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Description Of Jumping Spider Genus *Rhene* Thorell, 1869 (Araneae: Salticidae) In West Sumatra

Deskripsi Laba-Laba Pelompat Genus *Rhene* Thorell, 1869 (Araneae: Salticidae) Di Sumatra Barat

Syatila Baiduri Ouben[1]*, Rijal Satria[1], Zulyusri[1], Yusni Atifah[1]

[1] Department of Biology, Faculty of Mathematics and Natural Sciences, Padang State University, West Sumatera, Indonesia
*Correspondence author: aliouben10@gmail.com

Abstract

Salticidae has sexual dimorphism where the morphology of male and female is very different (body shape and size) causing misidentification either mistaken for different species or equating male and female morphology. One genus in family Salticidae that has this problem is genus *Rhene* Thorell, 1869 with a wide distribution area on various countries. This research objectives are to determine the type of genus *Rhene's* species found in West Sumatra, how the description of morphology and genitalia, and whether the characteristics of specimens will be the same as specimens in other countries. This research is a descriptive study of spiders of genus *Rhene*. Hand collecting and beating were applied in sampling from November 1st 2021 to February 28th 2023 in random locations (West Sumatra) with various habitat types. The datas obtained will be compiled into descriptions, illustrations and morphometrics. The result of this research found two species of genus *Rhene* in West Sumatra, *Rhene albigera* in Mangguang Mangrove Forest, Pariaman, and *Rhene flavigera* in Anai Valley Area to Taruko. *R. albigera* has a simple hair pattern, dominant hair colour is yellow and the head shape tends to be square and the abdomen of female and male is wide. *R. flavigera* has a complex and dense hair pattern, diverse colour variations (dominantly grey-white), a flatter head shape in an isosceles trapezoid, also a slender male and female abdomen.

Key words *Salticidae, Genus Rhene, Description*

Abstrak

Salticidae memiliki sifat dimorfisme seksual dimana morfologi jantan dan betinanya sangat berbeda (bentuk dan ukuran tubuh) menyebabkan terjadinya kesalahan pengidentifikasian baik disalahartikan sebagai spesies berbeda atau menyamakan morfologi jantan dan betina. Salah satu genus dalam famili Salticidae yang memiliki permasalahan ini adalah genus *Rhene* Thorell, 1869 dengan area persebaran luas di berbagai benua. Penelitian ini bertujuan untuk mengetahui jenis spesies genus *Rhene* yang ditemukan di Sumatra Barat, bagaimana deskripsi morfologi dan genitalia, serta apakah ciri spesimennya akan sama dengan spesimen di negara lain. Penelitian ini merupakan penelitian deskriptif terhadap laba-laba genus *Rhene*. *Hand collecting* dan *beating* diterapkan dalam pengambilan sampel dari tanggal 1 November 2021 sampai 28 Februari 2023 di lokasi acak (Sumatra Barat) dengan berbagai tipe habitat. Data yang diperoleh akan disusun dalam bentuk deskripsi, ilustrasi dan morfometrik. Hasil penelitian menemukan dua spesies genus *Rhene* di Sumatra Barat yaitu *Rhene albigera* di Hutan Mangrove Mangguang, Pariaman, dan *Rhene flavigera* di Kawasan Lembah Anai hingga Taruko. *R. albigera* memiliki pola rambut sederhana, warna rambut dominan kuning dan bentuk kepala cenderung persegi serta abdomen betina dan jantannya melebar. *R. flavigera* memiliki pola rambut kompleks dan lebat, variasi warna beragam (dominan putih abu), bentuk kepala lebih pipih berbentuk trapesium sama kaki, serta abdomen jantan dan betinanya ramping.

Kata kunci *Salticidae, Genus Rhene, Deskripsi*

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Introduction

Salticidae is sexually dimorphic that the morphology of male and female is very different, both in body shape and size. This is often a common problem in the world of taxonomy where the same species is often mistaken for a different species or equating male and female morphological information in confirming the type of species (McLean et al., 2018). It is also not uncommon to find studies that present morphological data from juvenile holotypes so that there is no information about their genital morphology, even though information about genital morphology is very important in identification process at species level (McLean et al., 2018). One of these taxonomic problems occurs in genus *Rhene* (Araneae: Salticidae).

