

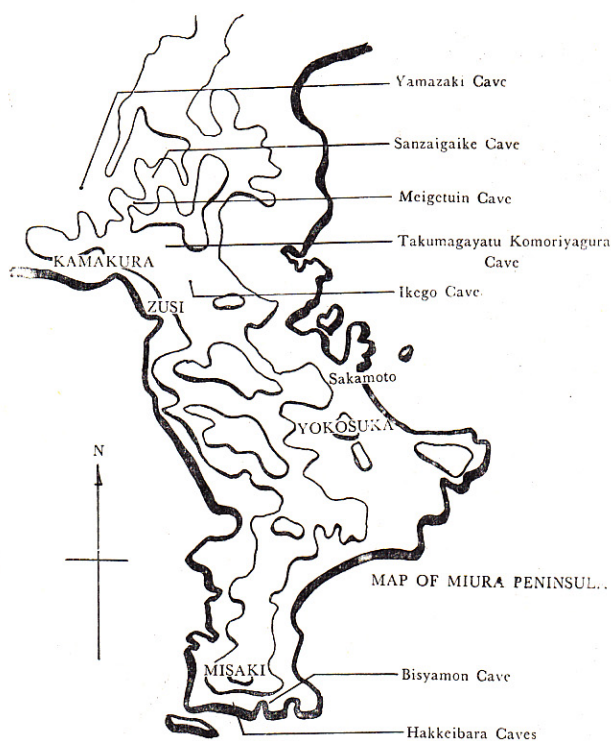
Bats of Miura Peninsula, Japan

Toshi. SHIBATA* and Koichi TERAJIMA**

(With 2 Plates, I Text-figure, and 5 Tables)

Miura Peninsula is located at the southern part of the Kanto district, on the eastern coast of central Japan. It is about 25 km north to south and about 8 km east to west in dimension. The climate is mild, the average annual atmospheric temperature being 15°C. Various forms of plant and animal life are found in the area.

Inquiries into the fauna of Miura peninsula has been conducted steadily since 1950. The following is a report on the results of these inquiries as relate to Chiroptera.



Text-figure 1.

Bats of 2 families, 4 genera, 5 species and subspecies inhabit Miura Peninsula.

They are as follows:

- 1) *Rhinolophus ferrum-equinum nippon* TEMMINCK
- 2) *Rhinolophus cornutus cornutus* TEMMINCK
- 3) *Myotis macrodactylus macrodactylus* (TEMMINCK)
- 4) *Pipistrellus abramus* (TEMMINCK)
- 5) *Miniopterus schreibersii japoniae* THOMAS

A description of the measurements, habitats and habits of the several species observed follows.

- 1) *Rhinolophus ferrum-equinum nippon* TEMMINCK

Habitats:

Meigetsuin cave, Kitakamakura 4/XII 1955 (14), 24/IX 1956 (3), 15/I 1957 (1), 23/XI 1957 (31, 18♂, 18♀), 5/XII 1957 (7) Sanzaigaike cave, Kitakamakura 4/XII 1955 (18), 16/XII 1956 (51), 23/XI 1957 (35, 8♂, 21♀, 6?) Takumagayastu Komoriyagura cave, Kitakamakura 18/I 1957 (2), 25/X 1957 (3, 1♂, 2♀), 8/XI 1957 (3) Yamazaki cave, Kitakamakura 30/III 1952 (1) Hakkeibara caves, Misaki 27/I 1952 (1), 23/IX 1952 (1), 23/IX 1952 (1), 9/XI 1952 (10) Ikego cave, Zushi X 1957.

Measurements: (Table 1)

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Habits:

Their habitats are located in the remains of a quarry in the northern part of Kamakura, and in erosive caves of the Provinces of Misaki. Most of these are individual habitats, mass formations are very rare here. Although this species is said to avoid others in the selection of its habitat, many specimens were found living together with *Myotis macrodactylus macrodactylus* in the same cave and at the same time.

When pursued in their cave during daylight hours, they would soon usually escape into the wooded sections nearby (SHIBATA 1953).

