REFERENCES

Abdul Rahman, K., Niiyama. K., Ripin, A., Appanah, S. and Iida, S. 2002. Species assembly and site preference of tree species in a primary seraya-ridge forest of Peninsular Malaysia. *Journal of Tropical Forest Science* **14**:287-303.

Abdullah, M.T., Siswanto, H., Widiyanto, A., Setiabudi, A. and Firmansyah. 1997. Abundance, diversity and distributional records of bats in disturbed habitats in Kalimantan Barat, Indonesia. *Sarawak Museum Journal* **11**: 75-84

Adekunle, V.A.J. 2006. Conservation of tree species diversity in a tropical rainforest ecosystem of South-West Nigeria. *Journal of Tropical Forest Science* **18**:91-101.

Akasaka, T., Nakano, D. and Nakamura, F. 2009. Influence of prey variables, food supply, and river restoration on the foraging activity of Daubenton's bat (*Myotis daubentonii*) in the Shibetsu River, a large lowland river in Japan. *Biological Conservation* **142(7)**: 1302-1310.

Aldridge, H.D.J.N. and Rautenbach, I.L. 1987. Morphology, echolocation and resource partitioning in insectivorous bats. *Journal of Animal Ecology* **56**:763-778.

Altringham, J.D. 1996. *Bats: Biology and Behaviour*. Oxford University Press, UK.

Andersen, A.N. 1997. Using ants as bioindicators: multiscale issues in ant community ecology**.** *Conservation Ecology* **1(1)**: 8.

Andersen, A.N., Hoffmann, B.D., Muller, W.J., Griffiths, A.D. 2002. Using ants as bioindicators in land management: simplifying assessment of ant community responses. *Journal of Applied Ecology* **39**: 8-17.

Anwarali Khan, F.A., Swier, V.J., Solari, S., Larsen, P.A., Ketol, B., Marni, W., Ellagupillay, S., Lakim, M., Abdullah, M.T. and Baker, R.J. 2008. Using Genetics and Morphology to Examine Species Diversity of Old World bats: Report of a Recent Collection from Malaysia. In Baker, R.J. (ed), *Occasional Papers, Museum of Texas Tech University*, Texas Tech University (p.1-27)

Appanah, S. and Weinland, G. 1990. Will the management systems for hill Dipterocarp forests, stand up? *Journal of Tropical Forest Science* **3**:140-158.

Appanah, S. and Rasol, A.M. 1991. Fruiting and seedling survival of Dipterocarps in a logged forest. *Journal of Tropical Forest Science* **6(3)**: 215-222.

Appanah, S. and Ratnam, L. 1992. The importance of forest biodiversity to developing countries in Asia. *Journal of Tropical Forest Science* **5(2)**: 201-215.

Arita, H.T. and Fenton, M.B. 1997. Flight and echolocation in the ecology and evolution of bats. *TREE* **12**:53-58.

Arlettaz, R. 1999. Habitat selection as a major resource partitioning mechanism between the two sympatric sibling bat species *Myotis myotis* and *Myotis blythii*. *Journal of Animal Ecology* **68**: 460-471.

Armstrong, A.I. 2004. The temporal and spatial distribution of bats in Southeastern Missouri. M. Nat. Sc. dissertation. Southeast Missouri State University.

Ashton, P.S. 2008. Changing values of Malaysian forests: the challenge of biodiversity and its sustainable management. *Journal of Tropical Forest Science* **20**:282-291.

Awang Noor A. G., Mohd. Basri H., Ashari M. and Abdul Rahman M. D. 1997. Economic viability of selective management system. Proceedings of the Workshop on Selective Management System and Enrichment Planting. Malaysia Forestry Department, Kuala Lumpur (p. 53-86).

Baker, R.J., and Bradley, R.D. 2006. Speciation in mammals and the genetic species Concept. *Journal of Mammalogy* **87**:643-662.

Bernard, E., and Fenton, M.B. 2007. Bats in a fragmented landscape: species composition, diversity and habitat interactions in savannas of Santarém, Central Amazonia, Brazil. *Biological Conservation* **134**:332-343.

Berry, N., O'Connor, W., Holderied, M.W. and Jones, G. 2004. Detection and avoidance of harp traps by ecolocating bats. *Acta Chiropterologica* **6(2)**: 335-346.

Bontadina, F., Schofield, H. and Naef-Daenzer, B. 2002. Radio-tracking reveals that lesser horseshoe bats (*Rhinolophus hipposideros*) forage in woodland. *Journal of Zoological Society London* **258**: 281-290.

Borhan, C. and Cheah, L.C. 1986. Preliminary observations on the effects of logging on a hill forest in Sabah. In Yusuf, H., Kamis, A., Nik, M.M. and Shukri, M. (eds.) Workshop proceedings on impact of man's activities on tropical upland forest ecosystems, 3-6 February 1986. Kuala Lumpur, Malaysia (p.187-215).

Boyle, T.J.B. 1992. Biodiversity challenges to forest scientist. *Journal of Tropical Forest Science* **5**:216-231.

Brehm, G., Colwell, R.K. and Kluge, J. 2007. The role of environment and mid-domain effect on moth species richness along a tropical elevational gradient. *Global Ecology and Biogeography* **16**: 205-219.

Campos, D., and Isaza, J.F. 2009. A geometrical index for measuring species diversity. *Ecological Indicators* **9**:651-658.

Cedergren, J., Falck, J., Garcia, A., Goh, F. and Hagner, M. 2002. Structure, composition and commercial characteristics of a primary dipterocarp forest in Sabah, Malaysia. *Journal of Tropical Forest Science* **14**:304-321.

Chan, L.H. 2002. The impact of present forest policies on sustainable forest management in Malaysia. In, Enters, T. and Leslie, R. N. (eds.) Proceedings of the forest policy workshop, 22-24 January 2002, Kuala Lumpur, Malaysia. FAO.

Chao, A. 1984. Nonparametric estimation of the number of classes in a population. *Scandinavian Journal of Statistics.* **11**:265-270.

Chao, A., Chazdon,R.L., Colwell,R.K. and Shen, T-J. 2006. Abundance-based similarity indices and their estimation when there are unseen species in samples. *Biometrics* **62**: 361-371.

Chown, S.L. and Convey, P. 2007. Spatial and temporal variability across life's hierarchies in the terrestrial Antarctic. *Philosophical Transactions of the Royal Society B: Biological Sciences* **362 (1488)**: 2307-2331.

Clark, M.L., Clark, D.B. and Roberts, D.A. 2004. Small-footprint lidar estimation of sub-canopy elevation and tree height in a tropical rain forest landscape. *Remote Sensing of Environment* **91**:68-89.

Costa, F.R.C., Magnusson, W.E. and Luizao, R.C. 2005. Mesoscale distribution patterns of Amazonian understorey herbs in relation to topography, soil and watersheds. *Journal of Ecology* **93**:863-878.

Crampton, L.H and Barclay. R.M.R. 1996. Habitat Selection by Bats in Fragmented and Unfragmented Aspen Mixedwood Stands of Different Ages. In Barclay, R.M.R and Brigham, R.M. (eds), *Bats and forests symposium*. Victoria, Canada (p. 238-259).

Crome, F.H.J. and Richards, G.C. 1988. Bats and gaps: microchiropteran community structure in a Queensland rain forest. *Ecology* **69(6)**: 1960-1969.

De Castilho, C.V., Magnusson, W.E., de Araújo, R.N.O., Luizão, R.C.C., Luizão, F.J., Lima, A.P. and Higuchi, N. 2006. Variation in aboveground tree live biomass in a central Amazonian Forest: Effects of soil and topography. *Forest Ecology and Management* **234**:85-96.

Dodd, L.E., Lacki, M.J. and Rieske, L.K. 2008. Variation in moth occurrence and implications for foraging habitat of Ozark big-eared bats. *Forest Ecology and Management* **255**:3866-3872.

Ellerman, J.R. and Morrison-Scott, T.C.S. 1955. *Chasen (1940) a handlist of Malaysian mammals*. London, British Museum.

Estrada, C.G., Damon, A., Hernández, C.S., Pinto, L.S. and Núñez, G.I. 2006. Bat diversity in montane rainforest and shaded coffee under different management regimes in southeastern Chiapas, Mexico. *Biological Conservation* **132**:351-361.

Ewers, R.M. and Didham, R.K. 2006. Confounding factors in the detection of species responses to habitat fragmentation. *Biological Reviews* **81**:117-142.

Faria, D., Mariano-Neto, E., Martini, A.M.Z., Ortiz, J.V., Montingelli, R., Rosso, S., Paciencia, M.L.B. and Baumgarten, J. 2009. Forest structure in a mosaic of rainforest sites: the effect of fragmentation and recovery after clear cut *Forest Ecology and Management* **257**:2226-2234.