There are 65 validly listed of genus Rhene's species in the world (World Spider Catalog, 2021), which 5 species are found in Sumatra, namely *Rhene albigera* (C. L. Koch, 1846) (♂,♀), *Rhene brevipes* (Thorell, 1891) (♀), *Rhene bufo* (Doleschall, 1859) (♂,♀), *Rhene flavigera* (C. L. Koch, 1846) (♂,♀) and *Rhene rubrigera* (Thorell, 1887) (♂,♀). The descriptions and holotypes recorded in Sumatra are juvenile, meaning that important parts of identification and classification of family Salticidae such as adult genitalia (pedipalp and epigyne) have not been clearly recorded for genus *Rhene* in Sumatra (Meyer and Smith, 2008). Based on this, objective of this research is to produce complete morphological description data of the adult phase and confirm which species are found in West Sumatra from genus *Rhene*.

Material and Methods

Research Site

This research was conducted from November 1st 2021 - February 28th 2023. The research site were several random areas in West Sumatra: Padang State University; Singgalang foothill area; Janjang Sajuta; The Great Wall of Koto Gadang; Anai Valley; Sianok Canyon; Taluak IV Suku Area; Mangguang Apar mangrove forest, which may represent Salticidae habitat types such as grassy areas, trees, herbs, bushes, corners of buildings, and places with low light intensity.

Sampling Methods

Hand collecting and beating techniques were used for sampling. Beating is a spider sampling technique using a stick and a brightly coloured collection tray or umbrella by hitting the branch or plant branch quickly (one hit) so that the sample falls directly into the tray or umbrella. The hand collecting technique is carried out on the ground surface area or the corner of place that cannot be reached freely with beating method. Specimens found were collected alive into 50 cc specimen tubes.

Species Identification

Specimens were frozen in a freezer at -18℃ to -20℃ (small juvenile maximum 30 minutes, old juvenile and adult maximum 1 hour) so that the specimens fainted and remained in fresh condition also did not reduce its colour or change the original shape of body parts. Photographing of specimens was done on dorsal and ventral sides using an Olympus TG 4 camera. Organs that needed to be observed in more detail (sternum and copulatory organs) used a Trinocular Microscope. Specimen type determination using some books such as Proszynski (2020), Chen et al. (2021) and World Spider Catalog (2021).

Description and Morphometric Measurements (*Abbreviation*)

Specimens will have their organs measured in millimetres (mm). The parts measured refer to Decae (2020), which are : Eyes part (*Anterior Median* [AME], *Anterior Lateral* [ALE], *Posterior Median* [PME], *Posterior Lateral* [PLE]); Dorsal body part (*Total Body Lenght* [TBL], *Carapace Lenght* [CL], *Carapace Width* [CW], *Abdomen Lenght* [AL], *Abdomen Width* [AW]); Ventral body part (*Labium Lenght* [LL], *Labium Widht* [LW], *Maxilla Lenght* [MaxL], *Sternum Lenght* [SL], *Sternum Width* [SW]); Dorsal part of bulb (*Lenght of Bulb* [BuL], *Width of Bulb* [BuW], *Lenght of Embolus* [EmL]).

Data Analysis

After all specimens are examined for body characteristics, genital parts and measured in millimetres (mm), all data obtained will be processed into description, illustration and morphometric forms to be analysed and used as a comparative reference for previous or future studies and research.

Results and Discussion

Type of Genus *Rhene* in West Sumatra

Based on this research, there are two types of jumping spider in genus *Rhene* samples found in West Sumatra out of five species recorded on of Sumatra island (Table 1).

