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The Japanese occupation of Malaysia highlights the interrelation between war and the natural environment as forming an integral part of the national narrative and global environmentalism. By disrupting the economy and emasculating the forestry service, the Japanese military administration removed the restraints on forest invasion by the hungry and landless and simultaneously privileged Japanese cooperate business, which engaged in indiscriminate exploitation, ostensibly for the war effort. Despite the best efforts of the Japanese scientific wing, the breakdown of forest management wrought havoc on environment and health. Ironically, postwar restitution of forestry was based on two by-products of the war: the Malayan Uniform System of silviculture and new technologies of harvesting and transportation, which set independent Malaysia on the trajectory of unsustainable harvesting. But equally, the retreat to the forest of the hungry, the landless and the disaffected bred a new awareness of human interdependence, irrespective of ethnic differences, within a shared natural environment. The collective experience and memory contributed to the emergence of the nation's first environmental advocates.

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The environmental impacts of war have rarely been studied within the broader narrative of human history. Its implications in the long term, moreover, have been overlooked or, at best, poorly understood. As a contribution to amending the gap in historiography, this case study shows how Japan's Malayan Occupation (1942-45) during the Pacific War within the global theatre of World War II, influenced the socio-economic destiny of one nation.¹

Forest management under British Malaya was an indispensable tool for the governance of land and people. Thus, its disruption under Japanese military rule undermined the very quest for natural resources that spearheaded the southern imperial advance. In incorporating Malaya within its Southern Military Command, Japan placed its resources within the reach of the commercial, industrial and service-based *zai-batsu* (financial groups) for purposes beyond the immediate war effort. High on the list of resources sought were the Peninsula's rubber, tin, bauxite and iron.² But, crucially, it was the Peninsula's forests which were thrust into a position of pre-eminence by the exigencies of war.³

On the eve of the Japanese Occupation some 76.5 percent of biologically-rich Dipterocarp forests covered British Malaya (now West Malaysia)⁴ constituting the Federated Malay States (Selangor, Perak, Negeri Sembilan and Pahang), the Unfederated Malay States (Kedah, Perlis, Kelantan, Terengganu and Johor) and the Straits Settlements of Singapore, Penang and Melaka. In a region where the forest was a primary resource based on usufruct, as well as a potential rallying point and cover for political resistance, colonial forest management provided an effective infrastructure for territorialization and social engineering.⁵ In contrast, the *Gunseikanbu* (the Japanese Military Government), perceived the extensive forests as purely a material resource and, by so doing, set in train environmental degradation which had far-reaching socio-political implications.

¹ This article is based on a paper presented at the 2010 Conference of the American Society for Environmental History (ASEH) held in Portland, U.S.A. I am grateful to the Sasakawa Foundation, London, for its generous support in sponsoring my attendance.

² Y. Yasukichi, "Did Japan Ever Suffer from a Shortage of Natural Resources before World War II?", in *Journal of Economic History*, 26, 3, 1996, pp. 554-555. J. Kathirithamby-Wells, *Nature and Nation: Forests and Development in Peninsular Malaysia*, NIAS Press, Copenhagen 2005, pp. 230-231.

³ As one Malaysian forester had anticipated on the brink of war, "timber and forest products are as much essential munitions of war as guns, tanks and aeroplanes". H.F. Desch, "The Contribution of Tropical Forests to the War Economy", in *Malayan Forester*, 10, 1941, p. 128.

⁴ *Forest Dept. Annual Report 1938*.

⁵ Kathirithamby-Wells, *Nature and Nation* cit., especially Chapters 3 and 4.

At the outbreak of war, Malay's forest revenues, generated by some 100 million ha managed as State Land Forests and Reserved Forests,⁶ were the highest in the Empire.⁷ Yet, timber played a negligible part within the export sector. Apart from a small trade in non-timber forest produce (NTFP), the Forest Department was dedicated, since its foundation in 1901, primarily to servicing the fuel needs of domestic consumption dominated by the lucrative and export-oriented rubber and tin industries. Malaya's Forestry Policy – formally enunciated in 1923 – was premised on the creation of Reserved Forests for environmental protection and sustainable production constituting Protection and Production Forests, respectively. The former provided protection of watersheds and erosion-prone steep land to serve downstream wet-rice peasant agriculture, urban water needs, public health and the aesthetic sensibilities of the colonial European community. The latter was set aside for production under silvicultural regimes. State Land Forests, on the other hand, were licensed for wood extraction and were potentially alienable for agriculture and industry. Laws and boundaries governing access to the resources both of Protection and Production Forests, tantamount to territorialization, provided the framework for British rule. However, during the late 1930s, this long-nurtured system was compromised by the "Grow-More-Food" policy launched as a buffer against the economic downturn brought

⁶ Protection Forests set aside for ecological services – generally above the c. 300 m floristic zone and not rich in commercial species – represented little revenue loss. Peasant communities had only limited access to Reserved Forests for NTFP collection. Reserved Forests fell under the direct jurisdiction of the Forest Department headed by the Conservator of Forests responsible to the High Commissioner. All other forests, though administered by the Forest Department, remained under the direct authority of the Resident/ Advisor who exercised power over land alienation for industry, settlement, and agriculture, including Malay Reserves comprising paddy land and forest fragments to serve daily needs.