Fenton, M.B. 1982. Echolocation calls and patterns of hunting and habitat use ofbats (Microchiroptera) from Chillagoe, North Queensland. *Australian Journal of Zoology* **30**:417-425.

Fenton, M.B. 1990. The foraging behaviour and ecology of animal eating bats. *Canadian Journal of Zoology* **68**:411-422.

Findley, J.S. 1993. *Bats: A community perspective*. London: Cambridge University Press.

Fleming, T.H., Heithaus, E.R. and Sawyer, W.B. 1977. An experimental analysis of the food location behavior of frugivorous bats. *Ecology* **58**: 619-627.

Fletcher, C.D. 2006. Roost selection of forest interior insectivorous bat species in Krau Wildlife Reserve, Peninsular Malaysia. Ph.D. thesis Universiti Kebangsaan Malaysia.

Fletcher, C.D., Shukor, M.N. and Zubaid, A. 2004. An elevational study of insectivorous bats at Gunong Nuang, Selangor, Malaysia. *Malaysian Applied Biology* **33(2)**: 41-49

Francis, C.M. 1989. A comparison of mist nets and two designs of harp traps for capturing bats. *Journal of Mammalogy* **70(4)**: 865-870.

Francis, C.M. 1990. Trophic structure of bat communities in the understory of lowland dipterocarp rain forest in Malaysia. *Journal of Tropical Ecology* **6**: 421-431.

Francis, C.M. 1994. Vertical stratification of fruit bats (Pteropodidae) in lowland dipterocarp rainforest in Malaysia. *Journal of Tropical Ecology* **10**: 523-530.

Fukami, T. and Wardel, D.A. 2005. Long-term ecological dynamics: reciprocal insights from natural and anthropogenic gradients. *Proceedings of the Royal Society B* **272**:2105-2115.

Fukuda, D., Tisen, O.B., Momose, K. and Sakai,S. 2009. Bat diversity in the vegetation mosaic around a lowland dipterocarp forest of Borneo. *The Raffles Bulletin of Zoology* **57**:213-221.

Gannon, R.M. and Willig, R.M. 1995. Ecology of ectoparasites from tropical bats. *Environmental Entomology* **24(6)**: 1495-1503.

Gaston, K.J. and Fuller, R.A. 2009. The sizes of species' geographic ranges. *Journal of Applied Ecology* **46**:1-9.

Gillison, A.N. and Liswanti, N. 2004. Assessing biodiversity at landscape level in northern Thailand and Sumatra (Indonesia): the importance of environmental context. *Agriculture, Ecosystems & Environment* **104(1)**: 75-86.

Griffiths, R.P., Madritch, M.D. and Swanson, A.K. 2009. The effects of topography on forest soil characteristics in the Oregon Cascade Mountains (USA): implications for the effects of climate change on soil properties. *Forest Ecology and Management* **257**:1-7.

Grindal, S.D. and Bringham., R.M. 1999. Impacts of forest harvesting on habitat use by foraging insectivorous bats at different spatial scales. *Ecoscience* **6(1)**: 25-34.

Gopukumar, N., Karuppudurai, T. and Swami Doss, D.P. 2005. Dispersal patterns of the short-nosed bat *Cynopterus sphinx* (Chiroptera: Pteropodidae). *Mammalian Journal* **70(2)**: 122-125.

Gotelli, N. and Colwell, R.K. 2001. Quantifying biodiversity: Procedures and pitfalls in the measurement and comparison of species richness. *Ecology Letters* **4**:379-391.

He, F., Legendre, P. and LaFrankie, J.V. 1996. Spatial pattern of diversity in a tropical rain forest in Malaysia. *Journal of Biogeography* **23**:57-74.

Heaney, L.R. and Rickart, E.A. 1990. Correlations of clades and clines: geographic, elevational and phylogenetic distribution patterns among Philippine mammals. In Peters, G. and Hutterer, R. (eds.) *Vertebrate in the tropics*. Bonn: Museum Alexander Koenig (p.321-332).

Heller, K.G. and Volleth, M. 1995. Community structure and evolution of insectivorous bats in the Palaeotropics and Neotropics. *Journal of Tropical Ecology* **11**: 429-442.

Henderson, L.E., Farrow, L.J. and Broders, H.G. 2008. Intra-specific effects of forest loss on the distribution of the forest-dependent northern long-eared bat (*Myotis septentrionalis*). *Biological Conservation* **141(7):** 1819-1828.

Henry, M., Cosson, J-F. and Pons, J-M. 2007. Abundance may be a misleading indicator of fragmentation-sensitivity: the case of fig-eating bats. *Biological Conservation* **139**: 462-467.

Hickman, P.C. 2003. *Animal diversity* (third edition). New York. McGraw-Hill.

Hill, J.E. 1974. New records of bats from South-Eastern Asia, with taxanomic notes. *Bulletin of the British Museum (Natural History) Zoology* **27(3)**: 127-138.

Hill, J.E. 1983. Bats (Mammalia: Chiroptera) from Indo-Australia. *Bulletin of the British Museum (Natural History) Zoology* **45**:103-208.

IUCN 2009. IUCN Red List of Threatened Species. (online) www.iucnredlist.org

Jabatan Perhutanan Semenanjung Malaysia. 1997. *Manual kerja luar: system pengurusan memilih (selective management system)*. Kuala Lumpur: Jabatan Perhutanan Semenanjung Malaysia.

Jennings, S.B., Brown, N.D. and Sheil, D. 1999. Assessing forest canopies and understorey illumination: canopy closure, canopy cover and other measures. *Forestry* **72:** (59-74).

Joann, C.L. 2006 Ectoparasite composition of bats at mangrove areas of Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM) Terengganu. B.Sc. dissertation. College University of Sains and Technology Malaysia.

Jones, S.S. 2004. Sustainable agriculture: ecological indicators. In Goodman, R.M. (ed.) *Encyclopedia of Plant and Crop Science*, Marcel Dekker, New York (p.1191-1194).

Jurasinski, G., Retzer, V. and Beierkuhnlein, C. 2009. Inventory, differentiation, and proportional diversity: a consistent terminology for quantifying species diversity. *Oecologia* **159**: 15-26.

Kalko, E.K.V. and Handley, C.O. 2001. Neotropical bats in the canopy: diversity, community structure, and implications for conservation. *Plant Ecology* **153**: 319-333.

Kanuch, P. and Kristin, A. 2005 Factors influencing bat assemblages in forest parks. *Okologia (Bratislavia)* **24(1)**: 1-327

Kasran, B. 1988. Effect of logging on sediment yield in a hill dipterocarp forest in Peninsular Malaysia. *Journal of Tropical Forest Science* **1(1)**: 56-66.

Kerth, G. and Melber, M. 2009. Species-specific barrier effects of a motorway on the habitat use of two threatened forest-living bat species. *Biological Conservation* **142**: 270-279.

Kessler, M. 2009. The impact of population processes on patterns of species richness: lessons from elevational gradients. *Basic and Applied Ecology* **10**:295-299.

Kindt, R. and Coe, R. 2005. *Tree diversity analysisi: A manual and software for common statistical methods for ecological and biodiversity studies*. Nairobi: World Agroforestry Centre (ICRAF).

Kingston, T., Jones, G. Akhbar, Z. and Kunz, T.H. 1999. Echolocation signal design in Kerivoulinae and Murininae (Chiroptera: Vespertilionidae) from Malaysia. *The Zoological Society of London* **249**: 359-374.

Kingston, T., Jones, G., Akhbar, Z. and Kunz, T.H. 2000. Resource partitioning in rhinolophoid bats revisited. *Oecologia* **124**: 332-342.

Kingston, T. 2001. Diversity, extinction risk, and structure in an insectivorous bat community from Malaysia. Ph.D dissertation. Boston University.

Kingston, T., Francis, C.M. and Akhbar, Z. and Kunz, T.H. 2003a. Species richness in an insectivorous bat assemblage from Malaysia. *Journal of Tropical Ecology* **19**: 1-12.

Kingston, T., Jones, G., Akhbar, Z. and Kunz, T.H. 2003b. Alteration of echolocation calls in 5 species of aerial-feeding insectivorous bats from Malaysia. *Journal of Mammalogy* **84(1)**: 205-215.

Kingston, T., Lim, L.B. and Akbar, Z. 2006. *Bats of Krau Wildlife Reserve*. Bangi, Universiti Kebangsaan Malaysia.

Kingston, T. (In press-2009). Analysis of species diversity of bat assemblages. In Kunz, T.H. and Parsons, S. (eds) *Behavioral and ecological methods for the study of bats, 2nd Edition.* Washington: Smithsonian Institution Press.