In flight, they were noted to describe a circle slowly, and within a very narrow area, but they were never observed to stand still at one point in the air as kestrel do when flying.

They often fly along a fixed course, while describing a small circle.

During hibernation their bodies were found to be cold and insensitive (Jan. 27, 1952 temp. 11.5°C in the cave). But usually, in the months of Nov. or Dec., even though already hibernating, they notice human approach.

They draw in their legs and raise their bodies nearer to the ceiling curving themselves forward (Fig. 10); then their ears appear from among their wings. After moving their horse-shoe and opening their eyes, they gradually stir their conches, turn their faces and look about (Fig. 12). Immediately after releasing their hold, they open their wings and start to fly; there is no space to fall down. When they roost, they hang from one leg, then slide the other leg and arrange both of them in order.

Food:

Adris tyramus GUENÉE, a kind of moth was noticed in the cave; and many of their wings were also seen scattered about. The specimens were also noticed eating the beetle, *Xylotrupes dichotomus* LINNÉ. In the Hakkeibara cave two sets of wings of the moth, *Cocytodes coerulea* GUENÉE, were discovered (Jan. 27, 1952).

Voice:

Scarcely audible. When irritated by the observers approach, they shriek tfu tfu tfu tfu 3 to 4 times a second.

Migration:

From October to January a particularly remarkable increase and decrease of their number occur, apparently due to migratory activity. On Nov. 27, 1957 in the province of Kamakura, there were recorded 66 cases, with 21♂ and 39♀; the remaining 6 cases could not be investigated. No sexual assemblage was observed of 31 that were dwelling in Meigetsuin cave, only 12 remained on Dec. 5, (cave temp. 8°C).

2) *Rhinolophus cornutus* TEMMINCK**Habitats:**

Near Hachimangu Shrine, Kamakura 11/XII 1949 (1), Meigetsuin cave, Kitakamakura 23/XI 1957 (10), 21/XI 1956 (10).

Measurements: (Table 2)

Habits:

Their habitats are located in the remains of a quarry and the marks of air-raided

shelter in the northern part of Kamakura, but observations are brief. On Dec. 11, 1949, one body was caught in a Mosquito net. In 1957 a female was noted in Meigetsuin cave, sleeping alone on the right hand side wall. 31 *Rhinolophus f. n.* were on the lefthand wall at the same time. On Nov. 21, 1956, one was found hanging by both its thumbs and legs. Its ears were more conspicuous than those of *Rhinolophus ferrum-equinum nippon*.

3) *Myotis macrodactylus macrodactylus* (TEMMINCK)

Habitat:

Sakamoto, Yokosuka 14/VI 1951 (about 30,..8♂, 1♀), 30/IV 1952 (1), 6/X 1952 (about 30,..8♂, 4♀), 10/XI 1952 (about 30,..10♂, 1♀), 20/XI 1952 (8), 24/XI 1956 (1), 4/X 1951 (1)

Measurements: (Table 3)

Habits:

The only dwelling place recorded is a drain (2m. high, 1.5m. broad, 300m. long) located beneath the grounds of the Sakamoto Junior High School in Sakamoto, Yokosuka (Fig 7). The drain is made of piling rocks (Fig 9), and at a crevice in the overhead they dwell hanging in masses of 5 to 10 (Fig. 8).

They are more sensitive to human entrance than *Rhinolophus ferrum-equinum nippon*, some of them flying out and others retreating further into the interior of the crevice. In the drain they fly parallel to the water and close above it. In the evening like the *Pipistrellus abramus* they make a circular flight over the ground at a height of about 5 to 10 meters.

Apparently they donot fly during the late night hours.

By day however, they do fly, starting easily from the ground. In flying they open their inter femoral membranes with both tibias stretched so as to let each of them form an interior angle slightly greater than 90 degrees. Observed from the slant rear, the area around the anus looked white; the inter femoral membrane was larger than that of *Pipistrellus abramus*.

The flapping of their wings is short, and large motion is seldom seen.