⁷ Malaya's revenues are calculated to have amounted to about 45 percent in the years leading up to the war. Lt. Col. J.P. Mead, Officer-in-Charge of Forests, B.M.A., Report, 24 Nov. 1945, DF 58/45. This and all the colonial records quoted hereafter are from the Malayan Forest Records repositied in the National Archives (Arkib Negara) of Malaysia, Kuala Lumpur.

by the depression and the outbreak of World War II.⁸ The policy, extended by the *Gunseikanbu*, in combination with the marginalization of its own highly-regarded scientific forest service, effectively dismantled both environmental and civil governance.

Dismantling forestry

Less than a year after the Occupation, a correspondent to a Malayan daily, the *Malay Mail*, drew attention to the forest devastation: “I feel sure that Nippon forest experts who are among the most highly qualified in the world will shed tears when they arrive in Malaya and see the large acreage of forest cut and burnt without discrimination”.⁹ In addition to speculation that forest clearance by food cultivators would create breeding ground for malaria-carrying anopheline mosquitoes, the press reported extensive erosion in the highland agricultural-settlement of Cameron Highlands and anecdotal reports of rising temperatures in the capital, Kuala Lumpur.¹⁰

Unbeknown, however, to the Malayan public, was the laudable but futile effort made by the rearguard scientific arm of the military to place forestry on a sound footing, in tune with the enormous strides already made by Japan’s own modern forestry agency (*Sanrinkyoku*).¹¹ Marquis Yashichika Tokugawa, appointed Supreme Commander and political advisor to Colonel Watanabe Wataru, head of the military government, was himself a man with a keen interest in forestry. The 22-part *History of Forestry in Kiso (Kiso Rinseishi)* he was to later publish, summed up the progress made in Japanese forest conservation in the decades preceding the war. Moreover, the Marquis arrived with a prior knowledge of Peninsular forests where he had shared his passion for hunting in earlier years with his close friend and host, Sultan Ibrahim of Johor. Appointed President of the

⁸ Kathirithamby-Wells, *Nature and Nation* cit., p. 231.

⁹ *Malay Mail (New Order)*, 16 September 1942.

¹⁰ *Malay Mail*, 9 September 1942.

¹¹ C. Totman, *The Green Archipelago: Forestry in Pre-Industrial Japan*, University of California Press, Berkeley 1989, pp.149-69.

prestigious Raffles Museum and Botanic Gardens, he lent patronage and inspiration for the handful of professional scientists in the service of the army. Commitment to maintaining scientific endeavour was duly endorsed by General Tojo Hideki (1884-1948) of the Japanese Imperial Army and Prime Minister (1941-44) in his order to protect and preserve museums, libraries, scientific collections and institutions.¹² Faithful to the policy, the Perak Museum, with valuable ethnological collections, was preserved and survives to this day. Moreover, a new Aboriginal Protection Enactment was passed in 1944 on the lines of the 1936 British Enactment, with work centred as previously in Perak, and the state's six District Officers were appointed to act as Assistant Protectors of Aborigines.¹³

Japanese scientific patronage vindicated the trenchant stand of the Lady Superior, Sister St Adèle of the Bukit Nanas Convent, Kuala Lumpur, in saving the small Forest Reserve on the adjacent Weld's Hill, one of the few green lungs that still remain.¹⁴ In the main, however, various scientific institutions survived only in name, their workings seriously impaired by the often conflicting powers and priorities of the army. Furthermore, widespread looting during the political transition resulted in the loss of valuable scientific data. A prime example is the gap in meteorological data, vital for analysis of rainfall trends and climate change in the Peninsula.¹⁵

Looting affected the scientific collections of the Forest Research Institute (FRI), the research wing of the Forest Department established in

¹² E.H. Corner, *The Marquis: A Tale of Syonan-to*, Hienemann Asia, Singapore 1981, pp. 37-38, 48-49, 101. Lieut.-Col. R.A. Mead, Officer-in Charge-Forests, B.M.A., 26 Sept. 1945, Situation Report on the Forest Department, Ad.F. 30/45, 2A.

