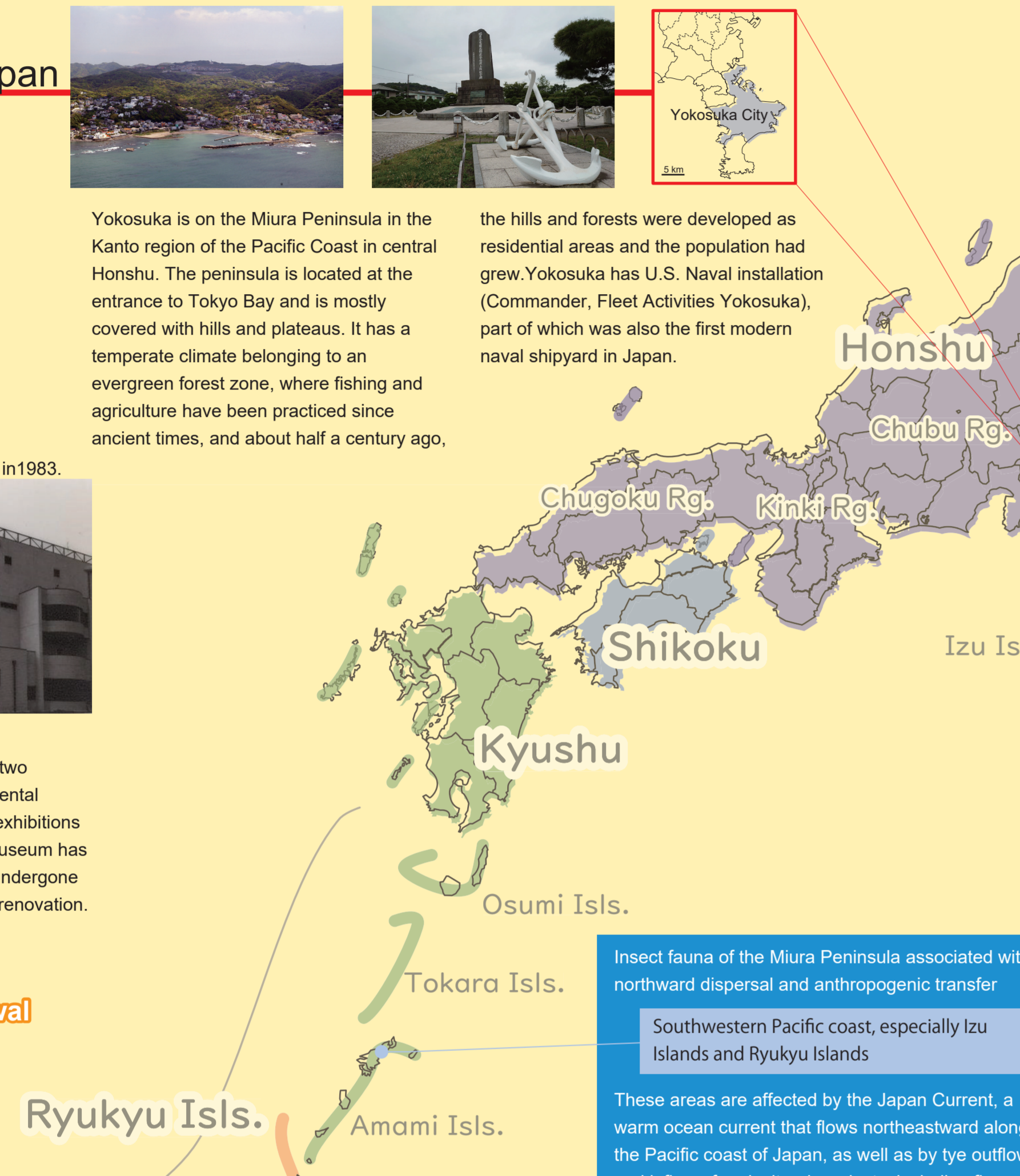
Exhibit content contributing to "Historical Exhibition" shown below. But, insects are unlikely to be preserved as historical remains.