Kittur, S., Padmawathe, R., Uniyal, V.P., Sivakumar, K. 2006. Some observations on butterflies of Simbalbara Wildlife Sanctuary, Himachal Pradesh. *Indian Forester*. **132(12a)**: 116-122.

Kock, D. and Dobat, K. 2000. The bat fauna of Bali and NusanPenida, Lesser Sunda Islands: corrections and additions (Mammalia: Chiroptera). *Acta Chiropterologica* **2(1)**: 83-96.

Kochummen, K.M., Lafrankie, J.V.Jr. and Manokaran, N. Floristic composition of Pasoh Forest Reserve, a lowland rain forest in Peninsular Malaysia. *Journal of Tropical Forest Science* **3(1)**:1-13.

Kominami, Y., Tanouchi, H., Tanaka, H., Katsuki, T. and Hassan, A. 2000. Light conditions, canopy conditions and microtopographies in the microsites of *Shorea curtisii* saplings in a hill dipterocarp forest of the Semangkok Forest Reserve, Peninsular Malaysia. *Journal of Tropical Forest Science* **12(2)**: 247-255.

Kunz, T.H. 1982. *Ecology of bats*. New York: Plenum Press.

Kunz, T.H. and Pierson, E.D. 1994. Bats of the world: an introduction. In Nowak, R.M. (ed.) *Walker's bats of the world*. Baltimore: John Hopkins University Press (p.1-46).

Laidlaw, R.K. 1994. The virgin jungle reserves of Peninsular Malaysia: the ecology and dynamics of small protected areas in managed forests. Ph.D dissertation. University of Cambridge.

Laidlaw, R.K. 1996. A comparison between populations of primates, squirrels, tree shrews and other mammals inhabiting virgin, logged, fragmented and plantation forests in Malaysia. In Lee, S.S. May, D.Y. Gauld, I.D. Bishop, J. *Conservation, Management and Development of Forest Resources*. Forest Research Institute Malaysia, Kepong (p.141-149).

Laidlaw, R.K. 1999. History of the Virgin, Jungle Reserves (VJRs) of Peninsular Malaysia (1947-1992). *Journal of Tropical Forest Science* **11**:111-131.

Lamb, E.G., Bayne, E., Holloway, G., Schieck, J., Boutin, S., Herbers, J. and Haughland, D.L. 2009. Indices for monitoring biodiversity change: Are some more effective than others? *Ecological Indicators* **9(3)**: 432-444.

Lawton, J.H., Bignell, D. E., Bolton, B., Bloemers, G.F., Eggleton, P., Hammond, P.M., Hodda, M., Holt, R.D., Larsenk, T.B., Mawdsley, N.A., Stork, N.E., Srivastava, D.S. and Watt, A.D. 1998. Biodiversity inventories, indicator taxa and effects of habitat modification in tropical forest. *Nature* **391**: 72-76.

Lee, S.L., Ng, K.K-S., Saw, L.G., Norwati, A., Salwana, M.H.S., Lee, C.T. and Norwati, M. 2002. Population genetics of *Intsia palembanica* (leguminosae) and genetic conservation of Virgin Jungle Reserves in Peninsular Malaysia. *American Journal of Botany* **89**:447-459.

Lee, Y-F. and McCracken, G.F. 2004. Flight activity and food habits of three species of Myotis bats (Chiroptera: Vespertilionidae) in sympatry. *Zoological Studies* **43(3)**: 589-597.

Leong, T.M. and Lim, K.K.P. 2009. Noteworthy microchiropteran records from the Bukit Timah and Central Catchment Nature Reserve, Singapore. *Nature in Singapore* **2**: 83-90.

Locke, R. 2003. The vampire's gift. *BATS* **21(1)**: 11-13.

Lloyd, A., Law, B. and Goldingay, R. 2006. Bat activity on riparian zones and upper slopes in Australian timber production forests and the effectiveness of riparian buffers. *Biological Conservation* **129**:207-220.

MacArthur, R.H. and Wilson, E.O. 1967. *The theory of island biogeography*. New Jersey: Princeton University Press, Princeton.

Maes, D. And Van Dyck, H. 2005. Habitat quality and biodiversity indicator performance of threatened butterfly versus a multispecies group for wet heathlands in Belgium. *Biological Conservation* **123**:177-187.

Magurran, A.E. 2004. *Measuring biological diversity*. Victoria: Australia, Blackwell Publishing.

McCune, B. and Grace, J.B. 2002. *Analysis of Ecological Communities.* Oregon: MjM Software Design.

McCune, B. and Mefford, M.J. and 1999. PC-ORD. *Multivariate analysis of ecological data*, *version 4*. Oregon: MjM software Design.

Medellin, R.A., Equihua, M. and Amin, M.A. 2000. Bat diversity and abundance as indicators of diturbance in Neotropical rainforest. *Conservation Biology* **14**: 1666-1675.

Medway, L. 1983. *The wild mammals of Malaya (Peninsular Malaysia) and Singapore. 2nd Edition.* Malaysia: Oxford University Press

Meyer, C.F.J., Schwarz, C.J. and Fahr, J. 2004. Activity patterns and habitat preferences of insectivorous bats in a West African forest-savanna mosaic. *Journal of Tropical Ecology* **20**: 397-407.

Meyer, C.F.J., Frund, J., Lizano, W.P. and Kalko, E.K.V. 2008. Ecological correlates of vulnerability to fragmentation in Neotropical bats. *Journal of Applied Ecology* **45**: 381–391.

Mielke, P.W. Jr. 1984. Meteorological applications of permutation techniques based on distance functions. In, Krishnaiah, P.R. and Sen, P. K. (eds.) *Handbook of Statistics, Vol. 4*. Elsevier Science Publishers, Amsterdam: North-Holland (p. 813-830).

Miller, D.A., Arnett, E.B. and Lacki, M.J. 2003. Habitat management for forest-roosting bats of North America: a critical review of habitat studies. *Wildlife Society Bulletin* **31(1)**: 30-44.

Ministry of Plantation Industries and Commodities. 2008. Statistics on Commodoties 2008. Kuala Lumpur.

Mirowsky, K-M. 1997. Bats in palms: precarious habitat. *BATS* **15(2)**: 3-6.

Mohd-Azlan J., Neuchlos, J. and Abdullah, M.T. 2005. Diversity of chiropterans in limestone forest area, Bau, Sarawak. *Malaysian Applied Biology* **34(1)**: 59–64.

Mohd Paiz K. and Wan Mohd Shukri W.A. 2003. Forest harvesting practices towards achieving sustainable forest management in Peninsular Malaysia. A paper presented at the International Expert Meeting on the Development and Implementation of National Codes for Forest Harvesting – Issues and Options, 17-20 November 2003, Kisarazu City, Japan.

Moning, C., Werth, S., Dziock, F. Bässler, C., Bradtka, J., Hothorn, T. and Müller, J. 2009. Lichen diversity in temperate montane forests is influenced by forest structure more than climate. *Forest Ecology and Management* **258**:745-751.

Moreno, C.E. and Halffter, G. 2000. Assessing the completeness of bat biodiversity inventories using species accumulation curves. *Journal of Applied Ecology* **37**:149-158.

Moriyama, M. and Numata, H. 2006. Induction of egg hatching by high humidity in the cicada *Cryptotympana facialis*. *Journal of Insect Physiology* **54(12)**: 1219-1225.

Mostafa, A.M., Fields, P.G. and Holliday, N.J. 2005. Effect of temperature and relative humidity on the cellular defense response of *Ephestia kuehniella* larvae fed *Bacillus thuringiensis*. *Journal of Invertebrate Pathalogy* **90**:79-84.

National Forestry Act. 1984. Act 313 Laws of Malaysia.

Neuweiler, G. 1989. Foraging ecology and audition in echolocating bats. *Trends in Ecology and Evolution* **4**: 160-166.

Oksanen, J., Kindt, R., Legendre, P., O'Hara, B., Simpson, G.L., Solymos, P., Stevens, M.H.H. and Wagner, H. 2009. Vegan: community ecology package. R package version 1.15-4. (online) http://CRAN.R-project.org/package=vegan

Osada, N., Tateno, R., Hyodo, F. and Takeda, H. 2004. Changes in crown architecture with tree height in two deciduous tree species: developmental constraints or plastic response to the competition for light? *Forest Ecology and Management* **188**:337-347.

Parker, S.P. (ed.) 1982. Synopsis and Classification of Living Organisms. New York: McGraw-Hill.

Patriquin, K.J. and Barclay, R.M.R. 2003. Foraging by bats in cleared, thinned and unharvested boreal forest. *Journal of Applied Ecology* **40**:646-657.

