

SPECIES ACCOUNT

AMPHIBIA

I. Family MEGOPHRYIDAE

Megophrys aceras Horned Frog

This was a leaf litter frog, which inhabited forest floor of closed-canopy evergreen forests at Gunung Tujuh. It occurs from the lowlands at about 750 meters asl up to mountain forests over 1500 meters asl (Mistar, 2003). At Gunung Tujuh it was found at elevation 1200 meters asl. This is a rare species, which was only found at Gunung Tujuh survey site. This species is known from Peninsular Thailand through most of Peninsular Malaysia (Berry, 1975) and Sumatra (Mistar, 2003).



Figure 21. *M. aceras* from Gunung Tujuh (Photograph by J. Holden).

Megophrys nasuta Bornean Horned Frog, Malayan Horned Frog, Horned Toad, Large Horned Frog

It was a leaf litter frog, which inhabited intact lowland and sub mountain rainforest, generally near forest streams. Adults are terrestrial in habits, but tadpoles live in clear forest streams. It occurred about 500 meters asl up to 1000 meters asl. It was regularly encountered, and its characteristic call was frequently heard in suitable habitat. It was uncommon in Tapan, Lumayang, Sungai Durian, Muara Kambang, Muara Sako, Muara Labuh and Lubuk Selasih survey sites. This species is known from southern, throughout Peninsular Malaysia (Berry, 1975), Tioman Island, Singapore (Lim and Lim, 1992), Sumatra, Bintan, all parts of Borneo and the Natuna Islands (Inger and Stuebing, 2005; Mistar, 2003).

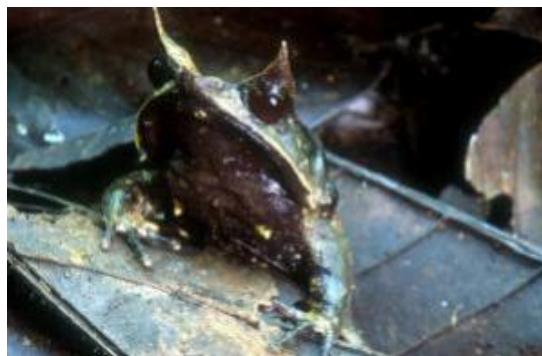


Figure 22. *M. nasuta* from Tapan (Photograph by J. Holden).

Megophrys paralella

Megophrys paralella was described by Inger and Iskandar (2005). Type locality of the species is Lubuk Selasih, West Sumatra, at elevation 1289 meters asl. However, it was also found in Gunung Tujuh survey site at elevation about 2300 meters asl (J. Holden; personal communication, 2005). In Gunung Tujuh survey site, *M. paralella* inhabited on the leaf litter of forest floor and found locally very common.



Figure 23. *M. paralella* that was found in Gunung Tujuh survey site (Photograph by J. Holden).

II. Family BUFONIDAE

Ansonia cf glandulosa

This species is known only from the holotype collected at Napal Licin, one of KSNP area in South Sumatra region, Indonesia. Only one individual was collected from Sungai Durian survey site. It was rare in Sungai Durian survey site. There are two described species of *Ansonia* in Sumatra, *A. Leptopus* and *A. glandulosa*. *A.cf glandulosa* occurred in the primary forest of Sungai Durian survey site. It was found sitting on herb stratum of the rain forest. One individual of *A.cf glandulosa* was recorded at elevation 750 meters asl.



Figure 24. *A.cf glandulosa* from Sungai Durian (Photograph by J. Holden).

Ansonia leptopus
Brown Slender Toad

This arboreal toad found in Muara Labuh survey and Upper Rupit River survey sites. The adult usually found sitting on herb plant along small stream bank in rain forest. It is unable to adapt to modified habitats (Inger and Stuebing, 2005). It was scarce at Muara Labuh survey sites. This species is known from a number of localities distributed over much of Borneo habitats (Inger and Stuebing, 2005). It is also present at two localities in Peninsular Malaysia, and at a single site in Sumatra (Indonesia). It has been recorded from lowland elevations of 50 to 700 meters asl habitats (Inger and Stuebing, 2005). In Upper Rupit River survey site, it was found at elevation 100 meters asl; however, in Muara Labuh survey site, it was found at elevation around 800 meters asl. This species is known from Borneo, Peninsular Malaysia and Sumatra (IUCN, 2006).



Figure 25. *A. leptopus* from Muara Labuh survey site (Photograph by H. Kurniati).

Bufo asper
Asian Giant Toad, River Toad, Rough Toad

In Sumatra it is apparently confined to the banks of rainforest streams and rivers throughout its life cycle, and has been recorded only from heavily forested areas (IUCN, 2006)); however in KSNP it has been observed in plantation area in Lumayang and in the village or paddy field in Muara Sako, Muara Kambang and Muara Labuh survey sites. In Gunung Halimun National Park, it is found in rivers or along small streams in various habitats, from primary rainforest to degraded areas and even near human habitations (Kurniati, 2003). In Java, it occurs from lowlands (Kurniati *et al.*, 2001) up to 1500 meters asl (Iskandar, 1998). It was common in lowland forest survey sites including Tapan, Lumayang, Sungai Durian, Napal Licin and Upper Rupit River; and also common in heavily degraded habitat such as rubber plantation in Sulap and Seloso Hills; and also in human habitation at Muara Sako, Muara Kambang and Muara Labuh. This species is found from Myanmar, through western Thailand, Tenasserim and Malaysia (including Penang and Tioman) to Indonesia (Sumatra, Java, Kalimantan, Natuna Besar and southwest Sulawesi (where it is introduced), and Malaysian Borneo and Brunei (Iskandar and Colijn, 2000).



Figure 26. *B. asper* from Tapan (Photograph by H. Kurniati).

Bufo claviger
Bengkulu Toad

Based on IUCN (2006), this species is only known with certainty from northern Bengkulu Province, Sumatra; it lives in lowland forest. However, during the survey in the Sulap Hills site, a juvenile of *B. claviger* was found inside rubber plantation at elevation about 200 meters asl. At the site, the frog inhabited very slow -moving stream. Based on this record, *B. claviger* can adapt to man mad habitat or probably in the other types of degraded forest. It was a rare species, because only one individual was found in Sulap Hills survey site.



Figure 27. Juvenile of *B. claviger* from Sulap Hills (Photograph by H. Kurniati).

Bufo divergen
Crested Toad

In KSNP, *B. divergen* was found at Upper Rupit River survey site, inhabited hilly lowland forest at elevation about 200 meters asl. In the site, it was seen after heavy rain; sit on herb leaf a long foot path where close to slow moving streams. Unfortunately, only males were recorded during the survey. It was scarce frog in Upper Rupit River survey site. The species occurs in Sumatra, Natuna Besar and Borneo (IUCN, 2006).



Figure 28. *B. claviger* from Upper Rupit River survey site (Photograph by H. Kurniati).

Bufo juxasper
Giant River Toad

It occurred along rocky creeks and riverbanks and also wanders widely through primary and degraded forests and marshland in Gunung Tujuh, Renah Kayu Embun and Lubuk Selasih. Occasionally it was found near isolated houses in hilly terrain near forest at Renah Kayu Embun survey site and in some types of tree plantations in Gunung Tujuh survey sites. It occurred about 1200 meters asl up to elevations of 1600 meters asl. It was common in Gunung Tujuh, Renah Kayu Embun and Lubuk Selasih survey sites. This species is widely distributed in Borneo and Sumatra (Inger and Stuebing, 2005).