Its glides are brief, the distance being no more than 30cm. When flying in pair or greater number. They exchange the lead position frequently. They perch in much the same fashion as other kinds of bats; after hanging, they sleep as soundly that their capture is quite easily done, within 5 to 10 minutes after sleep has begun. When captured, the male passes a small quantity of urine. On Dec. 20, 1952, one specimen sleeping in the crevice had an oral temperature of 17°C (atom. temp. 15.5°C, water temp. 14°C in the drain).

Food:

The stomach of a specimen captured on Oct. 10, 1952 was filled with a kind of *Chilonomidae*; while alive it ate crickets and sucked water from a basin; It swallowed food only after a thorough chewing. While chewing, it made noises identical to those of other species.

Voice:

It intermittently sings gi gi gi 3 to 5 times a second, like the *Pipistrellus abramus*.

Migration:

With each seasonal change increase and decrease of number were recorded. According to observations made from 1950 to 1952, 10 to 20 of them were noted in May and/or June, but none were found in midsummer.

In October and November, many masses were found; in winter, none at all. As this drain is often disturbed by children, it is doubtful the above fluctuation is entirely significant, but it appears that they roost at the time of migration in spring and autumn. On June 14, 1951, 1♀ and 8♂ were collected, Oct. 6, 1952 8♂, 4♀; Nov. 10, 1952 10♂, 10♀.

A group consisted of about 30 members in each case.

4) *Pipistrellus abramus* (TEMMINCK)

Habitats:

Tadodai, Yokosuka 1/V 1944 (1), 6/V 1944 (1), 2/V 1944 (2) Hukadadai, Yokosuka 24/V 1945 Iriyamazu, Yokosuka 24/IV 1944 (2), 27/IV 1944 (1) Sakamoto, Yokosuka 16/III 1952 (1) Kurihama, Yokosuka 2/VIII 1954 (1), 19/III 1955 (1),

Measurements: (Table 4)

Habits:

There have been many investigations on the general habits of this species, all observations agreed with these. In big wooden houses, especially in school-buildings, many were found (Fig. 2), but compared with other localities, their number was lesser than in Tokyo (NAORA 1943); no group consisting of as many as a thousand was found.

Hibernation here lasts from the middle of December to the beginning of March. Few members were to be seen in flight in mid-February. On April 24, 1944 one individual observed circling slowly 15 meters above the ground in the daylight at Iriyamazu, Yokosuka.

5) *Miniopterus schreibersii japoniae* THOMAS

Habitats:

Takumagayatsu Komoriyagura cave, Kamakura 11/IX 1955 (about 30), 3/XI 1955 (24), 21/IX 1955 (about 300), 6-7/XI 1956 (about 70), 11/VI 1957 (about 100), 25/X 1957 (about 200, 11♂, 41♀), 8-9/XI 1957 (about 30), 3-4/X 1957 (about 150) Meigetsuin cave, Kitakamakura 4/XII 1955 (1), 16/XII 1956 (1), 23/XI 1956 (1) Sanzaigaike cave, Kitakamakura 16/XII 1956 (2) Hakkeibara cave, Misaki 4/XI 1951 (30), 20/XI 1955 (10) Bishamon cave 20/XI 1955 (3).

Measurements: (Table 5)

Habits:

In the quarry remains of the northern part of Kamakura (Fig. 1) and in the dry erosive caves in the Provinces of Misaki (Fig. 3), they were observed living in groups, of 30 to 40 members each.

Migration seemed frequent, but their habitat remained indefinite. Both in September and November, 1956, and October 1957, they were noticed leaving their caves shortly after sunset, and none were to be found within by 10 p. m. At dawn they would begin their return, all of them back within by sunrise.

Their speed is extreme, and the flapping of their wings resembles the howling of a

dog. By day on the ceiling of the cave, they hung themselves in small groups (Fig. 5). They sleep all day; one group after another shrieking frequently. Even when pursued they do not commonly seek escape from the cave, but instead fly about in the narrow space within, colliding against the wall when turning.

When starting from the ceiling, they drop 50 to 100cm, then open their wings, and fly away (Fig. 6).