Payne, J. and Francis, C.M. 1997. *A field guide to the mammals of Borneo*. Sabah: Sabah Society.

Phillips, C. 1986. Preliminary observations on the effects of logging on a hill forest in Sabah. In Yusuf, H., Kamis, A., Nik, M.M., Shukri, M. (eds.) Proceedings Workshop on Impact of man's activities on tropical upland forest ecosystems, 3-6 February 1986, Universiti Putra Malaysia, Kuala Lumpur (p.187-215).

Pielou, E.C. 1966. The measurement of diversity in different types of biological collections. *Journal of Theoretical Biology* **13**: 131-144.

Pitman, N.C.A., Mogollón, H., Dávila, N., Ríos, M., García-Villacorta, R., Guevara, G., Baker, T.R., Monteagudo, A., Phillips, O.L., Vásquez-Martínez, R., Ahuite, M., Aulestia, M., Cardenas, D., Cerón, C.E., Loizeau, P.A., Neill, D.A., Núñez V. P., Palacios, W.A., Spichiger,R. and Valderrama, E. 2008. Tree Community Change across 700 km of Lowland Amazonian Forest from the Andean Foothills to Brazil. *Biotropica* **40(5)**: 525-535.

Pottie, S.A., Lane, D.J.W., Kingston, T. and Lee, B.P.Y-H. 2005. The microchiropteran bat fauna of Singapore. *Acta Chiropterologica* **7(2)**: 237-247.

Prabhu, R., Colfer, C.J.P. and Dudley, R.G. 1999. *Guidelines for Developing, Testing and Selecting Criteria and Indicators for Sustainable Forest Management. The Criteria and Indicators Toolbox Series No.1,* Center for International Forestry Research (CIFOR), Bogor, Indonesia.

Preston, F.W. 1948. The commonness and rarity of species. *Ecology* **29**: 254-283.

Putz, F. E. 1978. A survey of virgin jungle reserves in Peninsular Malaysia. *FRI Kepong Research Phamplet* **73.**

R Development Core Team. 2009. R: a language and environment for statistical computing. *R Foundation for Statistical Computing*, Vienna, Austria. URL http://www.R-project.org.

Rahbek, C. 1997. The relationship between area, elevation and regional species richness in Neotropical birds. *American Naturalist* **149**:875-902.

Ricklefs, R.E. and Bermingham, E. 2002. The concept of the taxon cycle in biogeography. *Global Ecology and Biogeography* **11**: 353-361.

Roverud, R.C., Nitsche, V. and Neuweiler G. 1991. Discrimination of wingbeat motion by bats, correlated with echolocation sound pattern. *Journal of Comparative Physiology* **168**:259-263.

Russo, S.E., Davies, S.J., King, D.A. and Tan, S. 2005. Soil-related performance variation and distributions of tree species in a Bornean rain forest. *Journal of Ecology* **93**:879-889.

Sam, Y.-Y. 2001. Plant conservation in the Virgin, Jungle Reserves of Peninsular Malaysia. Proceedings of the International Workshop on Bio Refor, Tokyo (p. 153-157).

Sanchez-Gonzalez, A. and Lauro, L-M. 2005. Plant species richness and diversity along an altitudinal gradient in the Sierra Nevada, Mexico. *Biodiversity Research* **11**:567-575.

Saunders, M.B. and Barclay, M.R. 1992. Ecomorphology of insectivorous bats: a test of predictions using two morphologacally similar species. *Ecology and Society* **73**:1335-1345.

Schmieder, D. 2009. Predatory behavior of bats of the subfamily Kerivolinae and Murinae. M.Sc. dissertation. Eberhard Karls University, Tubingen, Germany..

Sedgeley, J.A. 2001. Quality of cavity microclimate as a factor influencing selection of maternity roosts by a tree-dwelling bat, *Chalinolobus tuberculatus*, in New Zealand. *Journal of Applied Ecology* **38**: 425-438.

Sedgeley , J.A. and O' Donnell, C.F.J. 1999. Factors influencing the selection of roost cavities by a temperate rainforest bat (Vespertilionidae: *Chalinolobus tuberculatus*) in New Zealand. *Journal of Zoological Society London* **249**: 437-446.

Sedlock, J.L. 2001. Inventory of insectivorous bats on Mount Makiling, Philippines using echolocation call signatures and a new tunnel trap. *Acta Chiropterologica* **32(2)**: 163-178

Seng, H.W., Ratnam, W., Noor, S.M. and Clyde, M.M. 2004. The effects of the timing and method of logging on forest structure in Peninsular Malaysia. *Forest Ecology and Management* **203**:209-228.

Shanley, P. and Lopez, C. 2009. Out of the loop: why research rarely reaches policy makers and the public and what can be done. *Biotropica* **41(5)**: 535-544.

Sheema, A.A. 2006. Habitat Degradation and Endangered Species: Monitoring temporal variation in population sizes of Palaeotropical Microchiropteran bats. M.Sc. dissertation. University of Kent.

Sheil, D. 2002. Why doesn't biodiversity monitoring support conservation priorities in the tropics? *Unasylva 209* **53**: 50-54.

Sheil, D., Nasi, R. and Johnson, B. 2004. Ecological criteria and indicators for tropical forest landscapes: challenges in the search for progress. *Ecology and Society* **9(1)**:7.

Sierro, A. and Arlettaz, R. 1997. Barbastelle bats (*Barbastella spp*.) specialize in the predation of moths: implications for foraging tactics and conservation. *Acta Ecologica* **18**:91-106.

Simmons, N.B. 2005. Order Chiroptera. In Wilson, D.E. and Reeder, D.M. (eds.), *Mammal species of the world: a taxonomic and geographic reference, 3rd edition*. Washington D.C: Smithsonian Institute Press (p. 312-529).

Simpson, E.H. 1949. Measurement of diversity. *Nature* **163**: 688.

Slik, J.W.F., Raes, N., Aiba, S-I., Brearley, F.Q., Cannon, C.H. Meijaard, E., Nagamasu, H., Nilus, R., Paoli, G., Poulsen, A.D., Sheil, D., Suzuki, E., van Valkenburg, J.L.C.H., Web, C.O., Wilkie, P. and Wulffraat, S. 2009. Environmental correlates for tropical tree diversity and distribution patterns in Borneo. *Diversity and Distributions* **15**:523-532.

Sodhi, N.S. 2002. A comparison of bird communities of two fragmented and two continuous Southeast Asian rainforest. *Biodiversity and Conservation* **11**: 1105-1119.

Sodhi, N.S., Koh, L.P., Brook, B.W. and Ng, P.K.L. 2004. Southeast Asian biodiversity: an impending disaster. *Trends in Ecology and Evolution* **19**:654-660.

Solgrig, O.T. (Ed.). 1991. *From Genes to Ecosystems: a Research Agenda for Biodiversity.* Paris: International Union of Biological Sciences.

Stevens, G.C. 1992. The elevational gradient in altitudinal range: an extension of Rapoport's latitudinal rule to altitude. *The American Naturalist* **140(6)**: 893-911

Struebig, M.J., Kingston, T., Akhbar, Z., Adura, M.-A. and Rossiter, S. J. 2008. Conservation value of forest fragments to Palaeotropical bats. *Biological Conservation* **141(8)**: 2112-2126.

Struebig, M.J., Kingston, T., Zubaid, A., Le Comber, S.L., Adura, M-A., Turner, A., Kelly, J., Bozek, M. and Rossiter, S.J. 2009. Conservation importance of limestone karst outcrops for Palaeotropical bats in a fragmented landscape. *Biological Conservation* **142(10)**: 2089-2096

Summerville, K.S., Wilson, T.D., Veech, J.A. and Crist, T.O. 2006. Do body size and diet breadth affect partitioning of species diversity? A test with forest Lepidoptera. *Diversity and Distributions* **12**: 91-99.

Sundarapandian, S.M. and Swamy, P.S. 2000. Forest ecosystem structure and composition along an altitudinal gradient in the western Ghats, Sounth India. *Journal of Tropical Forest Science* **12**:104-123.

Sunderland, T., Sunderland-Groves, J., Shanley, P. and Campbell, B. 2009. Bridging the gap: how can information access and exchange between conservation biologists and field practitioners be improved for better conservation outcomes? *Biotropica* **41(5)**: 549-554.

Swystun, M.B., Psyllakis and Brigham, R.M. 2001. The influence of residual tree patch isolation on habitat use by bats in central British Columbia. *Acta Chiropterologica* **3(2)**: 197-201.