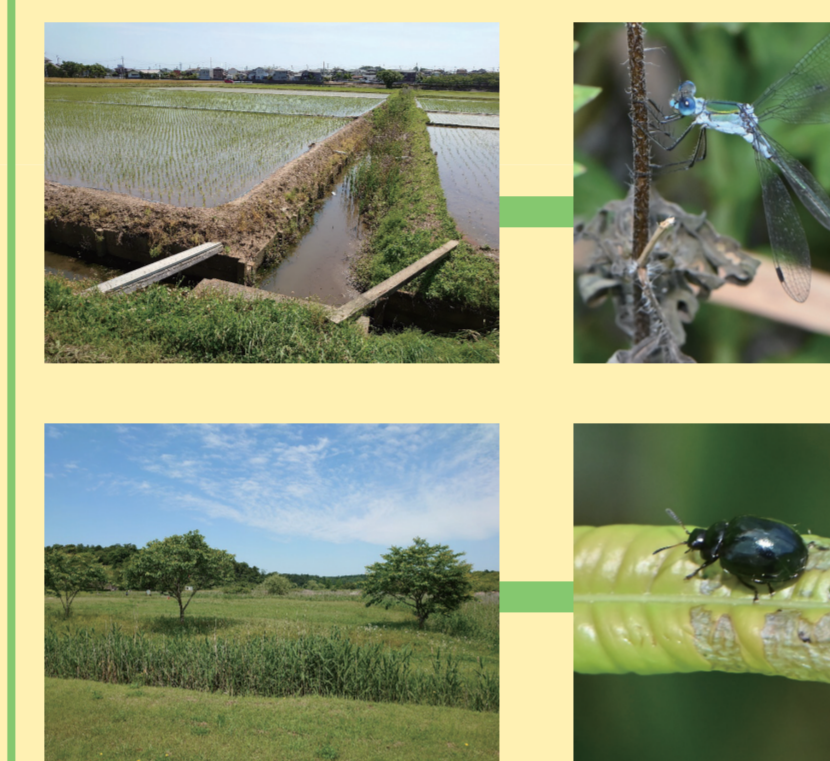
### Towards Integrated Exhibitions

Animals and plants from periods with significantly different climatic and weather conditions from the present, such as the so-called Little Ice Age in the Early Modern Period (Edo Period in Japan) 200 to 300 years ago.

Exhibit contents including insects contributing to "Historical Exhibition." Animals and plants associated with the cultivated lands such as rice paddies and fields that were still common in the Modern Period, and to the alien species that came from overseas when Japan opened its borders to the outside world.



Insect fauna of the Miura Peninsula corresponding to the Little Ice Age in the Early Modern Period  
The middle eastern area of Ibaraki Prefecture (Higashi-Ibaraki County)  
It is located on the Pacific coast and rice paddies are cultivated in areas close to the sea as well as the Miura Peninsula, the average annual temperature is 2°C lower than that of the Miura Peninsula.



Paddy fields spread around the rivers that connect the brackish lake (Lake Hinuma) to the Pacific coast, and wooded areas are maintained on the hillsides.  
Dragonflies, grasshoppers, and leaf beetles, which depend on waterside and riparian vegetation and are few in number on the Miura Peninsula, the cockroach of which there are no recent records at all on the Miura Peninsula, are found close at hand.



### Investigating "Familiar Insects"

The presenter (T. Uchifune) is conducting a survey of "familiar insects" in various areas shown in the map to the left.

"Familiar Insects" are a set of species of the current insect fauna of an area that can be followed by many people, and are an important component of the earliest remembered scenery for children.

In order to promote recognition of a wide range of insect taxa in educational settings, rather than just the most frequently observed insects, about 100 species were selected by adjusting the breakdown of species according to diversity within each group, while including a wide range of higher taxonomic groups such as orders and families.

### Preliminary Regional Comparative Study

Insect fauna that gives the perspective of nature to cultural exchange between cultural exchange cities

A part of the western area of Fukushima Prefecture (Aizuwakamatsu City)

The presenter attempted to add the perspective of nature to inter-city exchange by surveying "familiar insects" in Aizuwakamatsu City, Fukushima Prefecture, the cultural exchange city with historical ties to Yokosuka City (Uchifune, 2020).



In order to select familiar insects from the many candidate species recorded in the region, data from surveys conducted by the presenter (red box in the table at right), as well as data from a citizen researcher working at site F in the future (green box in the same table) and from a census of riverside waters at site G in the future (blue box) were considered.

Solid circles or circles in each box in the table indicate species with a high frequency of occurrence in each survey or at each survey site. In the red box, 209 insect species with at least 2 records were selected from about 780 data of about 370 species. In the green box, 89 species with at least 5 records were selected from 80 survey data over a period of about 5 years. In the blue box, 116 species with high frequency over two compilations.

Of the three surveys (red, green, and blue boxes in the table at right), 24 species were identified in all three and 67 species were identified in any two. In addition, of the species identified only in one survey, eight species were counted because they are all only one species within each order (solid circles in "II" in the table) and 31 species represented each family or subfamily that was frequently identified (solid triangles in "II" in the table). On the other hand, of the species identified in more than two surveys, if there were multiple species with low frequency in the presenter's survey results (red box) in each family, 30 species were selected for exclusion (horizontal bars in "II" in the table).