Food:

They take their food outside. On Oct. 9, 1957, one individual's stomach was found full of both setae and the scales of a moth.

The same was found also in their excrements.

Voice: While in the cave during the day, each group wakes by turns, and makes much noise: tfu tfu tfu tfu tfu tfu 6 to 8 times a second. In flight, they sound in a very low voice, a vibrating type of sound.

Migration:

Every year both in the spring and the autumn, large groups of 100-300 members were counted. The number of such a group, however, changes rapidly over a short period of time. On Sept. 21, 1956, in Takumagayatsu Komoriyagura cave, a group of 300 was found, but Oct. 6, 1956 there were only about 70.

In 1957, changes in their number were observed as follows: Sept. 30, about 150; Oct. 25, about 100; and Nov. 8, about 25 all in the same cave.

It was thought that their was in October. Eight individuals caught on Apr. 19, 1953, were all females.

Both the specimens and recording tapes of their voices are owned by the Yokosuka City museum.

Table 1. External measurements of *Rhinolophus ferrum-equinum nippon* TEMMINCK (in mm)

Number	Head & Body	Tail	Tibia	Hind foot (c. u.)	Forearm	Ear from meatus	Breadth of Horse-shoe	Length of Horse-shoe	Greatest length of Skull	Sex & Age	Locality	Date
V.M. 38	66	36	23	13	55	23	—	—	24.2	♂ Adult	Hakkeibara cave	Jan. 23, 1952
V.M. 201	63	32.6	24	12.6	57.2	24.8	9	15	24.0	♂ Adult	Takumagayatsu cave	Jan. 18, 1957
V.M. 202	62.9	34.4	23.8	12	58.6	26.5	8.8	14	23.6	♂ Adult	Sanzaigaike cave	Dec. 4, 1955
V.M. 203	—	37	24	13	57.0	27.6	8.2	16.7	24.2	♂ Adult	Yamazaki cave	Mar. 30, 1952
V.M. 204	66	39	25.4	12.5	59.6	24	8.8	16	24.4	♀ Adult	Ikego cave	Oct. 1957

Table 2. External measurements of *Rhinolophus cornutus cornutus* TEMMINCK (in mm)

Number	Head & Body	Tail	Tibia	Hind foot (c. u.)	Forearm	Ear from meatus	Breadth of Horse-shoe	Length of Horse-shoe	Greatest length of Skull	Sex & Age	Locality	Date
V.M. 301	—	18.6	16.7	8.5	39.3	16.7	—	—	16.0	— Adult	Near Hatimangu Shrine, Kamakura	Dec. 11, 1949
V.M. 302	42.2	22.4	17.4	8	39	17.6	6.5	10.3	16.2	♂ Adult	Meigetsuin cave	Nov. 21, 1956

Table 3. External measurements of *Myotis macrodactylus macrodactylus* TEMMINCK (in mm)

Number	Head & Body	Tail	Tibia	Hind foot (c. u.)	Forearm	Thumb	Ear from meatus	Tragus anterior border	Greatest length of Skull	Sex & Age	Locality	Date
V.M. 1	42	38	17	12	39	7	15	7.5	—	♂ Adult	Sakamoto, Yokosuka	June 14, 1951
V.M. 2	40	36	16	11	37	7	15	7	—	♂ Adult	" "	"
V.M. 3	49	34	17	12	39	6	14	7	—	♂ Adult	" "	"
V.M. 4	45	37	18	12	39	7	14	7	14.9	♂ Adult	" "	"
V.M. 5	52	34	17	12	38	7	13	6	—	♂ Adult	" "	"
V.M. 6	49	37	17	12	39	6	14	8	15.0	♂ Adult	" "	"
V.M. 7	51	35	16	12	38	6	14	7	15.2	♂ Adult	" "	"
V.M. 8	46.5	34	17	12	38	7	14.5	7	15.0	♂ Adult	" "	"
V.M. 9	47	35	17	13	38	7	14	7	14.4	♂ Adult	" "	"
V.M. 10	41	35	16	11	38	7.3	16	6.4	14.1	♂ Adult	" "	"
V.M. 13	43	31	15	11	37	8	16	—	14.8	♂ Adult	" "	"