Figure 29. *B. juxasper* from Gunung Tujuh (Photograph by J. Holden).

Bufo melanostictus

Asian Common Toad, Asian Toad, Black-spectacled Toad, Common Sunda Toad, Javanese Toad

It was found in Muara Kambang, Muara Sako, Muara Labuh, Gunung Tujuh, Sulap Hills, Seloso Hills and Napal Licin survey sites. This species associates with human habitations and agricultural areas and occurred at low elevation up to 1200 meters asl. It was an abundant species the four survey sites. This species occurs widely from northern Pakistan through Nepal, India (including the Andaman and Nicobar Islands), Sri Lanka, southern China (including Taiwan, Hong Kong and Macau), Myanmar, Laos, Vietnam, Thailand and Cambodia to Malaysia, Singapore, and Indonesia (Sumatra, Java, Borneo, Anambas Islands and Natuna Islands, introduced to Bali, Sulawesi, Ambon and Manokwari, New Guinea (north-eastern portion of the Vogelkop Peninsula, centre on Manokwari) (Iskandar and Colijn, 2000). In Papua *B. melanostictus* is restricted to coastal area north and south of Manokwari (Menzies, 2006).



Figure 30. *B. melanostictus* from Kerinci (Photograph by J. Holden).

Bufo parvus
Lesser Toad

It inhabited streams in lowland primary forest in Sungai Durian survey site. It has not been found in open areas outside forest. It occurs up to 750 meters asl. It was considered to be common in Sungai Durian survey site. This species is found in western and Peninsular Thailand, Peninsular Malaysia, southern Myanmar, and Indonesia (Sumatra and Java) (Iskandar and Colijn, 2000). It does not occur in Singapore (Lim and Lim, 1992).



Figure 31. *B. parvus* from Sungai Durian (Photograph by J. Holden).

Leptophryne borbonica
Cross Toad, Hourglass Toad

The adults of this species live in the leaf litter of lowland and sub mountain forests below 1200 meters asl. It is usually seen in seepage areas and along the banks of slow moving, small, very shallow streams (Inger and Stuebing, 2005; Kurniati, 2003); however in Tapan survey site, it was found along the banks of fast moving stream at elevation about 500 meters asl. In Upper Rupit River survey site, it was found locally very common, especially during full moon. In Sumatra, the frog locally common (IUCN, 2006); however, in Tapan it was uncommon; probably type of the habitat in the site was not suitable for the frog. This species has been reported from widely scattered localities across Borneo, Peninsular Malaysia, southern Thailand, Sumatra (Inger and Stuebing) and Java (Iskandar, 1998; Kurniati, 2003).



Figure 32. *L. borbonica* from Tapan (Photograph by J. Holden).

Pelophryne brevipes
Saint Andrew's Cross Toad

It inhabits arboreal microhabitats in closed-canopy rainforest in Sungai Durian and Napal Licin survey site. At the two survey site, it was found at elevations 150 meters asl in Napal Licin and 750 meters asl in Sungai Durian. This species is small, cryptic and easily confused with juveniles of other toad species. In KSNP the species was considered to be scarce. In Peninsular Malaysia this species is found as far north as Northern Trengganu, including Tioman and Aur Islands, and south to Singapore (Lim and Lim, 1992). It is also found in Siberut, north Sumatra, Mentawai, and Natuna Besar in Indonesia (Iskandar and Colijn, 2000).



Figure 33. *P. brevipes* from Sungai Durian (Photograph by J. Holden).

III. Family MICROHYLIDAE

Kalophrynus pleurostigma

Black-potted Narrow-mouthed Frog, Rufous-side Sticky Frog

It was found in the leaf litter of lowland primary forest in Sungai Durian survey site and occasionally in disturbed forests in Bukit Tiga Puluh National Park, Sumatra (Kurniati, 2001). In Sungai Durian, it breeds in temporary small pools of water after heavy rain. In Sungai durian survey site, it was abundant in most areas of suitable habitats. This species is widespread in southern Philippines, Peninsular Malaysia, southern Thailand, Singapore, Sumatra, Borneo, Laut in the Natuna Islands (Iskandar and Colijn, 2000) and has been found in one locality on Java (Iskandar, 1998).



Figure 34. *K. pleurostigma* from Sungai Durian (Photograph by J. Holden).

Kaloula baleata

Brown Bullfrog, Flower Pot Toad, Muller's Narrow-mouth Toad, Smooth-fingered Narrow-mouthed Frog

This species inhabited lowland primary rainforest in Sungai Durian survey site and was also tolerant of disturbed habitats such as plantation and human habitations. In Sungai Durian, It was known from its loud characteristic call after heavy rain. It bred in animal wallow that full of water after heavy rain. It has been recorded from sea level up to 800 meters asl. It was to be locally common in Sungai Durian survey site. This species occurs in southern Peninsular Thailand, it is widely distributed throughout Malaysia (including Sabah, Sarawak and Phuket Island), central and western Indonesia (Nias, Sumatra, Kalimantan, Java, Madura, Bali, Lombok, Sumbawa, Flores, Timor, Sulawesi, Kabaena, Muna, Butung and Wowoni), and Palawan in the Philippines (Iskandar and Colijn, 2000).



Figure 35. *K. baleata* from Sungai Durian (Photograph by J. Holden).

Metaphrynella cf pollicaris

Malayan Spade-footed Frog, Malayan Tree-hole Frog

This frog was only found at Napal Licin survey site. It inhabited semi disturbed forest and also found at forest edge. Based on its recognizable call, it was very common in Napal Licin. The population density of this frog seems to be limited by tree hole availability (IUCN, 2006). In Peninsular Malaysia, *M. pollicaris* occurs generally numerous above 900 meters asl (IUCN, 2006); however, at Napal Licin it was abundant (based on calls) at elevation 250 meters asl. The species is known from Peninsular Malaysia and Sumatra (IUCN, 2006).



Figure 36. *M. pollicaris* that found at Napal Licin survey site (Photograph by H. Kurniati).

Metaphrynella sundana
Tree Hole Frog

It lived in lowland primary rainforest in Lumayang and Sungai Durian survey sites. Males call from water-containing holes in trees. Breeding and larval development takes place in the tree holes. It was a lowland species occurring below 700 meters asl. It was considered to be locally abundant. This species is widely distributed in Borneo, and has also been recorded from northern Sumatra (Iskandar and Colijn, 2000; Mistar, 2003).

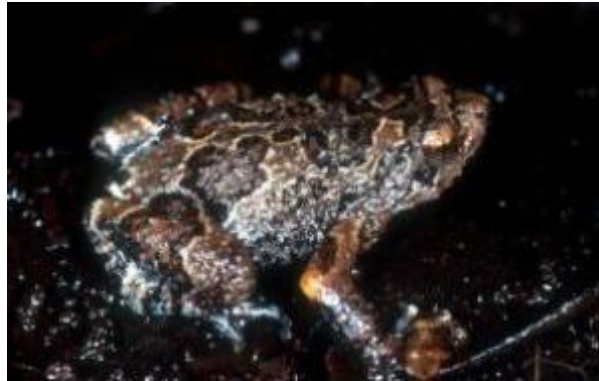


Figure 37. *M. sundana* from Sungai Durian (Photograph by J. Holden).