24 + 67 + 8 + 31 - 30 = 100 species

The presenter surveyed familiar insects at seven (A-G) sites, including the urban area in the northern part of Aizuwakamatsu City shown in the figure.

The table below is part of the table used to select familiar insects in Aizuwakamatsu City in Uchifune (2020).

コア No.	order 目	family 科	candidate species 候補種	志川	水田	調査							Ⅲ	Ⅳ		
						A	B	C	D	E	F	G				
1	カワガリ	カワガリ科	カワガリ	●	●	○	○	○	○	○	○	○	○	○	●	カワガリ科の代表種
2	トンボ	トンボ科	アオイトトンボ	●	●	○	○	○	○	○	○	○	○	○	○	アオイトトンボ科の代表種
3		カワトンボ	アサギカワトンボ	●	●	○	○	○	○	○	○	○	○	○	○	カワトンボ科の代表種
4		モトトンボ	モトトンボ	●	●	○	○	○	○	○	○	○	○	○	○	モトトンボ科の代表種
5		イトトンボ	イトトンボ	●	●	○	○	○	○	○	○	○	○	○	○	イトトンボ科の代表種
6		ヤンマ	ヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	ヤンマ科の代表種
7		オニヤンマ	オニヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	オニヤンマ科の代表種
8		トンボ	オニヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	オニヤンマ科の代表種
9		トンボ	オニヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	オニヤンマ科の代表種
10		トンボ	オニヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	オニヤンマ科の代表種
11		トンボ	オニヤンマ	●	●	○	○	○	○	○	○	○	○	○	○	オニヤンマ科の代表種
12	カワガリ	カワガリ科	カワガリ	●	●	○	○	○	○	○	○	○	○	○	○	カワガリ科の代表種
13	ハサミスジ	ハサミスジ科	ハサミスジ	●	●	○	○	○	○	○	○	○	○	○	○	ハサミスジ科の代表種
14	コカマキ	コカマキ科	コカマキ	●	●	○	○	○	○	○	○	○	○	○	○	コカマキ科の代表種
15	ゴキブリ	ゴキブリ科	ゴキブリ	●	●	○	○	○	○	○	○	○	○	○	○	ゴキブリ科の代表種
16	シロアリ	シロアリ科	シロアリ	●	●	○	○	○	○	○	○	○	○	○	○	シロアリ科の代表種

Insect fauna of the Miura Peninsula corresponding to modern agricultural culture in the hills

The hilly area from southern Tokyo to eastern Kanagawa Prefecture (Tama Hills)

It is contiguous with the Miura Hills that run the length of the Miura Peninsula and is still dotted with cultivated land, and has advanced research in terms of culture.



Rice pests such as leafhoppers and weevils can be found in rice paddies.



Firefly, water strider, and longicorn beetle species that are localized in the northern part of the Miura Peninsula, near the border with the Tama Hills, are common in the Tama Hills.

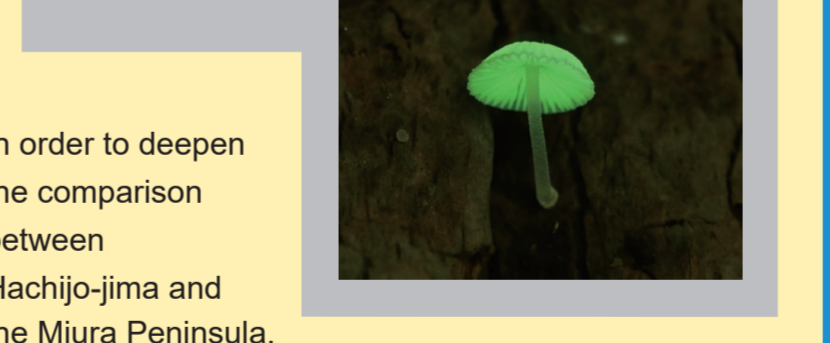
Two large ant species and one tortoise beetle species are common in the Tama Hills, while they are not distributed on the Miura Peninsula, which should be contiguous with the Tama Hills.



Hachijo-jima Island is also a field associated with the presenter's museum (YCM). The presenter's predecessors (the late Dr. Yata Haneda and the late Dr. Nobuyoshi Ohba) curators studied luminous organisms on Hachijo-jima in the 1950s and 1980s, respectively, and are part of the current museum exhibition.



The late Dr. Yata Haneda (left above), the late Dr. Nobuyoshi Ohba (right above) and a kind of luminous mushroom (below).