Table 4. External measurements of *Pipistrellus abramus* (TEMMINCK) (in mm)

Number	Head & Body		Tail	Tibia	Hind foot (c. u.)	Forearm	Thumb	Ear from meatus	Tragus anterior border	Greatest length of Skull	Sex & Age	Locality	Date
V.M. 402	33.4	26.9	11.4	6.9	29.5	5	9	2.7	12.5	? Subadult	Kurihama	Aug. 2, 1954	
V.M. 403	43.7	38.8	12.7	7.4	32	5	12	3.2	12.7	♂ Adult	Yokosuka	Mar. 16, 1952	
V.M. 404	—	34	12.4	6.8	32.8	5.6	10.1	3.2	13.4	♂ Adult	Yokosuka	Oct. — 1956	
V.M. 405	49	40.8	13	6.4	32.2	5.4	12.4	3.5	13.2	♂ Adult	Kurihama	Mar. 19, 1955	

Table 5. External measurements of *Miniopterus schreibersii japoniae* THOMAS (in mm)

Number	Head & Body		Tail	Tibia	Hind foot (c. u.)	Forearm	Thumb	Ear from meatus	Tragus anterior border	Greatest length of Skull	Sex & Age	Locality	Date
V.M. 12	52	52.5	18.9	11.5	46	6	12.5	4.5	16.0	♂ Adult	Hakkeibara cave	Nov. 4, 1951	
V.M. 14	54	50	20	11.5	47	6	12	4.5	15.9	♂ Adult	"	"	
V.M. 18	54	56	18.6	9.3	46	6	11.5	4.5	15.9	♀ Adult	"	"	
V.M. 17	56	54	21	10.5	46	6	12.5	4.5	16.0	♂ Adult	"	"	
V.M. 20	52	49	20	11.2	46	5	11.5	5	—	♀ Adult	"	"	
V.M. 101	52.3	53	19.5	9.3	47	5	10.6	3.6	15.6	♀ Adult	Takumagayatsu cave	Apr. 19, 1953	
V.M. 102	52	53	18.9	9.3	47.8	5.5	9.9	4.9	16.0	♀ Adult	"	"	
V.M. 103	51	54	19	9	45.6	5	11.3	4.3	15.7	♀ Adult	"	"	
V.M. 104	51.5	52.5	18.5	10.6	45	5.4	11.7	4.3	15.9	♀ Adult	"	"	
V.M. 105	52	57	18.4	9.4	45	5.9	12	4.2	15.4	♀ Adult	"	"	
V.M. 106	50	54	19.6	9	46.5	5	11.2	4.3	15.6	♀ Adult	"	"	
V.M. 107	52	55	19.2	10.1	46.6	6	11	4.5	15.7	♀ Adult	"	"	
V.M. 108	53.6	56	18.6	9.0	45.6	5.1	11.1	4.6	15.6	♀ Adult	"	"	

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抄 録

三浦半島の翼手類について

柴田敏隆・寺島浩一

著者等は1950年以來三浦半島の動物相について調査を進めてきたが、その中の翼手類について現在迄の観察結果をここにまとめた。

三浦半島には2科4属5種及び亜種のコウモリが棲息する。即ち、キクガシラコウモリ *Rhinolophus ferrum-equinum nippon*, コキクガシラコウモリ *Rhinolophus cornutus cornutus*, モモジロコウモリ *Myotis macrodactylus macrodactylus*, イエコウモリ *Pipistrellus abramus* ユビナガコウモリ、*Miniopterus schreibersii japoniae* である。

キクガシラコウモリは鎌倉及び三崎方面の洞穴に住み、多くは単独で、人の接近をいち早く感知する。アケビコノハ、フクラスズメなど大型の蛾を食べ、秋から冬にかけて移動する。コキクガシラコウモリは鎌倉北部の洞穴及び防空壕跡に棲息する。