Tan, K.H., Akbar, Z. and Kunz, T.H. 1999. Roost selection and social organisation in *Cynopterus horsfieldi* (Chiroptera: Pteropodidae). *Malayan Nature Journal* ***53*****(4)**: 295-298.

Tange, T., Yagi, H., Sasaki, S., Niiyama, K. and Abdul Rahman, K. 1998. Relationship between topography and soil properties in a hill dipterocarp forest dominated by Shorea curtisii at Semangkok Forest Reserve, Peninsular Malaysia. *Journal of Tropical Forest Science* **10(3)**: 398-409.

Thabah, A., Rossiter, S.J., Kingston, T., ZHANG, S., Parsons, S., Mya, K.M., Akhbar, Z. and Jones, G. 2006. Genetic divergence and echolocation call frequency in cryptic species of *Hipposideros larvatus* s.l. (Chiroptera: Hipposideridae) from the Indo-Malayan region. *Biological Journal of the Linnean Society* **88**: 119-130.

Thang, H.C. 1997. Concept and basis of selective management system in Peninsular Malaysia. Proceedings of the Workshop on Selective Management System and Enrichment Planting. Malaysia Forestry Department, Kuala Lumpur (p. 1-13).

Thomas, D.W. 1992. Bats and old-growth forests: are both vanishing? *BATS* **10 (2)**: 4-9.

Tuttle, M.D. 1983. Can rain forest survive without bats? *BATS* **0(1)**: 1-2.

Tylianakis, J.M., Klein, A-M., Lozada, T. and Tscharntke, T. 2006. Spatial scale of observation affects a, b and c diversity of cavity-nesting bees and wasps across a tropical land-use gradient. *Journal of Biogeography* **33**: 1295-1304.

Uehara-Prado, M. and Freitas, A.V.L. 2009. The effect of rainforest fragmentation on species diversity and mimicry ring composition of ithomiine butterflies. *Insect Conservation and Diversity* **2**: 23-28.

Vaughan, T.A., Ryan, J.M. and Czaplewski, N.J. 2000. *Mammalogy* 4th Edition. Philadelphia: Saunders College Publishers.

Vences, M., Wollenberg, K.C., Vieites, D.R. and Lees, D.C. 2009. Madagascar as a model region of species diversification. *Trends in Ecology and Evolution*, in press.

Wan Juliana, W.A., Burslem, D.F.R.P. and Swaine, M.D. 2009. Nutrient limiation of seedling growth on contrasting soilsfrom Pasoh Forest Reserve, Peninsular Malaysia. *Journal of Tropical Forest Science* **21(4)**: 316-327.

Wang, Z., Ye, W., Cao, H., Huang, Z., Lian, J., Li, L., Wei, S. and Sun, I.F. 2009. Species-topography association in a species-rich subtropical forest of China. *Basic and Applied Ecology* **10**: 648-655.

Weller, T.J. and Lee, D.C. 2007 Mist net effort required to inventory a forest batspecies assemblage. *Journal of Wildlife Management* **71(1)**: 251-257.

Whitaker, J.O. 2004. Prey selection in a temperate zone insectivorous bat community. *Journal of Mammalogy* **85(3)**: 460-469.

Whitmore, T.C. 1984. *Tropical rain forest of the Far East* Second Edition. Oxford: Clarendon Press.

Whitmore, T.C. 1990. *An introduction to tropical rain forest*. Oxford: Clarendon Press.

Wike, L.D. and Martin, F.D. 2005. Report: Using ant communities for rapid assessment of terrestrial ecosystem health. U.S. Department of Energy.

Wolda, H. 1987. Altitude, habitat and tropical insect diversity. *Biological Journal of the Linnean Society* **30**: 313-323.

Wong, M. 1985. Understory birds as indicators of regeneration in a patch of selectively logged West Malaysian rainforest. *Proceedings at the 53rd World Conference of the International Council for Bird Publication (ICBP)* **4**: 249-263.

Wyatt-Smith, J. 1950. Virgin Jungle Reserves. *Malayan Forester* **13**:92-94.

Wyatt-Smith, J. 1961. A note on the fresh-water swamp, lowland and hill forest types of Malaya. *Malaysian Forester* **24(2)**: 110-121.

Xiang, Q-Y, Zhang, W.H., Ricklefs, R.E., Qian, H., Chen, Z.D., Wen, J. and Li, J.H. 2004. Regional differences in rates of plant speciation and molecular evolution: a

comparison between eastern Asia and eastern North America. *Evolution* **58(10)**: 2175-2184.

Xu, X.L., Ma, K.M., Fu, B.J., Song, C.J. and Liu, W. 2008. Relationships between vegetation and soil and topography in a dry warm river valley, SW China. *CATENA* **75**:138-145.

Zubaid, A. 1993. A comparison of the bat fauna between a primary and fragmented secondary forest in Peninsular Malaysia. *Mammalia* **57(2)**: 201-206.

Zubaid, A. 1994. Vertical stratification of Pteropodid bats in a Malaysian lowland rainforest. *Mammalia* **58(2)**: 309-311.

APPENDIX A

Among the bat species captured that is listed as Near Threatened (NT) under the International Union for Conservation of Nature and Natural Resources (IUCN, 2009).

Myotis ridleyi was only captured in Kledang Saiong, Perak.

Kerivoula intermedia were captured in various sites.

APPENDIX B

Rules governing the laying out and maintenance of virgin jungle reserves (Putz, 1978).

This section is a synthesis of the rules presented by Wyatt-Smith (1950) and by the VJR Sub-committee of the Forestry Department's Council on Forest Management and Silviculture (MAJURUS) (1975).

3.1 Rules concerning the establishment of VJRs.

3.1.1 Virgin Jungle reserves should be located in Forest Reserves and surrounded by managed forest.

3.1.2 One or more VJRs should be established in every Forest Reserve representing all of the forest types present.

3.1.3 VJRs should be selected so as to be representative of the surrounding forests.

3.1.4 VJRs should be compact in shape, cover preferably 200 acres or more, and where possible have defines natural boundaries.

3.1.5 VJRs should be reasonably accessible by road.

3.1.6 Proposals for VJRs will be forwarded to FRI by State Directors of Forestry. All proposed areas should be treated as VJRs until approved or rejected by the Director, FRI.

3.2 Rules concerning the maintenance of VJRs

3.2.1 All VJRs will have their own record books with copies at FRI and at the state and District Forest Offices (DFO). Sample Plot Forms should be used in these records (See Appendix 2 of Putz (1978))

3.2.2 VJR boundaries shall be inspected annually by the DFO and cleaned whenever necessary.

3.2.3 VJR signboards shall be posted at critical positions along the boundary and at intervals of not less than 30 chains.

3.2.4 When the compartments adjacent to the VJR are to be logged, trees among the common boundaries should be clearly marked with bright coloured paints.

3.2.5 Logging permits issued for compartments adjacent to a VJR must include the following clause:

> Nothing done under the terms of this permit may cause damage to trees in the Virgin Jungle Reserve in compartment..... This forbids the dragging of timber through and the felling of trees into that compartment boundary of which is indicated on the attached plan.