Microhyla borneensis
Bornean Narrow Mouthed Frog

The frog was found in marshland area in Gunung Tujuh survey site; it lived at the same habitat with *M. superciliari* and *M. palmipes*. It was common in the site. It has a quite wide altitudinal range, 70 to 550 meters asl (Inger and Stuebing, 2005); however, it was found in Gunung Tujuh survey site where the elevation about 1400 meters asl. It has been seen at many scattered localities in Borneo (Inger and Stuebing, 2005). It has recently been recorded from a single locality in West Sumatra (IUCN, 2006)).



Figure 38. *M. borneensis* from Gunung Tujuh survey site (Photograph by H. Kurniati).

Microhyla heymonsi

Arcuate -spotted Pygmy Frog, Dark Sided Chorus Frog

This species was found in marshland area in Gunung Tujuh survey site and also in paddy field and human habitations in Muara Kambang, Muara Sako, Muara Labuh, Lubuk Selasih, Sulap Hills, Seloso Hills and Napal Licin survey sites. It occurred from sea level up to 1400 meters asl. It was generally abundant in appropriate habitats including marshland and paddy field. This species occurs in central, southern and south-western China, Myanmar, Thailand, Laos, Vietnam, Cambodia, Peninsular Malaysia, Singapore and Indonesia, including major islands such as Sumatra, Penang, Siberut, Phuket as well as Great Nicobar Island, India (Iskandar and Colijn, 2000; Mistar, 2003).



Figure 39. *M. heymonsi* from Kerinci (Photograph by J. Holden).

Microhyla palmipes

Palmated Chorus Frog

The frog was found in marshland area of Gunung Tujuh survey site. The frog can be found inside primary or secondary forest or marshland area that close to forest edge (IUCN, 2006)); however, in Gede-Pangrango the frogs are restricted to primary rainforest (Liem, 1973). It was common in suitable habitat such as grassy swamp. In Sumatra, it inhabits lowland up to 1400 meters asl (IUCN, 2006)). This species is known from three widely separated locations in Peninsular Malaysia (Berry, 1975) as well as from Sumatra, Nias, Java, Madura and Bali (Indonesia) (IUCN, 2006)).



Figure 40. *M. palmipes* from Gunung Tujuh survey site (Photograph by J. Holden).

Microhyla superciliaris
Narrow Mouthed Frog

According to Mistar (2003), it is found in forested areas (primary and secondary forest) in Sumatra at elevation between 300 meters-1400 meters asl. However, it was found in marshland area in Gunung Tujuh survey site at elevation 1300 meters asl. It was also found in primary rain forest in Sungai Durian Survey site. It breeds in slow-flowing streams and standing water such as marshland and animal wallow. In Gunung Tujuh survey site, it was abundant species, but it was scarce in Sungai Durian survey site. This species occurs in Peninsular Malaysian and from three Sumatran localities including Gunung Leuser National Park in Aceh, Lahat and south Sumatra (Mistar, 2003).



Figure 41. *M. superciliaris* from Gunung Tujuh (Photograph by J. Holden).

***Microhyla* sp**

This species looks like *Microhyla borneensis*, but male has body size smaller than male of *M. borneensis*, and also it has different dorsal colour. It is probably a new species, but further study of this species is needed. It was found in Sungai Durian survey site and occurred in temporary pool in primary at elevation 1000 meters asl. It was rare species in Sungai Durian survey site.



Figure 42. *Microhyla* sp from Sungai Durian (Photograph by J. Holden).

Phrynella pulchra
Reddish Tree-hole Frog

This species was found in Lumayang, Sungai Durian and Upper Rupit River primary rainforest at elevation 100-750 meters asl. They live in water filling three holes up to 5 meters above the ground. It can live up to 30 meters above the ground (IUCN, 2006); however at Upper Rupit River, a female of *P. pulchra* was found on fallen tree on stream bank. This species can be recorded from its specific call that can explain which tree they stay. They make call and breed in temporary pool in three holes. It was uncommon Lumayang, Sungai Durian and Upper Rupit River survey site. This species is found in Indonesia at low altitudes on Siberut, Tanah Masa, Sipora, Pini and Sumatra, and in Peninsular Malaysia (Mistar, 2003) and Thailand (IUCN, 2006).

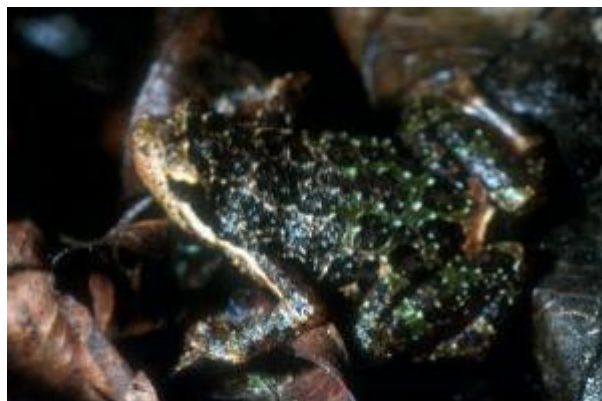


Figure 43. *P. pulchra* from Sungai Durian (Photograph by J. Holden).

IV. Family RANIDAE

Fejervarya cancrivora

Asian Brackish Frog, Crab-eating Frog, Mangrove Frog, Rice Field Frog

It was found in man-made environments such as rice paddy fields in Gunung Tujuh, Rawa Bento, Muara Sako, Muara Kambang, Muara Labuh, Lubuk Selasih, Sulap and Seloso Hills survey sites. Generally, it occurs in mangrove forest, estuarine habitats, swamps and open, wet coastal areas, such as roadside ditches and also thrives in man-made environments (Kurniati, 2003; Kurniati *et al.*, 2001). It can be found from sea level up to 1500 meters asl. It is tolerant of moderate salinity. It was common to abundant in suitable habitats in the six survey sites. This is a widely distributed frog. It is known from coastal southern China in Guangxi and Hainan Provinces, from Great Nicobar Island in India, and from most countries in Southeast Asia including the Philippines. In New Guinea, introduced populations are known from the Sorong, Manokwari, Nabire and Jayapura areas of Papua, Indonesia (Iskandar and Colijn, 2000; Menzies, 2006).



Figure 44. *F. cancrivora* from Gunung Tujuh (Photograph by H. Kurniati).

Fejervarya limnocharis

Asian Grass Frog, Common Pond Frog, Field Frog, Grass Frog, Indian Rice Frog

It inhabited most open wet habitat types, including river floodplains, wet agriculture areas such as rice paddy fields, ditches and marshes in Gunung Tujuh, Rawa Bento, Muara Sako, Muara Kambang, Muara Labuh and Lubuk Selasih survey sites; but is rarely found in closed canopy forest (Kurniati *et al.*, 2001). It is found from sea level up to 2000 meters asl (Liem, 1973). These frogs are generally common and abundant in suitable habitat in the six survey sites. The species is widespread throughout much of South Asia and Southeast Asia, including many islands in Indonesia, the Philippines, Phuket and Singapore and is also found in northern, central, southern and south-western China (including Taiwan, Hong Kong and Macau). It is distributed in western Japan, in the western half of Honshu, Shikoku and Kyushu Districts and Nansei Islands (IUCN, 2006)).



Figure 45. *F. limnocharis* from Sungai Gambir, Muara Sako (Photograph by J. Holden).