モモジロコウモリは横須賀市坂本町の下水道内のみ認められる。毎年春秋に30頭位の群を作る。水面上すれすれに直飛し、ユスリカの類を食べる。薄明より外へ出て旋回飛行をするが、腿間膜の大きいのが目立つ、イエコウモリに似た低い声で1秒間5回の割でギィギィと啼く、渡りの途中たち寄るものと思われる。

イエコウモリについては今迄の多くの観察例とほとんど大差ない。1944年4月24日横須賀市不入斗町で白昼旋回飛翔中の1頭を認めた。

ユビナガコウモリは鎌倉及び三崎の洞穴に多く、その棲息数にはかなり激しい増減が見られる。一般に秋は10月頃が最盛期で1穴で300頭に達する。日没後暗くなってから飛出し、日出前暗い中に帰って来る。帰るときのスピードは非常に速い。洞穴内では小群毎に集まって懸垂し、終日かわるがわる啼き交している。蛾の類を食べている。



Fig. 1 Habitat of *Rhinolophus ferrum-equinum nippon*. Meigetsuin cave.



Fig. 4 Face of *Rhinolophus cornutus cornutus*.

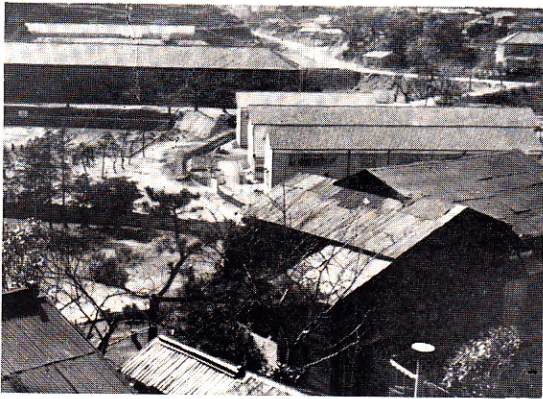


Fig. 2 Typical habitat of *Pipistrellus abramus* in Yokosuka.

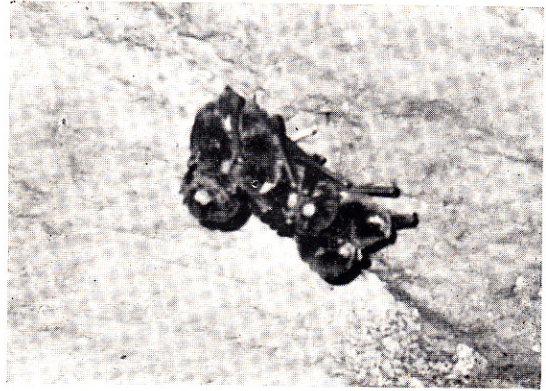


Fig. 5 A group of *Miniopterus schreibersii japoniae*, sleeping.



Fig. 3 Habitat of *Miniopterus schreibersii japoniae*. Hakkeibara cave, Prov. of Misaki.

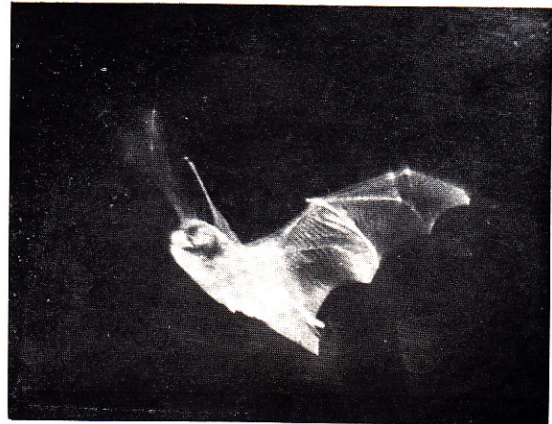


Fig. 6 *Miniopterus schreibersii japoniae*, flying.