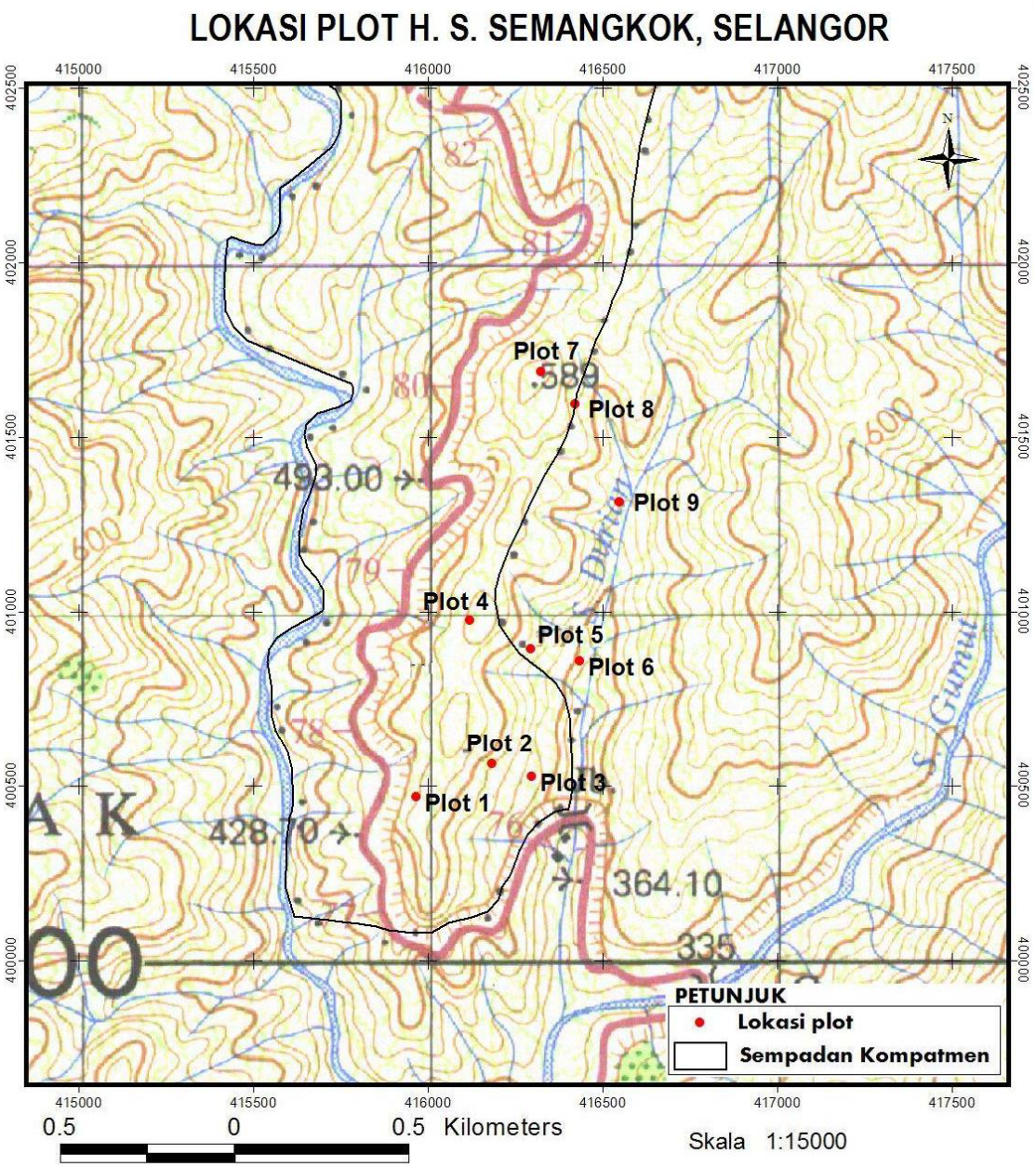
3.3 Rules concerning the use of VJRs

3.3.1 No research plots of any kind will be demarcated in a VJR without the prior approval of the Director.

3.3.2 No cutting of any sort shall be made in a VJR apart from that required for the demarcation of boundaries, and around Ecology and Phenology Plots; such cutting, as far as possible, is to be restricted to monocotyledonous plants.

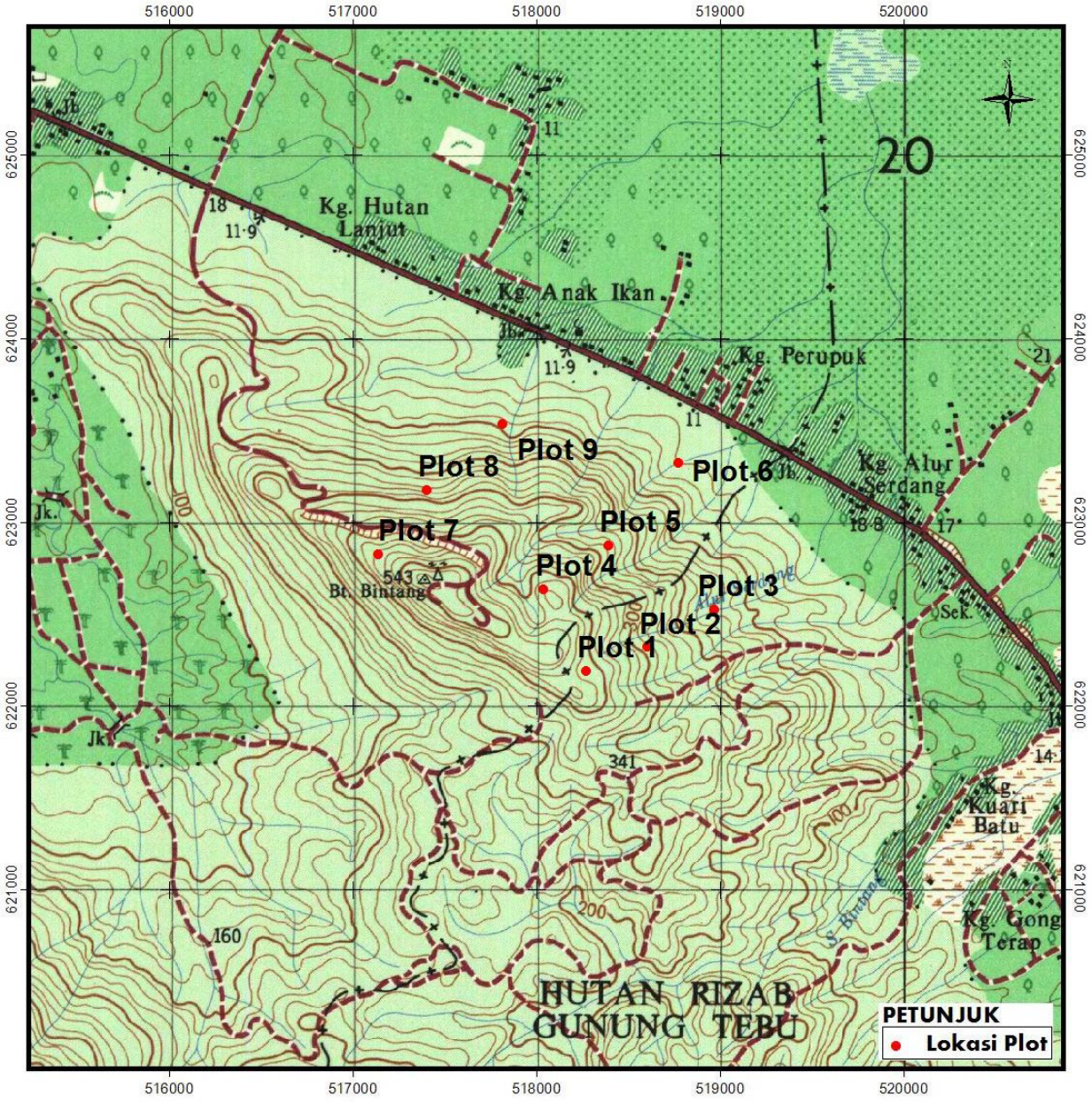
APPENDIX C

Topographic map of study sites. *Source: Forestry Department of Peninsular Malaysia*



Shape	Plot_no.	X	Y	Transet_lo	Remark
Point	Plot 1	415966	400467	415984 / 400499 (0m	Elevation : 536
Point	Plot 2	416184	400563	416188 / 400571 (0m	Elevation : 490
Point	Plot 3	416297	400526	416281 / 400523 (0	Elevation : 438
Point	Plot 4	416120	400974	416113 / 400973 (0m	Elevation : 551
Point	Plot 5	416098	400814	416098 / 400821 (0m	Elevation : 509
Point	Plot 6	416435	400858	416433 / 400847 (0m	Elevation : 425
Point	Plot 7	416323	401688	416248 / 401657 (0m	Elevation : 578
Point	Plot 8	416549	401313	416562 / 401311 (0m	Elevation : 480
Point	Plot 9	416422	401594	416430 / 401586 (0m	Elevation : 547