Huia modiglianii

It occurred in clean torrents and fast-flowing streams in rain forest and open areas near the forest in Tapan survey site. *H. modiglianii* is characterized by having six crossbars on hind limb; however *H. sumatrana* has four crossbars (Doria *et al.* 1999). Based on IUCN (2006), this species was only known from Si Rambe and Bantjan Batu in the vicinity of Lake Toba, and collected at 400 meters asl; however at Tapan survey site it was found at elevation 550 meters asl, and inhabited strong moving streams.



Figure 46. *H. modiglianii* from Tapan survey site (Photograph by J. Holden).

Huia sumatrana
Sumatran Torrent Frog

It occurred in clean torrents and fast-flowing streams in rain forest and open areas near the forest in Lumayang, Sungai Durian, Gunung Tujuh, Renah Kayu Embun, Muara Labuh, Lubuk Selasih and Upper Rupit River survey sites. Sometimes it sits on herb leaf near fast flowing stream. It occurs from 300 to more than 1200 meters asl (Mistar, 2003); however at Upper Rupit River it was found at elevation 150 meters asl. It was common and abundant in suitable habitat in most of survey sites. This species is endemic to the Bukit Barisan mountains of western Sumatra (in Aceh, North Sumatra, West Sumatra, Bengkulu and Lampung Provinces) (Mistar, 2003).



Figure 47. *H. sumatrana* from Tapan (Photograph by J. Holden).

Limnonectes acuticeps

This species has been described by Djoko Iskandar. In Tapan survey site, it was found in boulders clean torrents and fast-flowing streams in primary rain forest and open areas near the forest. It occurred at elevation 500 meters asl. It was scarce species in Tapan survey site.

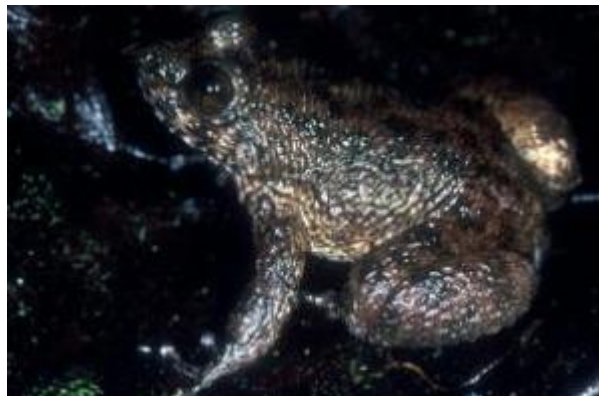


Figure 48. *L. acuticeps* from Tapan (Photograph by J. Holden).

Limnonectes barisani

This species has been described by Djoko Iskandar. It was found in marshland in Gunung Tujuh and Renah Kayu Embun survey sites. It lives sympatric with *L. kuhlii* in slow moving or standing water. It occurs at elevation 1200-1400 meters asl. It was common in Gunung Tujuh survey site.



Figure 49. *L. barisani* from Gunung Tujuh (Photograph by J. Holden).

Limnonectes blythii

Blyth's River Frog, Giant Asian River Frog, Giant Frog

It inhabits gravelly and boulder streams in primary forest in Tapan, Lubuk Sela Sih, Upper Rupit River and Napal Licin survey sites; however in Muara Kambang, Muara Labuh, it was found in secondary to heavily degraded forest, and in Sulap and Seloso Hills it was found in rubber plantation. Gravid females have reddish dorsal colour. Males build a nesting hollow in a sandy streambed area where eggs will be laid by females (Mistar, 2003). It occurs up to 1200 meters asl (IUCN, 2006)); however, in KSNP it was found at elevation between 100-1200 meters asl. The population of this species was locally variable, ranging from being fairly common in Tapan, Muara Kambang, Muara Labuh and Lubuk Selasih survey sites to common in Upper Rupit River. The frog was common in Bukit Tiga Puluh National Park at elevation 300 meters asl (Kurniati, 2001). This species ranges widely in Southeast Asia, from Vietnam and Laos, to Thailand and Peninsular Malaysia, Singapore and Sumatra, the Anambas Islands and the Natuna Islands (Indonesia). It is also present on the islands of Phuket, Langkawi, Penang and Tioman. Curiously, it is not recorded from the Cardamom Mountains in Cambodia (IUCN, 2006); Iskandar and Colijn, 2000).



Figure 50. *L. blythii* from Tapan (Photograph by J. Holden).

Limnonectes crybetus

This species has been described by Djoko Iskandar. It was found in Sungai Durian, Muara Labuh, Lubuk Selasih, Sulap Hills, Seloso Hills, Upper Rupit River and Napal Licin survey sites. In Sungai Durian, it occurred on forest floor in primary rain forest not far from streams, and breeding in clean torrents and fast-flowing streams. In Muara Labuh, Lubuk Selasih, Sulap Hills, Seloso Hills and also in North Sumatra, the species can be found in manmade habitats such as plantation and degraded forest. In KSNP, it occurred at elevation 200- 1000 meters asl. In North Sumatra the species can be found below 500 meter s asl (Kurniati, personal observation). It was fairly common in Sungai Durian and Napal Licin, but common in Muara Labuh and Lubuk Selasih survey sites.



Figure 51. *L. crybetus* from Sungai Durian (Photograph by J. Holden).

Limnonectes kuhlii

Kuhl's Creek Frog, Large -headed Frog

It was found in clear slow moving streams or standing water in primary rain forest, forest edge and marshland in Tapan, Lumayang, Sungai Durian, Gunung Tujuh, Renah Kayu Embun, Napal Licin and Upper Rupit River survey sites, but it was not found at open area at Rawa Bento, and inside rubber plantation at Sulap and Seloso Hills. It occurred from 150 to 1400 meters asl. It was common and abundant in most survey sites. It is found in southern Yunnan and Guangxi provinces, China, in two small areas of north-eastern India (in Arunachal Pradesh), and throughout Southeast Asia south to Java, Borneo, the Anambas Islands and the Natunas Islands, but it has not been recorded from Cambodia or Singapore (IUCN, 2006)).



Figure 52. *L. kuhlii* from Sungai Durian (Photograph by J. Holden).

Limnonectes laticeps

Corrugated Frog, Flat-headed Frog, Rivulet Frog

This frog was found in Muara Sako, Napal Licin and Upper Rupit River survey site. It occurred in small and shallow streams in degraded forest that closed to rubber plantation. In Borneo, this species occurs only along the banks of small streams, in pools in swampy streams, and in seepage areas near streams in hilly primary forest (Inger and Stuebing, 2005). It was scarce in Muara Sako, Napal Licin and Upper Rupit River; however it was common in suitable habitat in closed primary forest in north Sumatra (Kurniati, personal observation). This species is known from north-eastern India, Myanmar, Thailand, extreme southern Thailand, throughout Peninsular Malaysia, Borneo, and Sumatra. The altitudinal range is from 50 to 1400 meters asl (IUCN, 2006)).



Figure 53. *L. laticeps* (Photograph by H. Kurniati).

Limnonectes macrodon

Fanged River Frog, Java n Giant Frog, Stone Creek Frog

L. macrodon was found at Napal Licin survey site. It occurred along the bank of strong moving streams inside semi disturbed forest. It was scarce in the site, but in Java the species is common (Kurniati, 2003). Based on IUCN (2006), in Sumatra, this species is found in the Lampung Province in south Sumatra. However, *L. macrodon* has wider distribution in Sumatra since it has been found at Napal Licin area that very close to Jambi Province. This species is known from Java and Sumatra (IUCN, 2006); however it has been reported from Papua as introduced frog (Menzies, 2006).