Tabel 1. Type of Genus *Rhene* spiders in West Sumatra

No.	Genus	Spesies	Life Stage	Site Location
1.	*Rhene*	*Rhene albigera* (presumed as ♂ #1)	*juvenile*	Mangguang Mangrove Forest, Apar, North Pariaman, Pariaman City (S 00°53.6933' T 100°20.7466')
2.		*Rhene albigera* (presumed as ♀ #2)	*juvenile*	Mangguang Mangrove Forest, Apar, North Pariaman, Pariaman City (S 00°35.8035' T 100°06.5298')
3.		*Rhene flavigera* (presumed as ♂ #3)	*juvenile*	Anai Valley Area, Sepuluh Koto Sub-district, Tanah Datar District (S 00°18.7473' T 100°21.9124')
4.		*Rhene flavigera* (♂)	*adult*	Taruko Area (S 00°18.8982' T 100°21.9289')
5.		*Rhene flavigera* (♀)	*adult*	Anai Valley Area, Sepuluh Koto Sub-district, Tanah Datar District (S 00°18.8607' T 100°21.9324')

The discovery location of *Rhene albigera* (temperature 28.2℃) was a mangrove edge bushland towards the coast. These two juvenile individuals were found in a weed bush (*Imperata cylindrica*) with direct sunlight without any tree foliage obstruction and quite far from water source. While the three individuals of *Rhene flavigera* (temperature 23.7℃) were found on tree branches and wild shrubs on the edge of a stream in the valley.

Taxonomy

***Rhene albigera* (C. L. Koch, 1846)**

Distribution : Indonesia (Sumatra), Vietnam, Japan, Korea, China, India.

Holotype : Museum für Naturkude, Berlin (ZMB), Germany; *Rhanis albigera* C. L. Koch, 1848.

Rhanis albigera C. L. Koch, 1846, p. 87

Rhene albigera Simon, 1901, P. 635, 639; Żabka, 1985, p. 442; Prószyński, 1992, p. 203; Peng et al., 1993, p. 198; Jastrzebski, 1997, p. 48; Song, Zhu dan Chen, 1999, p. 543, Namkung, 2002, p. 577; Namkung, 2003, p. 58; Ono, Ikeda dan Kono, 2009, p. 580; Zhu & Zhang, 2011, p. 510; Yin et al., 2012, p. 1458, Kim dan Lee, 2014, p. 127; Peng, 2020, p. 383.

Juvenile Presumed as Male #1 : TBL 3.00, CL 1.00, LL 0.20, CW 1.10, LW 0.20, AL 1.90, AW 1.10, MaxL 0.30, SL 0.70, SW 0.50. Eyes AME 0.20 mm, ALE 0.10, PME 0.05, PLE 0.09. Pedipalp BuL 0.40. Cephalothorax: predominantly black area at the centre, yellow hairs around it, pale yellow hairs at the edges. Chelicerae: light brown, darker outline to fangs. Trochanter: black scopula and spina present. Palpal organs have not yet appeared. Photographs of juvenile #2 could be seen in Figure 1.

Juvenile Presumed as Female #2 : TBL 3.40, CL 1.50, LL 0.20, CW 1.40, LW 0.10, AL 1.80, AW 1.50, MaxL 0.50, SL 0.90, SW 0.20. Eyes AME 0.25 , ALE 0.17, PME 0.10, PLE 0.14. Cephalothorax: slightly black area, yellow hairs on the front edge, pale yellow hairs on the back edge, yellowish white hairs in the centre. Chelicerae: overgrown with yellow hairs at base, dark brown in colour, blackish margins, fangs completely

black. Abdomen: ventral side narrower, there is a would-be epigyne present. Trochanter: no scopula, black spines present. Photographs of juvenile #2 could be seen in Figure 2.

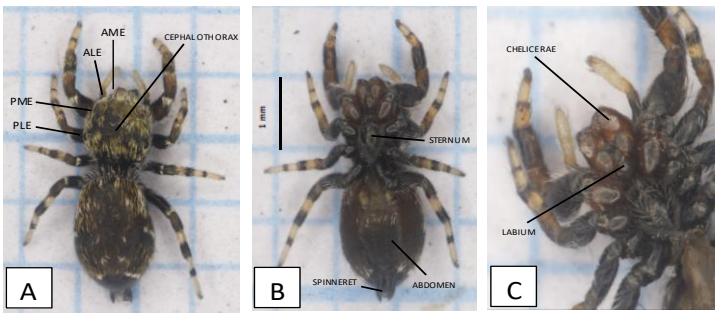

Figure 1. *Rhene albigera* presumed as male juvenile #1. A. dorsal body part; B. ventral body part; C. chelicerae and sternum part.