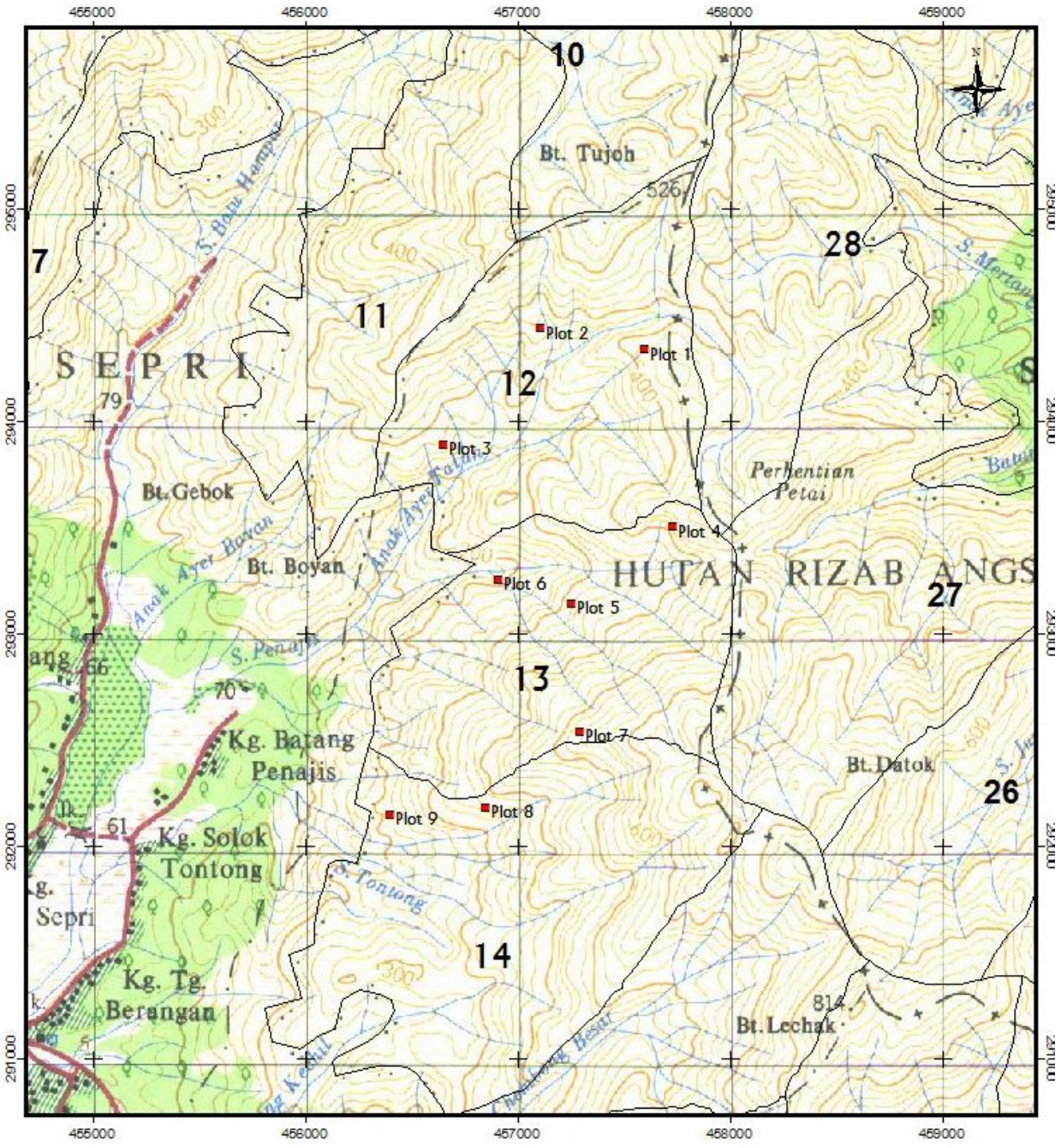
LOKASI PLOT H.S. GUNONG TEBU, TERENGGANU



1 0 1 Kilometers Skala 1:30000

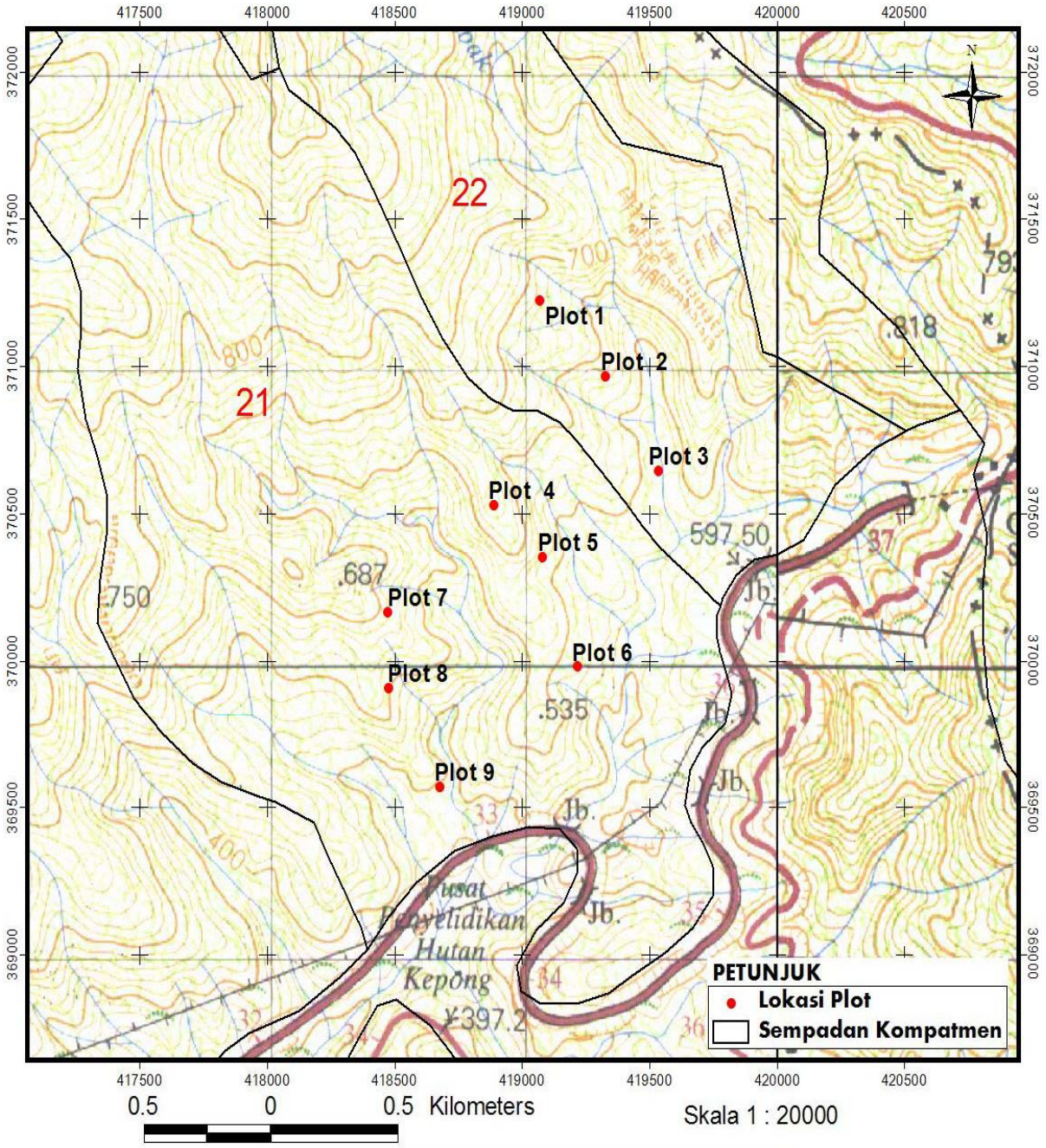
Shape	Kompt	Plot	Y	X
Point	4	1	622185	518269
Point	4	2	622315	518605
Point	4	3	622518	518970
Point	3	4	622631	518039
Point	3	5	622870	518390
Point	3	6	623320	518772
Point	2	7	622820	517135
Point	2	8	623170	517400
Point	2	9	623530	517815