Figure 54. *L. macrodon* that found at Napal Licin survey site (Photograph by H. Kurniati).

Limnonectes microdiscus
Small Disked River Frog

It was forest floor dwelling species which usually found in undisturbed primary rain forest such as the forest in Sungai Durian survey site. The frog uses temporary pool such as animal wallow for breeding site. It occurs from near sea level (Kurniati *et al.*, 2001) up to above 1200 meters asl (Kurniati, 2003). It was uncommon in Sungai Durian survey site. This species is found throughout Java and the Lampung Province in the south of Sumatra (Iskandar and Colijn, 2000). The occurrence of *L. microdiscus* in KSNP (central Sumatra region) is new information for its extend distribution.



Figure 55. *L. microdiscus* from Sungai Durian (Photograph by J. Holden).

Limnonectes paramacrodon
Lesser Swamp Frog, Masked Swamp Frog

The frog is lowland specialist. It was found in paddy field where closed to gravel rivers at elevation 50-100 meters asl in Muara Sako and Muara Kambang survey sites. Generally, it inhabits lowland swamp forest areas with small rivers and streams (Berry, 1975). In north Sumatra, it occurred in old rubber plantation (Kurniati, personal observation) and found very common. It seems to be able to tolerate selective logging, but does not adapt to more heavily modified habitats (IUCN, 2006). It was common in Muara Sako and Muara Kambang survey sites. This species is known from scattered localities in Peninsular Malaysia (Berry, 1975) and Borneo (Inger and Stuebing, 2005), and has been recorded from Singapore (Lim and Lim, 1992), southern Thailand, Natuna Besar and Sumatra. Generally, it occurs at elevations below 200 meters asl (IUCN, 2006).



Figure 56. *L. paramacrodon* from Muara Sako (Photograph by H. Kurniati).

Limnonectes prajatmoi

This species has been described by Djoko Iskandar. It was found in Tapan survey site. It lives in clean torrents and fast-flowing streams in primary rain forest and open areas near the forest. In Tapan survey site, it was scarce species. It occurred at elevation 500 meters asl.

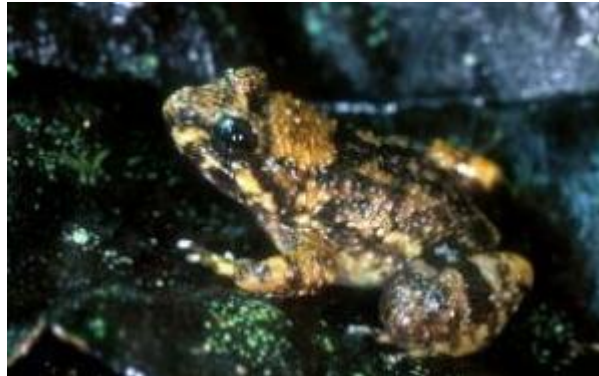


Figure 57. *L. prajatmoi* from Tapan (Photograph by J. Holden).

Limnonectes shompenorum
Giant Lowland Frog

This is lowland frog specialist. It was found in Muara Sako and Muara Kambang survey sites. In the sites, the frog inhabited paddy field and found very common. Some individuals occurred along gravel riverbank. Generally, it occurs in low areas along rivers in tropical forest and forest edges in leaf litter (IUCN, 2006). It is common in Indonesia and abundant in the Nicobar Islands (IUCN, 2006). This species is known from lowland coastal areas of northern and western Sumatra (in Bengkulu, West Sumatra, North Sumatra and Aceh Provinces, all along coastal area to about 200 km inland), the Mentawai Islands (Enggano, Siberut, Sipora, Batu Islands , Nias and Simeulue, and Natuna in Indonesia; and from Great Nicobar Island (India), Singapore and Peninsular Malaysia (IUCN, 2006).



Figure 58. *L. shompenorum* from Muara Sako (Photograph by H. Kurniati).

Occidozyga laevis
Puddle Frog

The species was found in Muara Labuh survey site. It occurred in muddy pool inside rain forest. In north Sumatra, it was inhabit primary forest and degraded forest. It never found many in its suitable habitat. The occurrence of this species in Sumatra is a record for the island. This species is known from Borneo (Inger and Stuebing, 2005) and Philippines islands (Alcala and Brown, 1998).



Figure 59. *O. laevis* (Photograph by J. Holden).

Rana chalconota
Copper Cheeked Frog, Bronze Back Frog, White Lipped Frog

It was found in all of survey sites in KSNP. Usually, it was seen on vegetation around fishpond or small lowland forest streams in Tapan, Lumayang, Sungai Durian, Muara Labuh, Lubuk Selasih, Sulap Hills, Seloso Hills, Napal Licin and Upper Rupit River survey sites. In Gunung Halimun National Park, it occurs in ponds and in paddy fields. It is present from sea level up to 1200 meters asl (Kurniati, 2003; Kurniati *et al.*, 2001). It was common species in all survey sites. The species is found through Thailand, Nicobar, Peninsular Malaysia, Sumatra, Java, Bali and Sulawesi (Iskandar and Colijn, 2000).



Figure 60. *R. chalconota* from Napal Licin survey site (Photograph by H. Kurniati).

Rana crassiovis
Kerinci's Frog

The species was usually seen on vegetation along fast moving streams. It occurred in primary lowland rain forest in Tapan survey site to highland forest in Gunung Tujuh, Renah Kayu Embun, Muara Labuh and Lubuk Selasih survey sites. It also found along streams in marshland area in Gunung Tujuh survey site. It occurred at elevation between 500 meters to 1500 meters asl. It is common in Tapan, Gunung Tujuh, Renah Kayu Embun and Lubuk Selasih survey sites, but scarce in Muara Labuh. This species is only known from a few localities including Barong Baru and Mount Kerinci in central Sumatra region (Iskandar and Colin, 2000).



Figure 61. *R. crassiovis* from Tapan (Photograph by J. Holden).

Rana erythraea
Common Green Frog, Green Paddy Frog, Leaf Frog

The frog was found in Muara Sako and Muara Kambang survey sites. It occurred in paddy field and freshwater swamp. It is characteristic of vegetated floodplain ponds and is also frequently associated with paddy fields (Kurniati, 2003; IUCN, 2006)). In Muara Sako and Muara Kambang, it was uncommon. This species is widespread in Asia from India, mainland Southeast Asia, Singapore, and Indonesia. It has been introduced to Sulawesi (Indonesia) and the Philippines. It occurs from sea level (Kurniati *et.al*, 2001) up to 1200 meters asl (Kurniati, 2003).



Figure 62. *R. erythraea* from Muara Sako (Photograph by H. Kurniati).

Rana hosii
Poisonous Frog

The species was mainly associated with clear, swift-flowing boulder streams in hilly primary rainforest in Tapan, Lumayang, Sungai Durian, Renah Kayu Embun, Muara Sako, Muara Kambang, Muara Labuh, Lubuk Selasih, Napal Licin, Upper Rupit River and also found in marshland area in Gunung Tujuh survey site. It occurs from sea level up to 1700 meters asl (Liem, 1973). It is generally a common frog in suitable habitat. This species is known throughout the Thai-Malay Peninsula, Tioman (Berry, 1975). It is also widespread in Borneo, Mentawai Islands, Sumatra, Bangka, Belitung and Java (Iskandar and Colijn, 2000).