Both juveniles #1 and #2 have black eyes, sideways chelicerae movement type, solid black sternum (creamy centre with no hairs, pale yellow fine hairs at the edge of the line approaching the trochanter), dorsal side of abdomen with 4 colour variations (black and dark brown base, overgrown with yellow and pale yellow hairs) and ventral side with black dominant base (dark brown edge decorated with pale yellow hairs in the centre and dark ash around the edges), 4 pairs of legs: front pair thicker for gripping prey while hunting (predominantly dark brown); hind 3 pairs for jumping and maintaining body balance (light cream with black tips), trochanter and femur are black (tips covered with pale yellow hairs), and dark brown patella (tibia, metatarsi and tarsi only have spines without scopula). The teeth on chelicerae and palpal organs have not yet appeared.

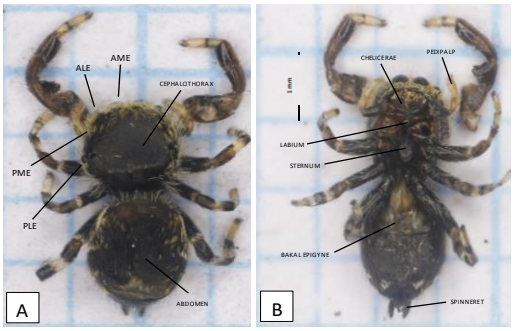

Figure 2. *Rhene albigera* presumed as female juvenile #2. A. dorsal body part B. ventral body part.

***Rhene flavigera* (C. L. Koch, 1846)**

Distribution : Indonesia (Sumatra), Pakistan, India, China, Malaysia, Vietnam.

Holotype : Museum für Naturkude, Berlin (ZMB), Germany; *Rhanis albigera* C. L. Koch,1848.

Rhanis flavigera C. L. Koch, 1846, p. 87

Rhene flavigera Thorell, 1869, p. 37; Prószyński, 1984, p. 119-121; Żabka, 1985, p. 443; Chen dan Zhang, 1991, p. 313; Peng et al., 1993, p. 201; Maddison, 1996, p. 332; Song, Zhu dan Chen, 1999, p. 543; Yin et al., 2012, p. 1462; Prószyński, 2017, p. 94; Fu, 2018, p. 151; Peng, 2020, p. 388; Caleb et al., 2022, p. 392.

Juvenile Presumed as Male #3 : TBL 3.50, CL 1.20, LL 0.30, CW 1.30, LW 0.20, AL 2.00, AW 1.50, MaxL 0.40, SL 0.80, SW 0.60. Eyes AME 0.20, ALE 0.10, PME 0.05, PLE 0.09. Pedipalp BuL 0.05. Abdomen slightly wide. Cephalothorax: slight black area in the centre, yellow hairs around thicker, pale yellow hairs on the edge. Chelicerae: dark brown, border colour much darker up to fangs. Abdomen: dorsal side has 5 colour variations (black and dark brown base, yellow hairs, pale yellow, ash white); ventral side colour: black dominant base, dark brown margins, pale yellow hairs in middle, dark ash at margins. Legs: trochanter and femur black, scopula black and spina pale grey. The photographic results of juvenile #3 could be seen in Figure 3.

Adult Male : TBL 5.50, CL 2.50, LL 0.20, CW 2.10, LW 0.10, AL 3.00, AW 2.00, MaxL 0.50, SL 1.50, SW 0.60. Eyes AME 0.34, ALE 0.17, PME 0.10, PLE 0.40. Pedipalp: BuL 1.20, BuW 0.50, EmL 0.60, dark brown, black dorsal cymbium (lighter edge), pouch-shaped tegulum curved towards embolus, tibia apophysis thicker. Cephalothorax: dominant black area in the centre, 2 white hairs (as if forming a dot), pale yellow hairs around thicker, neat and regular pattern, pale yellow hairs on the edge. Chelicerae: black, dark brown border to fangs. Abdomen: dorsal side with 3 colour variations (black base, pale yellow hairs, white ash); ventral side with dominant black base, pale yellow hairs in the middle, dark ash at the margin. Photographs of adult male of *R. flavigera* can be seen in Figure 4.