LOKASI PLOT H.S. ANGSI NEGERI SEMBILAN



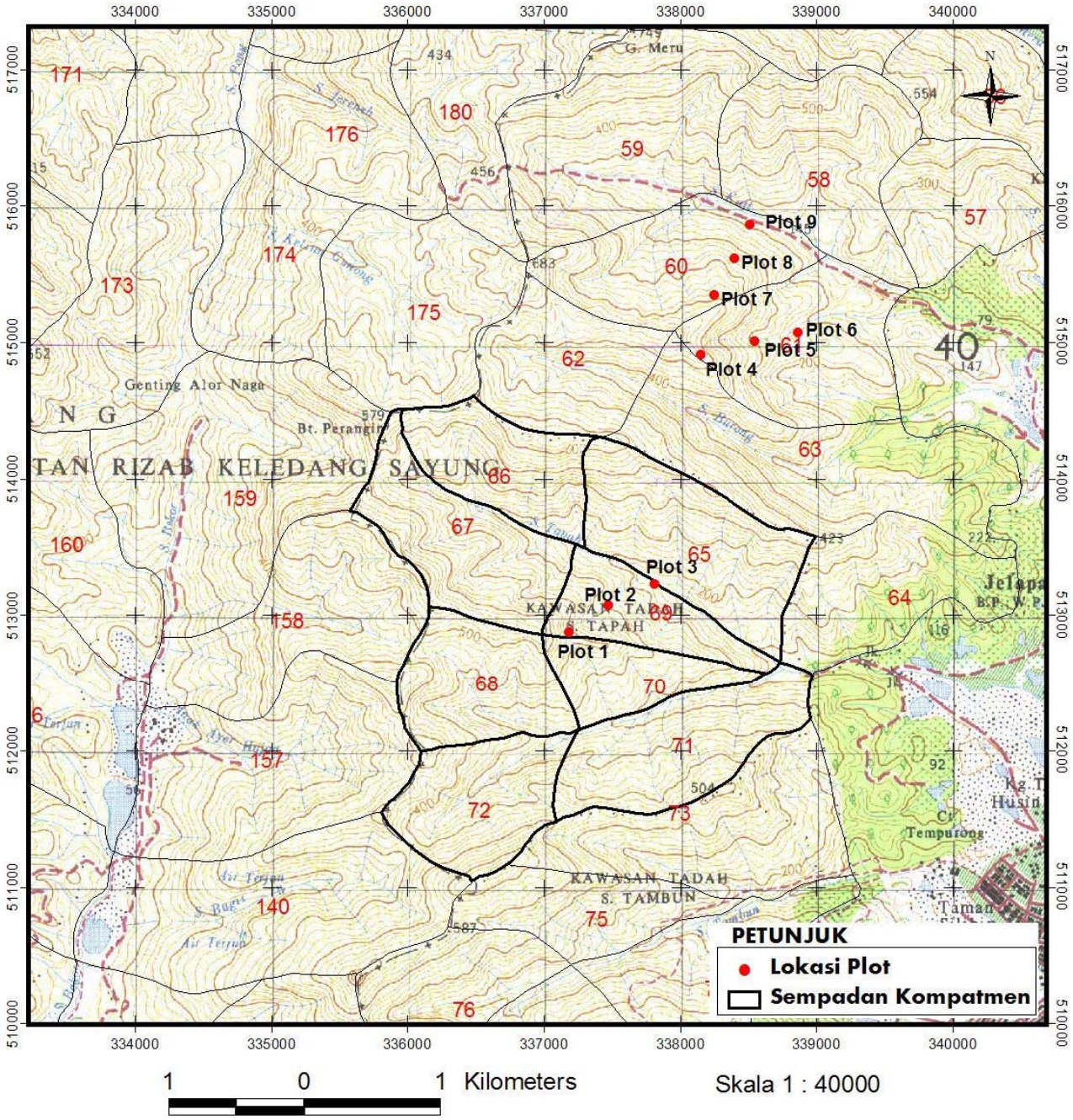
Plot_no.	X	Y
Plot 1	457596	294334
Plot 2	457108	294433
Plot 3	456649	293888
Plot 4	457728	293500
Plot 5	457254	293141
Plot 6	456906	293253
Plot 7	457294	292537
Plot 8	456847	292181
Plot 9	456398	292147

LOKASI PLOT H. S. ULU GOMBAK,SELANGOR



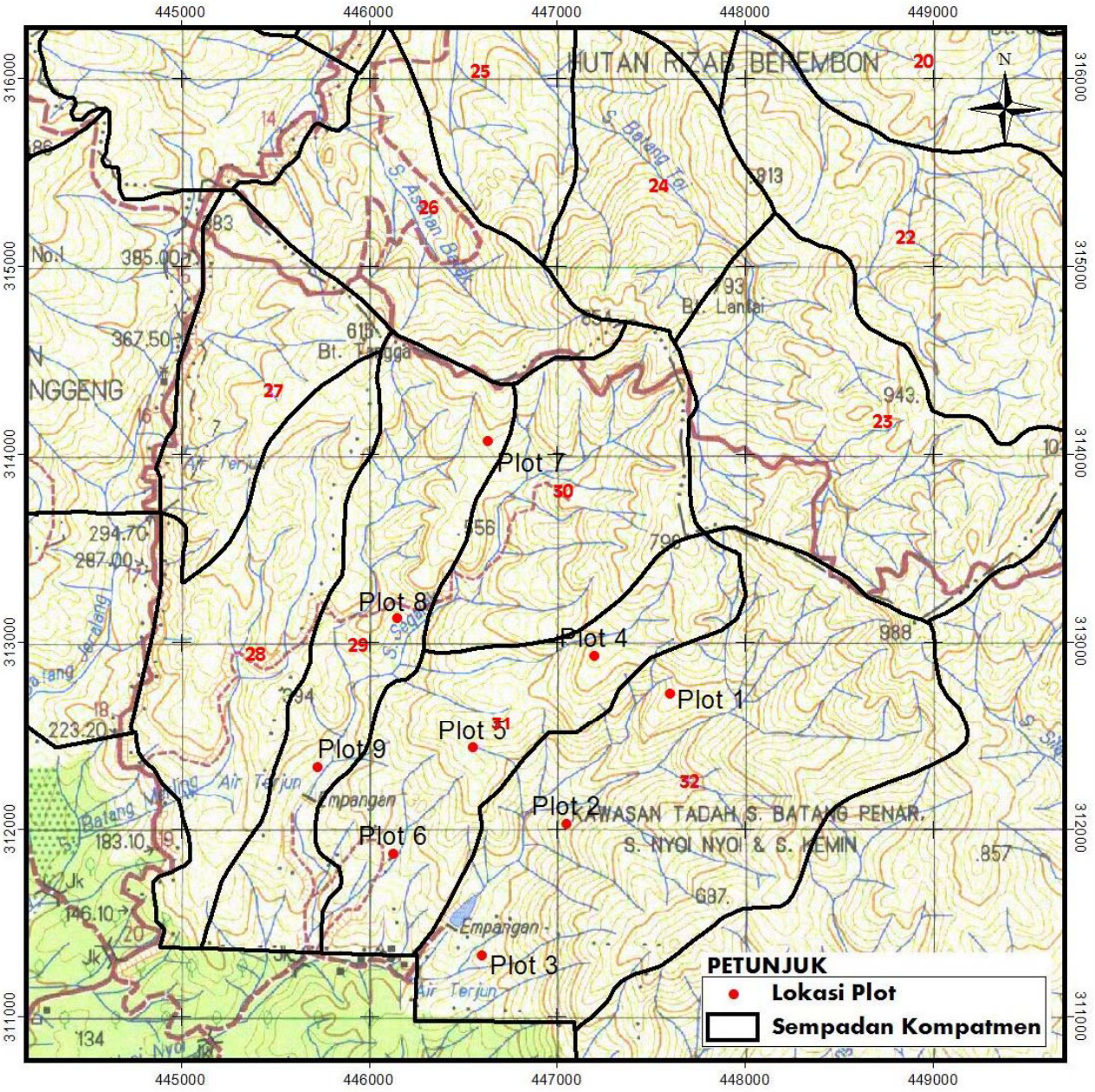
Plot	Kompt.	Hutan_simp	X	Y
1	22A	Hulu Gombak	419068	371221
2	22A	Hulu Gombak	419327	370963
3	22A	Hulu Gombak	419534	370644
4	21A	Hulu Gombak	418888	370526
5	21A	Hulu Gombak	419080	370349
6	21A	Hulu Gombak	419217	369977
7	21A	Hulu Gombak	418474	370162
8	21A	Hulu Gombak	418475	369906
9	21A	Hulu Gombak	418677	369567

LOKASI PLOT H. S. KLEDANG SAIONG, PERAK



Plot_no.	X	Y	Transet_lo	Remark
Plot 1	337189	512872	337395 / 513024 (0m)	Elevation : 337m
Plot 2	337475	513070	337704 / 513286 (30m	Elevation : 246m
Plot 3	337812	513229	338862 / 514140 (0m)	Elevation : 247m
Plot 4	338154	514909	338154 / 514909 (0m)	Elevation : 532m
Plot 5	338550	515005	338550 / 515005 (0m)	Elevation : 528m
Plot 6	338864	515071	338771 / 515020 (0m	Elevation : 280m
Plot 7	338252	515347	338464 / 515512 (0m)	Elevation : 544m
Plot 8	338403	515616	338560 / 515514 (0m)	Elevation : 343m
Plot 9	338514	515859	338492 / 515910 (0m)	Elevation : 235m

LOKASI PLOT H. S. BEREMBUN, NEGERI SEMBILAN



Plot_no.	X	Y	Transet_lo	Remark
Plot 1	447600	312725	447555 / 312598 (210m)	Elevation : 587
Plot 2	447050	312025	447181 / 312170 (300m)	Elevation : 396
Plot 3	446600	311325	446658 / 311568 (300m)	Elevation : 262
Plot 4	447200	312925	447067 / 312734 (300m)	Elevation : 605
Plot 5	446555	312430	446593 / 312272 (0m)	Elevation : 442
Plot 6	446130	311867	446193 / 312083 (300m)	Elevation : 245
Plot 7	446632	314069	446774 / 314130 (240m)	Elevation : 527
Plot 8	446150	313125	446043 / 312968 (300m)	Elevation : 447
Plot 9	445728	312328	445575 / 312128 (300m)	Elevation : 249