Figure 63. *R. hosii* from Sungai Durian (Photograph by J. Holden).

Rana kampeni
Kampen's Frog

The morphology of the frog is similar to *R. carssioviss*, but they have difference in tympanum size. Kampen's Frog was only found in Lubuk Selasih survey site. It occurred in primary sub mountain and mountain rainforest along streams. It does not appear to tolerate forest disturbance. It was a common species, especially around 1000 meters asl in Lubuk Selasih. This species is known from the entire mountain ridge along the western side of Sumatra. It was rediscovered in the late 1990s, and has now been recorded widely. It occurs above 700 meters asl (IUCN, 2006).



Figure 64. *R. kampeni* (Photograph by J. Holden).

Rana nicobariensis

Nicobar Frog

It was usually found in degraded habitat including secondary-growth vegetation and human-modified habitats such as grassy or shrubby, paddy field and fishpond in Gunung Tujuh, Rawa Bento, Renah Kayu Embun, Muara Sako, Muara Kambang, Muara Labuh, Lubuk Selasih, Sulap Hills, Seloso Hills and Napal Licin survey sites; it was also found in towns, cities and logging road (Kurniati, personal observation). It occurs from sea level (Kurniati *et al.*, 2001) up to 1500 meters asl (Kurniati, 2003). In KSNP, it was common to abundant in its suitable habitats such as paddy field, fishpond and freshwater swamp. This species is widespread in Southeast Asia (Berry, 1975; Iskandar and Colijn, 2000). It occurs widely in Borneo, Sumatra, Java and Bali. In the Philippines, it occurs only on the islands of Palawan, Balabac and Sibutu (Alcala and Brown, 1998). It is also known from Great Nicobar and Car Nicobar Islands in India (Iskandar and Colijn, 2000).



Figure 65. *R. nicobariensis* from Kerinci (Photograph by J. Holden).

Rana nigrovittata

Dark Sided Frog

It was found in Sungai Durian Survey site. It inhabits gentle streams in primary rain forest. It is occurs in evergreen forest, including evergreen galleries in deciduous forest areas (Berry, 1975). It is generally not a commensally of humans, though it can be found close to settlements if the streams and surrounding forest are intact. It has occasionally been seen in drains in towns (IUCN, 2006). In Sungai Durian survey site, it occurred at elevation 1000 meters asl. However, ranges as widely as 60 to 1200 meters asl (IUCN, 2006). It was scarce species in Sungai Durian survey site. This species is known from southern Yunnan, China, and southern Myanmar through Thailand, Laos, Vietnam and Cambodia to the northern half of Peninsular Malaysia (Berry, 1975; Iskandar and Colijn, 2000). It has been recorded once from Gunung Leuser National Park, North Sumatra (Mistar, 2003), and has also been reported from localities in Assam, Meghalay and Nagaland in India (IUCN, 2006).



Figure 66. *R. nigrovittata* from Sungai Durian (Photograph by J. Holden).

Rana picturata
Spotted Stream Frog, Variable Backed Frog

The frog was found in Lumayang, Muara Sako and Muara Kambang survey sites. In Lumayang, it occurred in primary and slightly disturbed rain forests; however, in Muara Sako and Muara Kambang, it was found in along fast moving stream that located in degraded forest. In KSNP, it was found between 200 to 600 meters asl. It was common species in Lumayang, but scarce in Muara Sako and Muara Kambang survey sites. This species has been recorded from widely scattered localities throughout Borneo and Sumatra (Inger, 1966; Iskandar and Colijn, 2000).



Figure 67. *R. picturata* from Lumayang (Photograph by J. Holden).

Rana raniceps
Greenish White-lipped Frog

The morphology of *R. raniceps* is similar to *R. chalconota*. Both of the species have different dorsal colour. *R. raniceps* is characteristic with green dorsal colour; however, *R. chalconota* is brownish. This species was found in Muara Labuh, Lubuk Selasih, Muara Kambang, Muara Sako, Napal Licin and Upper Rupit River survey sites. It was typically seen on rocks and vegetation along small lowland forest streams, but also seen away from streams in forest, or in highland areas. Primary and degraded forests are equally favoured, but a reasonably closed canopy and gently flowing water are essential. In Sumatra it also breeds in ponds and in paddy fields (IUCN, 2006). It is generally common in lowland forest streams, and is less common but still present in highland areas. This species is known from Peninsular Thailand, Peninsular Malaysia (Berry, 1975) and Singapore (Lim and Lim, 1992); it has also been recorded from most of Borneo, the Great Nicobar Islands, in India, as well as from northern and western Sumatra, the Anambas Islands and the Natuna Islands (IUCN, 2006). In KSNP, it occurred from 100 up to 1000 meters asl.



Figure 68. *R. raniceps* from Muara Labuh (Photograph by H. Kurniati).

Rana siberu
Siberut Stream Frog

In Tapan survey site, it was found along fast moving streams in lowland primary rain forest, and breeds in slow moving streams. In the site, it occurred at elevation 500 meters asl, Mistar (2003), recorded that this species occurred at elevation between 750-1500 meters asl. In Tapan survey site, it was common to abundant in suitable habitats. It is known in Siberut and Sumatra (Aceh, North Sumatra, Bengkulu, West Sumatra and Lampung Provinces) (Mistar, 2003; Iskandar and Colijn, 2000).



Figure 69. *R. siberu* from Tapan (Photograph by H. Kurniati).

V. Family RHACOPHORIDAE

Nyctixalus pictus
Spotted Tree Frog, Cinnamon Frog, Peter's Tree Frog

It was found in Sungai Durian survey site. Adults live in the shrub and lower tree strata in primary rain forests. It breeds in arboreal water-filled cavities and in rotting logs by larval development (Inger and Stuebing, 1998). It occurs at elevation 650 meters asl in Sungai Durian survey site, but it has been recorded from 50 to 700 meters asl (Inger and Stuebing, 2005). In Sungai Durian survey site, it was scarce species. This species is found from southern Thailand through Peninsular Malaysia (Berry, 1975; Iskandar and Colijn, 2000), Singapore (Lim and Lim, 1992), Sumatra (Mistar, 2003), northern parts of Borneo (Inger and Stuebing, 2005) , and Palawan in the Philippines (Alcala and Brown, 1998).



Figure 70. *N. pictus* from Sungai Durian (Photograph by J. Holden).

Philautus aurifasciatus
Golden Striped Bush Frog

This tiny frog was found in Gunung Tujuh survey site. It inhabited primary sub mountain and mountain forests, and was not found outside forests of Gunung Tujuh area. Adults were often found on shrubs that grew away from streams, pools or rivers. It breeds by direct development, laying eggs in tree holes. It was a common species in Gunung Tujuh survey site. This species occurs in Java and Sumatra (IUCN, 2006). In Gunung Tujuh, the frog can be found at elevation between 1000-2000 meters asl, but it was abundant at elevation 2000 meters asl.



Figure 71. *P. aurifasciatus* from Gunung Tujuh (Photograph by H. Kurniati).

Philautus cornutus
Tusked Bush Frog

This species was found in Gunung Tujuh and Renah Kayu Embun survey sites. It occurred in primary forest at elevation between 1500-2000 meters asl. Usually, the frog was found on shrub or low vegetation that grows far from water. It was common to abundant in Gunung Tujuh and Renah Kayu Embun survey sites. This species is known only from Kerinci, in West Sumatra (Van Kampen, 1923; IUCN, 2006).