Adult Female : TBL 4.10, CL 1.90, LL 0.40, CW 1.90, LW 0.20, AL 2.10, AW 1.50, MaxL 0.60, SL 1.10, SW 0.80. Eyes AME 0.25, ALE 0.18, PME 0.05, PLE 0.10. Cephalothorax: no black area in the centre, yellow hairs around thicker, pale yellow hairs at the edge. Chelicerae: dark brown, border colour much darker up to the fangs. Pedipalps: dark brown, yellowish cream on tips. Abdomen: dorsal side has 4 colour variations (black base, yellow, pale yellow, grey-white hairs); ventral side predominantly black base, pale yellow hairs in the middle. Epigyne: copulatory opening oval-shaped, insemination pathways close to each other, spermatheca convoluted. Photographs of adult female of *R. flavigera* can be seen in Figure 5.

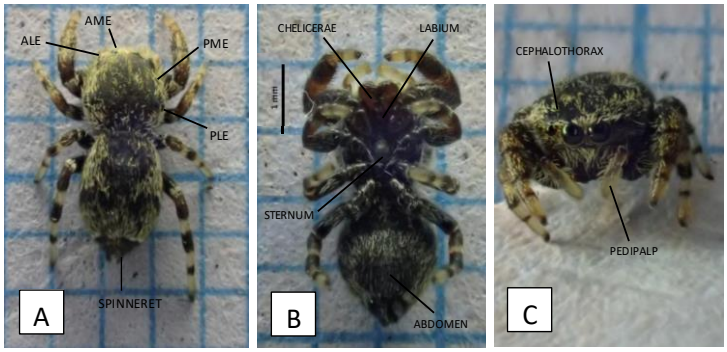

Figure 3. *Rhene flavigera* presumed as male juvenile #3. A. dorsal body part; B. ventral body part; C. front head part

Adult male and female individuals have a slimmer abdomen. The hairs around the eyes of PME and PLE do not grow as if they were form black round. Four pairs of legs: the front pair is thicker for gripping prey when hunting (black); the back three pairs for jumping and maintaining body balance (dark brown, black spines all over, few yellow spines on top), trochanter and femur are black (scopula present, black spines, pale yellow hairs on tip).

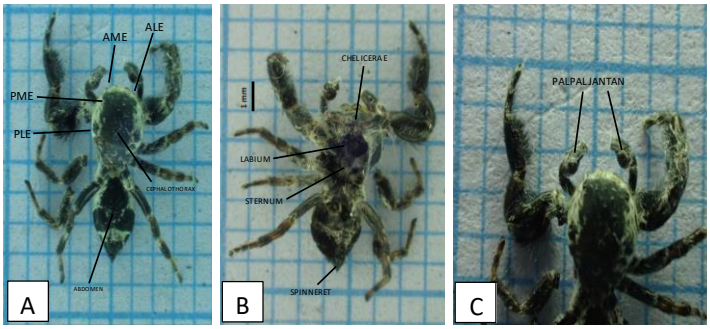

Figure 4. *Rhene flavigera* adult male. A. dorsal body part; B. ventral body part; C. male pedipalp (palpal)

The three individuals of *R. flavigera* have a cephalothorax shaped close to a flattened isosceles trapezoid, black eyes, sideways chelicerae type of movement, solid black sternum (the centre has fine grey-white hairs), dark brown patella. Tibia, metatarsi and tarsi (only black spines without scopula).

Both species are found in upland or lowland areas close to water or with little cover (high sunlight intensity). *R. albigera* is more likely to be present in lowland areas while *R. flavigera* dominates the highlands. Researcher did not find any presence of this species at all in humid areas and around watercourses in forests or mountain top areas with low sunlight intensity in line with the location of findings conducted by Putra (2021) that genus *Rhene* tends to be on the beach and valley bushes or bushes near settlements that have higher room temperatures and are not too far from water. This may be a corroboration of *Rhene* prey in the form of insects that are usually many in the bush or places close to the flow of water such as flying insects that like the humidity around the river with not dense cover.