Hachijo-jima Island is located at the southern tip of the Izu Islands, where the influence of the insect fauna of the Honshu Pacific Coast is weakest among the Izu Islands, and is also under the influence of the Japan Current. Floriculture is one of the main industries of the island, and while species introduced from Ryukyu Islands such as Amami-Oshima have become prominent in recent decades, the island may be a relay point for species introduced to the southern Kanto region, including the Miura Peninsula.

In order to deepen the comparison between Hachijo-jima and the Miura Peninsula, the presenter recently has also begun surveying familiar insects in the Amami-Oshima in the Ryukyu Islands, the source area of the Japan Current.

Southern stink bugs, of which only a few records have appeared so far on the Miura Peninsula, are common on the island.

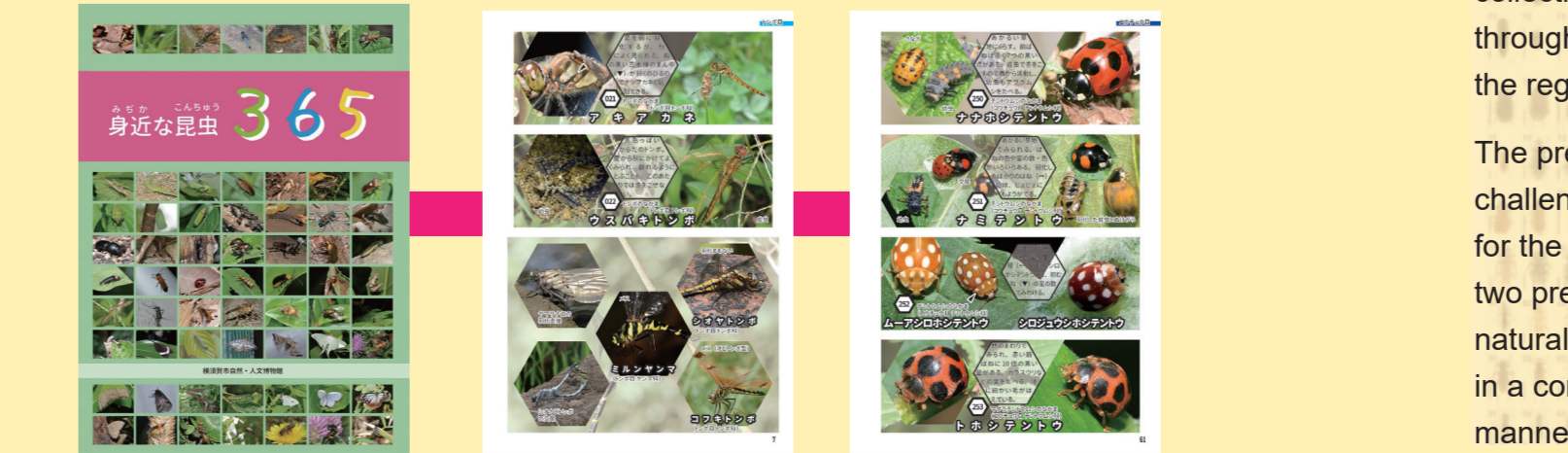
The habitats of familiar insects that have not been recorded on the Miura Peninsula, but that may be identified naturally or artificially on the Miura Peninsula in the near future, will help us imagine the original landscape of the Miura Peninsula in the future.



### A Tool of Educational Outreach

The presenter has published a guidebook introducing familiar insects of the Miura Peninsula, utilizing photographs of insects taken in various places in the Miura Peninsula during the 10 years since he started working at this museum.

The book contains about 470 species, which is about one-tenth of all the insects recorded so far in the Miura Peninsula. The book was designed with the image of being used as a "gateway" for research in more specialized illustrated books or on the Internet.



### To Utilize Extraregional Specimens

The collection and information accumulated through this survey will greatly extend the time period covered in "Areal Exhibition with Resional Components" in Miura Peninsula, and will enable the placement of insect collections at various locations throughout the historical exhibition of the region's past and future.

The presenter would like to use this challenge as one of the perspectives for the renewal attempt to integrate the two previously separated exhibitions, natural history and history & folklore, in a comprehensive and historical manner.

This challenge would not only include the collections obtained from this survey, but would also offer the possibility of displaying tens of thousands of extraregional specimens already in the museum's collection for half a century in a comprehensive and historical manner.

Uchifune, T. 2020. Comparison of regional insect faunas around "familiar insects" - from studies of insect fauna in Miura Peninsula, Kanagawa Prefecture and Aizuwakamatsu City, Fukushima Prefecture. Scientific Report of Yokosuka City Museum, (67): 9-27. (in Japanese)



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