Figure 72. *Philautus cornutus* from Gunung Tujuh (Photograph by J. Holden).

Polypedates leucomystax

Common Tree Frog, Four-lined Tree Frog, White -lipped Tree Frog

This species was found in Gunung Tujuh, Rawa Bento, Renah Kayu Embun, Muara Sako, Muara Kambang, Muara Labuh, Sulap Hills, Seloso Hills and Napal Licin survey sites in such man made habitats and open areas near forest edge. It is a very adaptable opportunist species, occurring from beach vegetation through all manner of human habitats such as agricultural areas, ditches, artificial ponds, gardens, even in houses (Kurniati *et al.*, 2001; Kurniati, 2003; Liem, 1973) . It appears to be dependent on human activities to create suitable habitats. It is found from sea level up to 1500 meters asl (Kurniati *et al.*, 2001; Liem, 1973) . It was common to abundant in KSNP. This species occurs throughout northeast India , Bangladesh, Nepal (Iskandar and Colijn, 2000). It also occurs throughout most of mainland southeast Asia including Singapore (Lim and Lim, 1992), and is widespread (and introduced) throughout the Philippines (Alcala and Brown, 1998), and is present in Borneo, Mentawai, Sumatra, Java, Sulawesi, Bali, Lombok, Natuna Islands, Anambas Islands, Sumbawa, Sumba, Flores, Timor and is introduced to Papua (Iskandar and Colijn, 2000).



Figure 73. *P. leucomystax* from Gunung Tujuh (Photograph by H. Kurniati).

Polypedates macrotis

Brown-striped Tree Frog, Dark-eared Tree Frog

It was found in Sungai Durian survey site. In KSNP, it inhabited primary rain forest, but in North Sumatra, it can be found in degraded forest or plantation (Kurniati, personal observation). In KSNP, it breeds in temporary pool such as animal wallow, and builds foam nests. In Sungai Durian survey site, it was found at elevation 750 meters asl, but it has been recorded from 75-900 meters asl as recorded in Gunung Leuser National Park (Mistar, 2003). It was fairly common species in Sungai Durian survey site. This species is known from Thailand, Peninsular Malaysia, Borneo, Sumatra (including Mentawai and Natuna) and south-western Philippines (Iskandar and Colijn, 2000).

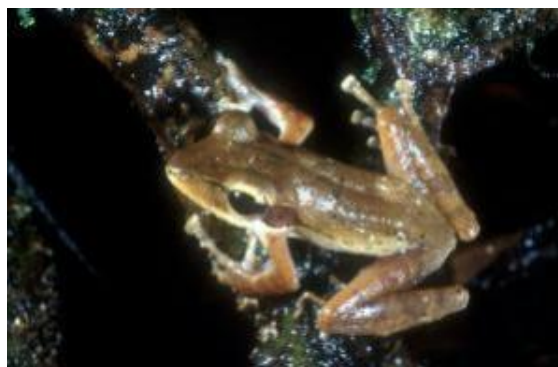


Figure 74. *P. macrotis* from Sungai Durian (Photograph by J. Holden).

Polypedates ottilophus
File-eared Tree Frog

The frog was found in Tapan and Sungai Durian survey sites. It occurred in flat hilly terrain primary rain forest. It used the shrub and tree strata and breeds in temporary pools. It has been recorded in disturbed habitats, such as logged areas at the forest edge (Mistar, 2003). In KSNP, it occurred at elevation 500-1000 meters asl. It was rare in Sungai Durian survey site, but fairly common in Tapan survey site. This species has been found at many sites in Borneo and Sumatra (Inger and Stuebing, 2005; Mistar, 2003).



Figure 75. *P. ottilophus* from Sungai Durian (Photograph by J. Holden).

Rhacophorus achantharrhena

This greenish frog was found in marshland in Gunung Tujuh survey site, it has not been found in forested areas. Males usually sit on shrubs or grass. According to Harvey *et al* (2002), this species has been collected in secondary growth tropical forest, in overhanging vegetation close to pools and slow-flowing streams. It occurs at elevation 1400 meters asl, but Harvey *et al* (2002) reported that It was collected at elevations of between 1415 and 1575 meters asl at Gunung Dempo, South Sumatra. In Gunung Tujuh survey site, It was abundant in suitable environment (dark moon and after rain) but become scarce in unsuitable environment (dry air and full moon). This is endemic frog species in Sumatra. This species has been collected from Bukit Kaba, Bengkulu and the south-eastern slope of Gunung Dempo, South Sumatra (Harvey *et al.*, 2002).



Figure 76. *R. achantharrhena* from Gunung Tujuh (Photograph by J. Holden).

Rhacophorus angulirostris
Masked Tree Frog

It was found in marshland area in Gunung Tujuh survey site, never found in closed canopy forest; but in Borneo, it has been found only in primary sub mountain and mountain forests (Inger and Stuebing, 2005). Males were usually found sitting on shrubs that grow in marshland areas. In Gunung Tujuh survey site, it occurred at elevation 1400 meters asl. In Borneo, it has an altitudinal range of 700 to 1800 meters asl (Inger and Stuebing, 2005). It was common in Gunung Tujuh survey site. This species is known from northern Borneo and from one locality in Sumatra (Iskandar and Colijn, 2000).



Figure 77. *R. angulirostris* from Gunung Tujuh (Photograph by J. Holden).

Rhacophorus appendiculatus
Frilled Tree Frog, Rough-armed Tree Frog, Southeast Asian Tree Frog

The species was found in Sungai Durian survey site. In the site, it inhabited swampy area with shrub at elevation about 1000 meters asl. It was abundant when the water level of the swamp was low, but it was becoming rare when the water high. It was common frog in Sungai Durian, but it was only occasionally encountered. This species is known from Sumatra, Siberut, Borneo, the Philippines, Peninsular Malaysia and India (IUCN, 2006).



Figure 78 . *R. appendiculatus* from Sungai Durian (Photograph by J. Holden).

Rhacophorus barisani

Barisan Tree Frog

This tree frog was found in Sungai Durian survey site. It inhabited slow moving water of stream bank in primary forest. The male were found sitting on vegetation 1-2 meters above deep pool where the stream flowed down. It was rare in Sungai Durian survey site. The type specimens have been collected from Bukit Kaba, Bengkulu, Sumatra and collected at elevations of between 1440 meters asl (Harvey *et al.*, 2002); however in Sungai Durian it was found at elevation about 1000 meters asl.



Figure 79. *R. barisani* from Sungai Durian (Photograph by J. Holden).

Rhacophorus bifasciatus

This fascinating frog was found in Gunung Tujuh and Rawa Bento survey sites. Usually males were found on the trees or low vegetation in marshland areas. It was never found in the forest. It occurs at elevation between 1200-1400 meters asl. It had been collected at elevation 1600 meters asl at Mount Kerinci (Van Kampen, 1923). It was common in Gunung Tujuh survey site, but abundant in Rawa Bento survey site. This is an endemic species in Sumatra, and only known from Mount Kerinci (Van Kampen, 1923).



Figure 80 . *R. bifasciatus* from Gunung Tujuh (Photograph by J. Holden).