Researcher also found more juveniles than adults (no adults were ever found at the same time), with individuals quite distant from each other and rarely found on the same day. This could suggest that they may be very active hunters and have large hunting areas with each other as well as populations that may already be small in wild nature, especially in this region of West Sumatra.

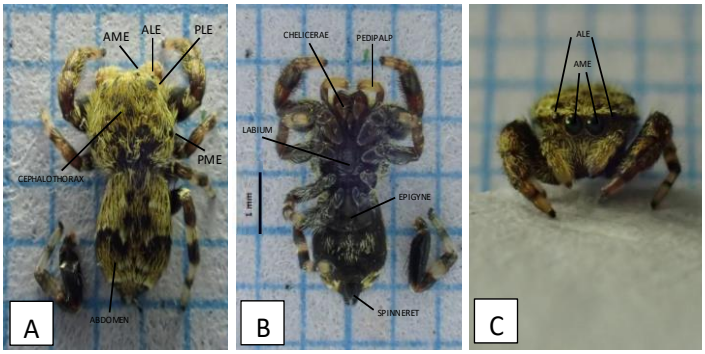

Figure 5. *Rhene flavigera* adult female. A. dorsal body part; B. ventral body part; C. front head part

Based on species distribution mapping in the World Spider Catalog (2021), genus *Rhene* has a wide distribution. The distribution of this genus covers Indo-China zone from Indonesia, Vietnam, China and Japan, to Indo-Malayan Archipelago in Malaysia and Pakistan-India region. The latest INaturalist (2022) input data of *R. albigera* is minimally recorded only in Laos, Hong Kong, India, China, South Korea and Japan, while *R. flavigera* is still widely recorded in many Asian countries including Indonesia (Sumatra). However, detailed studies for this genus in these regions are still very limited.

The small number of individuals obtained here may be related to solitary nature of Salticidae that affects this research because it has never found male and female together (in pairs) and found juveniles in a long distance range, in line with the Salticidae life pattern described by Brintannica (2023) that most Salticidae are solitary individuals, except for some Salticidae species such as the genus *Myrmarachne*. In addition, there is also the possibility that genus *Rhene* only lives together during the mating period in one nest then a male who survives the cannibal behaviour of a female will leave after the mating process and make his own nest elsewhere. Rienks (2000) asserts that it is common for juveniles to stay with a female until they are slightly bigger. Thereafter, these juvenile individuals will separate themselves from each other as well as away from their female mother due to the potential for cannibalism or matriphagy as is the habit of other arachnids.

In addition to the possibility of a large range and solitary lifestyle, researcher also found differences in the habitat of genus *Rhene* spiders that have been obtained based on gender that male individuals are found on trees or sturdy branches, while females are found actively jumping on shrubs, herbs and dense low leaves. This can be attributed to the biological pattern of males who walk more than actively and aggressively jump unless they feel threatened or pressured similar to that found in the genus *Carrhotus* (Mezofi et al., 2019).

Finding of more juvenile individuals (for *R. albigera* and *R. flavigera*) and the separation of adult male and female (*R. flavigera*) could be due to the mating season of these Salticidae spiders. According to research conducted by Ferez et al. (2000), the recognition and mating behaviour of jumping spiders occurs during the rainy season and juveniles will be found more in December to July. In line with this research, researcher found all samples in the span of December 2022 to January 2023 with more juveniles than adults. So it could be assumed that they have just passed the mating period and are just experiencing growth even though they are already in juvenile phase or could actively seek their own food. In addition, the finding of adult male and female *R. flavigera* in two different locations and far apart is also an indication that they are going through the mating period. Like the mating pattern above, they have a cannibalistic habit in mating where it often happens that adult female who are ready to mate have a larger size than male and end up with that adult female eating her male-mate after the copulation period ends (Bittel, 2017).

During this reasearch period, researcher could see the liveliness of this genus in receiving stimuli (actively observing objects or movements approaching towards it) and hunting despite its larger and wider body size. The way it ambushes prey is by jumping from a certain angle and place after observing their prey for a while, flanking the prey with chelicerae fangs and injecting venom until their prey stops moving, gripped with two thick front legs for several minutes before eating this prey on the spot. However, males of this genus are more often seen walking on their eight legs, jumping only in emergencies or when they feel threatened. It was reviewed by Mezofi et al. (2019) that female individuals of Salticidae are more active than males especially at night, while males hunt most actively in the morning only.