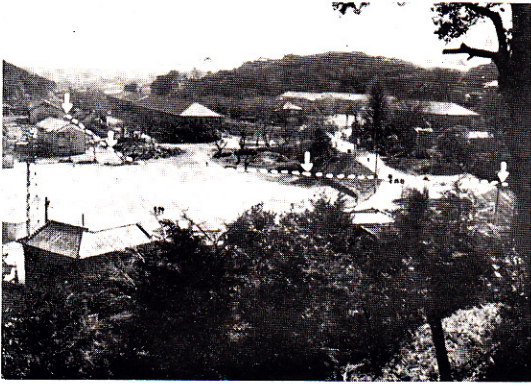


Fig. 7 Panoramic View of the habitat of *Myotis macrodactylus macrodactylus* at Sakamoto, Yokosuka, The dotted line indicates that the location of the under-ground drain. The arrows indicate passageways to the outside.

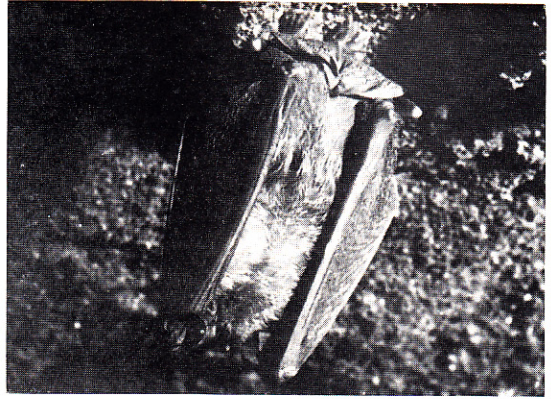


Fig. 10 *R. ferrum-equinum nippon*. just after awaking.

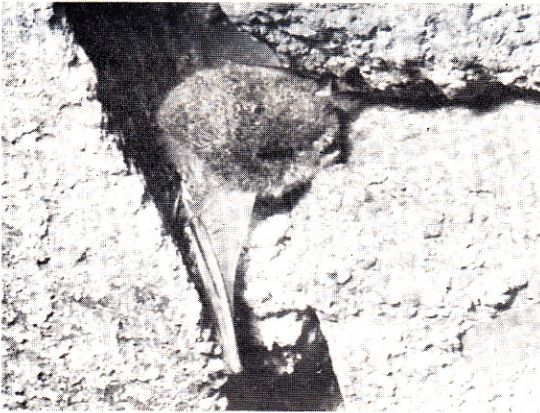


Fig. 8 *M. macrodactylus macrodactylus* (viewed from beneath)

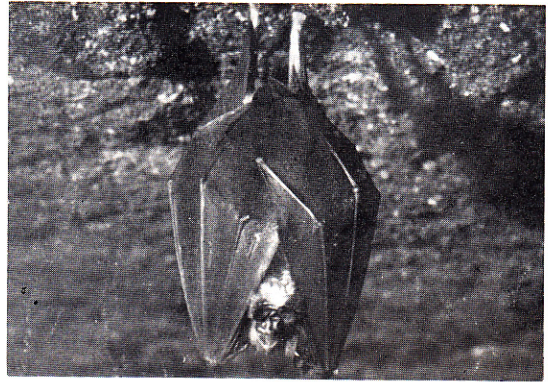


Fig. 11 *R. ferrum-equinum nippon* hibernation.



Fig. 9 Habitat of *Myotis macrodactylus macrodactylus* Sakamoto, Yokosuka.

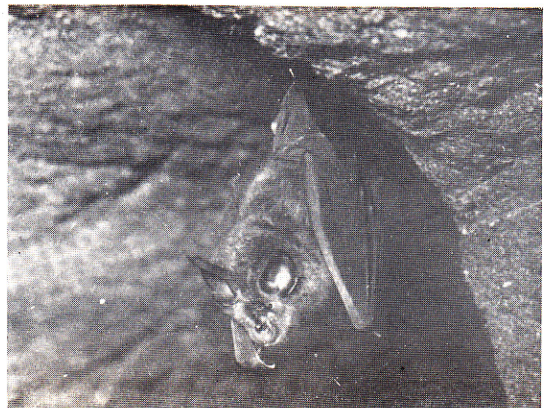


Fig. 12 *Rhinolophus ferrum-equinum nippon* just about to fly.