Rhacophorus catamitus

It was found in marshland areas in Gunung Tujuh and Renah Kayu Embun survey sites. The frog never found in the forest. Based on Harvey *et al.* (2002), this species occurs in forest of the Bukit Barisan range. Males were usually found on low vegetation near to fast moving streams or standing water. In Gunung Tujuh and Renah Kayu Embun, it occurred at elevation about 1400 meters asl. It has been collected at elevations between 600 to 1630 meters asl (Harvey *et al.*, 2002). It was common species in Gunung Tujuh, but became scarce in Renah Kayu Embun. It is endemic frog in Sumatra. This species has been recorded from the Gunung Dempo, Sumatera Selatan, from Bukit Kaba, Bengkulu, from the Bukit Barisan range near Kepahiang, Bengkulu and from Tapan, Jambi (Harvey *et al.*, 2002).



Figure 81 . *R. catamitus* from Gunung Tujuh (Photograph by J. Holden).

Rhacophorus cyanopunctatus

Blue Spotted Tree Frog, Asiatic Tree Frog

This species was found in Upper Rupit River survey site at elevation 100 meters asl. At the site, it has been seen calling from herb tree on slow moving stream. Recently, in Sumatra it was only known from north Sumatra (IUCN, 2006); it probably occurs more widely since the frog was also recorded in southern Sumatra, especially in areas between known sites. *R. cyanopunctatus* was a rare species at Upper Rupit River. Based on IUCN (2006), it is generally an uncommon to rare species where it is known to occur. This species is known from Thai- Malay Peninsula, Vietnam, Singapore, Sumatra and Borneo (IUCN, 2006).



Figure 82. *R. cyanopunctatus* that found at Upper Rupit River survey site (Photograph by H. Kurniati)

Rhacophorus modestus
Medium Tree Frog

This frog was found in Sungai Durian survey site. In the site, it had the same habitat with *R. barisani*. It inhabited low vegetation along the bank of slow moving stream. The species was rare in Sungai Durian survey site. This species is known only from five specimens from Kerinci, on Sumatra (IUCN, 2006); Van Kampen, 1923). In Sungai Durian it occurred at elevation about 1000 meters asl. It is presumably a mountain species occurring above 700 meters asl (IUCN, 2006).



Figure 83. *R. modestus* from Sungai Durian (Photograph by J. Holden).

Rhacophorus nigropalmatus
Abah River Flying Frog, Wallace's Flying Frog

It was found in primary rain forest in Sungai Durian and Upper Rupit River survey site. In the site, breeding aggregations formed in vegetation near animal wallow, and egg masses were attached to low vegetation overhanging these pool. In Sungai Durian survey site, it occurred at elevation 700 meters asl. It was uncommon in Sungai Durian survey site. Generally, it is a rarely encountered species; because it is only seen when it comes down from the trees to its breeding aggregations where it can be locally common (Inger and Stuebing, 2005). This species is known with certainty from the Thai-Malay Peninsula (Berry, 1975), Borneo to south-eastern Kalimantan and also Sumatra (Inger and Stuebing, 2005).



Figure 84. *R. nigropalmatus* from Sungai Durian (Photograph by J. Holden).

Rhacophorus pardalis
Gliding Tree Frog, Harlequin Tree Frog

This frog was found in Muara Sako survey site. It occurred at temporary pool in heavily degraded forest. According to Inger and Stuebing (2005), it is an inhabitant of primary and secondary rainforest; it breeds at swampy forest pools. It is locally common in intact forest and forest edge but patchily distributed and activity patterns are temporally variable (IUCN, 2006). It was rare species in Muara Sako survey site. This species is known from Peninsular Malaysia and is widespread in Sumatra (including Siberut and Sipora), Borneo (IUCN, 2006), and the Philippines (Alcala and Brown, 1998). In Muara Sako the species was found at elevation 50 meters asl. It has been recorded up to 1015 meters asl (IUCN, 2006).



Figure 85. *R. pardalis* from Muara Sako (Photograph by J. Holden).

Rhacophorus poecilonotus
Reddish Tree Frog

It was found in marshland area that close to rain forest in Renah Kayu Embun survey site. Historically, it was found in primary and secondary mountain forest (Van Kampen, 1923). Fortunately, the species was rediscovered 200 km to the north near Padang (West Sumatra) above 1000 meters asl, in 2001 (IUCN, 2006). It was a rare species in Renah Kayu Embun survey site. This is endemic species in Sumatra and is known only from West Sumatra (Iskandar and Colijn, 2000). The type locality is Sungai Kumbang, Mount Kerinci (Van Kampen, 1923).



Figure 8 6. *R. poecilonotus* from Renah Kayu Embun (Photograph by J. Holden).

Rhacophorus prominanus
Malayan Flying Frog

It was found in Tapan and Sungai Durian survey sites. In Sungai Durian, it makes foam nest and breeds in the same animal wallow with *R. nigropalmatus*. In Tapan, this species was found at grassy pool in open area that closes to the rain forest. All records of this species are from closed-canopy rainforest at low to medium altitudes (IUCN, 2006). It was a common species in Tapan and Sungai Durian survey site. It was reported to be uncommon in Sumatra (Mistar, 2003). This species has been recorded from Peninsular Malaysia, southern Thailand (Berry, 1975), Sumatra (often under *R. dulitensis*) (Mistar, 2003).



Figure 8 7. *R. prominanus* from Tapan (Photograph by J. Holden).

Rhacophorus reinwardtii

Black-webbed Tree Frog, Green Flying Frog, Reinwardt's Tree Frog

In KSNP, the frog was recorded from primary in Sungai Durian survey site. However, in Gunung Halimun National Park, It had been observed in forest edge near villages , tea plantation or garden, never found in the forest (Kurniati, 2003). It was a canopy species that makes foam nests above pools and ponds inside forests. Adults probably spend most of the time in the upper forest strata. It has been seen in Bogor Botanic Garden in west Java (IUCN, 2006). In Sungai Durian, it was scarce species. It is generally considered to be rare, but this is probably an artefact of the difficulty in locating it (IUCN, 2006). Large numbers can be seen at breeding sites (Kurniati, 2003). This species is known from China, Thailand, Laos and Vietnam, through Peninsular Malaysia to Sumatra, Java, and Borneo (IUCN, 2006); Inger and Stuebing, 2005; Kurniati, 2003; Liem, 1973). It occurs from 500 meters asl up to about 1400 meters asl (Kurniati, 2003; Liem, 1973) .



Figure 88. *R. reinwardtii* from Sungai Durian (Photograph by J. Holden).

***Rhacophorus* sp1**

This frog is similar to *Rhacophorus pardalis*. The differences are on colour of fore limb webbing, male body size, and colour pattern of belly and ventral limb. The species has been described as a new species by H. Kurniati. It was found in primary rain forest in Sungai Durian survey site at elevation 1000 meters asl. It was also found in Anggoli region in North Sumatra at elevation 900 meters asl (Kurniati, personal observation). It seemed to be a rare species in Sungai Durian Survey site, but it was common in Anggoli region in North Sumatra (Kurniati, personal observation).



Figure 89. *Rhacophorus* sp1 from Sungai Durian (Photograph by J. Holden).

***Rhacophorus* sp2**

This is very distinct species; none of the species in family Rhacophoridae is similar to this species. It was found in Muara Labuh survey site. It had similar habitat with *R. crassiovis*. The frog was found along strong moving stream in degraded forest. It occurred at elevation 800 meters asl. It was a rare species in Muara Labuh survey site.



Figure 90. *Rhacophorus* sp2 from Muara Labuh (Photograph by H. Kurniati).