From those above hunting techniques, genus *Rhene* (including the two species obtained by this research) could be assumed to play an active role as pest controllers rather than web-making spiders. Unfortunately, there is still no detailed research on the prey species of this genus and this researcher have never found this species with prey in its natural habitat. However, during this research, genus *Rhene*, which was collected alive and fed for some time before being brought to our laboratory, accepted prey such as crickets (family Gryllidae), small grasshoppers (*Pseudoxya diminuta*) and hongkong caterpillars (*Tenebrio molitor*) that were still alive (moving) and not interested in eating dead or frozen insects. According to Huseynov (2005), Salticidae feed on arthropod groups such as Diptera and Lepidoptera that are medium-sized or twice their own body size. Schadegg and King (2021) confirmed that Salticidae very rarely feed on Formicidae. Based on these facts and considering the location of habitat where genus *Rhene* is found and environmental observations, the most likely prey of this genus in wild nature are mosquitoes, flies, grasshoppers, crickets, bees, ants, and small caterpillars.

There are still many mistakes and differences in identifying this *Rhene* species, such as male juveniles being mistaken as female juveniles because they are almost identical to each other or adults being identified as different species. According to the results of this research, the benchmark for differentiation is their hair pattern on the cephalothorax and abdomen, which must be more scrutinised and seen in great detail.

Although still in juvenile stage, *R. flavigera* juvenile #3 already shows the presence of: a distinctive hair pattern on the abdomen (black dominant base shaped like an evergreen tree); hair pattern on the cephalothorax already showing a white dot in the centre and faintly forming a rectangle and a black circle around their eyes, PME and PLE. This confusion could be answered if the juvenile has undergone their last molt so that their hairs on the cephalothorax and abdomen that vaguely resemble females will disappear and form a perfect adult male hair pattern. *R. albigera* juvenile #2 has an abdominal hair pattern and a ventral epigyne area. This presumption of sex of juvenile individuals has been proven in sex ratio studies in genus *Psecas* (Salticidae) by Romero and Neto (2010) where female juveniles have the same hair pattern

and colour as adult females and the size of juveniles, both females and males, are on same average. The difference in hair patterns on the body and sternum of *R. albigera* and *R. flavigera* could be seen in Figure 6.

The abdomen of male *R. albigera* is wider and has more hairless bald patches, forming an upside-down T shape or clover flower in the centre of dorsal abdomen that does not break off the yellow hairs near spineret (the indentation pattern is simpler). Female does not have a wide black base colour near their spineret, the dominant colour is yellow and pale yellow forming 2-3 side lines and the number of round dot patterns is also at most only two pairs (most only have a pair) with black side line connections. While the abdomen of *R. flavigera* male is slimmer, the dominant black base colour forms an evergreen tree embedded on the ground, more squiggly, hair on the edges will be cut off with this black base colour. Their female has more hair, more slender, there is a black base colour near their spineret, the edge of this base colour is decorated with ash-white hairs impressed as a dividing line or scribble on each pattern with a total of three pieces and there is a round dot pattern of three pairs.

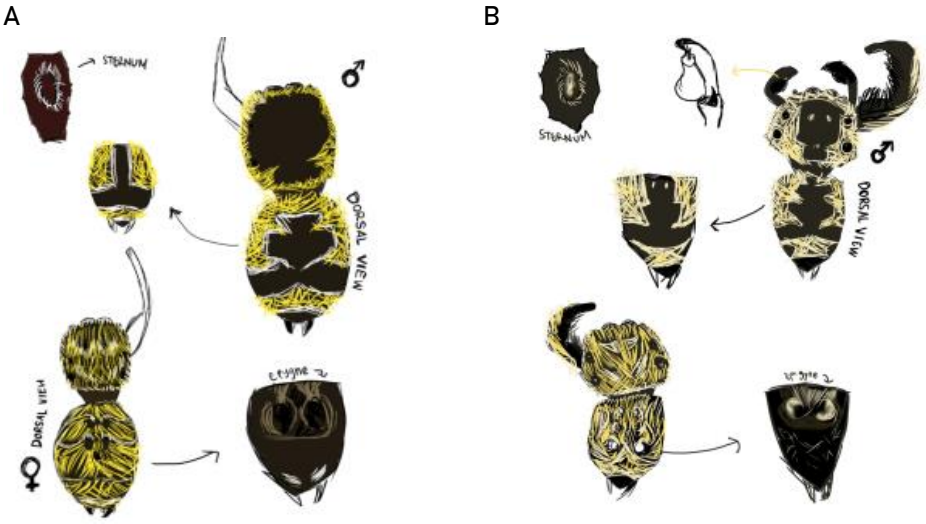

Figure 6. Hair Pattern of Body and Sternum Part. A. *R.albigera;* B. *R.flavigera*

Differences in adult individuals identified as other species such as in research by Putra (2021) who found *R. flavigera* with a description different from the results obtained in this research and several other studies archived in World Spider Catalog (2021). The abdomen of the individual in that study was too large and widened and also had white hairs that formed a perfect border on its cephalothorax, there was no distinctive hair pattern that *R. flavigera* has. Its abdomen had a very thin three-line pattern. This individual is probably not *R. flavigera*, but *Rhene rubrigera* from Caleb et al. (2022) which has corrected a similar misidentification. Possible reasons for such a conclusion from that study are the differences in specimen capture locations. Putra (2021) found his specimen on *Xylocarpus rumphii*, while this researcher found our specimen on *Imperata cylindrica* reeds. The difference in identification of female R*. rubrigera* to female *R. flavigera* could be seen in Figure 7.

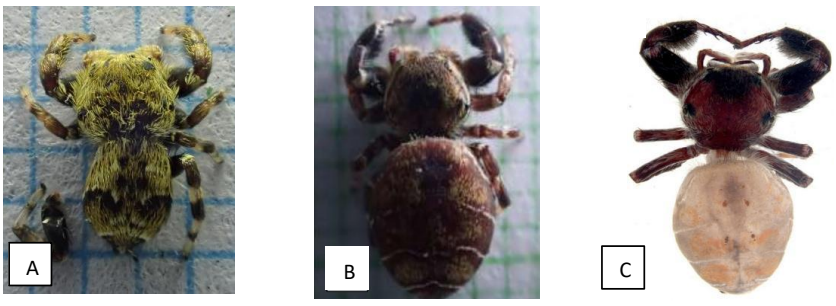

Figure 7. The Difference of Identification of *R.rubrigera* as *R. flavigera*. A. female *R. flavigera* by this research; B. female *R. flavigera* by Putra (2021); C. *R.rubrigera* by World Spider Catalog (2021) and Caleb *et al.* (2022)

A possible problem is the colour variation and hair pattern in genus *Rhene* with the same species as some other Salticidae species that have been recorded to have variation in these characteristics, which could lead to misunderstandings in assigning new species. So far, the characteristics of *R. albigera* and *R. flavigera* found in West Sumatra are similar to those of previously published studies. This means that the distribution area of these two species is indeed wide even though they are found in different countries.

Although this description is the simplest way and the first step in identifying species, the description of somatic and genital characters (male and female) is the most important and effective to be done first as a reference hypothesis. Molecular biology with further DNA analyses of *R. albigera* and *R. flavigera* are urgently needed in the future to clarify phylogeny and evolution among species of the same genus *Rhene* in different countries to correct errors that have or may occur.

Conclusions

There are only two species found in West Sumatra from this research, *R. albigera* (C. L. Koch, 1846) and *R. flavigera* (C. L. Koch, 1846). Comparison of genitalia descriptions could not be made because *R. albigera* samples obtained were juvenile. Although this description is the simplest way and first step in identifying species, description of somatic and genital characters is the most important and effective to do first as a reference hypothesis. Molecular biology with further DNA analyses of *R. albigera* and *R. flavigera* should be conducted in the future to clarify phylogeny and evolution among species of the same genus *Rhene* in different countries to correct errors that have or may occur.

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