¹³ Sangyobu-Rin-En-Kacho, S.F.O. Perak 20-2-27 No 1. For the origins of the Perak Museum and aboriginal administration in the Peninsula under the British see Kathirithamby-Wells, *Nature and Nation* cit., pp. 61, 179-80.

¹⁴ Lieut.-Col. R.A. Mead, Officer-in Charge-Forests, B.M.A., 26 Sept. 1945, Situation Report on the Forest Department, Advisor Forestry Hereafter Ad.F. 30/45, 2A.

¹⁵ K.C. Goh, "Rainfall Trends and Deficiencies in Peninsular Malaysia", in *The Oriental Geographer*, 24, 1980, pp. 25-40.

1926 in Kepong, on the outskirts of Kuala Lumpur. Here the Japanese scientist, Dr. Hidezo Tanakadate was appointed by the Marquis to restore the institute in recognition of its scientific value. A volcanologist from Tohoku Imperial University, Tanakadate was described as a man “on the side of nature and science”. In common with other scientists of his generation who worked under the inspiration of Emperor Hirohito (an amateur biologist and fellow of the Linnaean Society), he believed that “science was international, not to be sullied by war”. Credited with rescuing the Raffles Museum and Gardens before the arrival of the Marquis, he made a spirited effort to salvage what remained of FRI’s museum and library. Rising above the politics of war, he sought the collaboration of the eminent Cambridge botanist, E.J.H. Corner, then held prisoner of war in Changi, Singapore, for the publication at his own expense of C.F. Symington’s seminal study, *Foresters’ Manuel of Dipterocarps*.¹⁶ However, Tanahadate’s failure to restore the full workings of the institution testified to *Gunseikanbu*’s flawed ideology and poor administrative capacity with the result that no forestry training was conducted for the entire period of the Occupation.¹⁷

Though in adopting a “scorched earth” policy the retreating British had destroyed some Chinese-owned saw mills, timber stocks and store sheds, they left intact a sound management system with its laws, enactments and administrative layout. Subscribing to the spirit of the southern advance, which claimed Japanese scientific superiority, the *Gunseikanbu* proposed to build on the existing forest service. The few Japanese foresters on hand, having no experience of Malayan forests, were amenable to the suggestions of Malayan staff and endeavoured to maintain silvicultural work and research in the best tradition of the department. Only forest stands which failed the test of good timber stocks and future production were released. Silvicultural work under Commercial Regeneration felling was resumed. But despite these efforts the *Gunseikanbu* was contemptuous of the foresters as

¹⁶ C.F. Symington, with a preface by Tanakadate Hidezo, *Foresters’ Manuel of Dipterocarps*, Malayan Forest Records, 16, Reprint, Penerbit University Malaya, Kuala Lumpur 1974.

¹⁷ Kathirithamby-Wells, *Nature and Nation* cit., pp. 233-234.

a community. A general decline in the ethics and standards of governance by the military authority and an acute shortage of material and managerial resources disrupted forest administration, described as “haphazard and inefficient”. Malay foresters, now promoted to senior positions, often lacking the experience and training of their European predecessors were powerless against the army, as were their Japanese counterparts. Dr. Y. Tsugi, a trained senior forest officer who took charge in December 1942, is reported to have appreciated the Malayan forest policy and was able to bring some influence to bear on the army by virtue of his seniority. However, his early departure saw the steady subordination of the Forest Department to the will and interests of the *Gunseikanbu* and its business allies. The largely Malay forest staff was crippled by lack of transport facilities and uniforms, and the poor salaries paid were barely sufficient for upkeep. Many among them resigned to take up farming and petty business, while those who remained in service were demoralized.¹⁸

Soon, by order of the *Gunseikanbu*, forestry was absorbed into the Department of Commerce and Industry, under the branch administration of Agriculture, Forestry and Drainage. Just as with forest administration in Burma under the Nippon Burma Timber Union,¹⁹ *kaisha* (monopoly companies), appointed as agents for the army, took control over both the wood industry as well as the rice, sugar, salt, tin and boat-building industries. An example of the total commercialization of forestry and the marginalization of the Forest Department were the contracts made by Mitsui Bussan Kaisha and Nomura Kaisha with inexperienced Malay entrepreneurs for planting *bakau* (*Rhizophora* spp.) seeds in the valued Matang forest in Perak. The wood industry, which was traditionally concentrated in Perak to service some of the richest tin mines of the Peninsula, was stepped up as part of the war effort to

¹⁸ Lieut.-Col. R.A. Mead, Officer-in Charge-Forests, B.M.A., 26 Sept. 1945, Situation Report on the Forest Department, Ad.F. 30/45, 2A. V.L. Bain, Extra. Asst. Conservator of Forests, Kuala Lumpur, 26 Sept. 1945, Enclosure No. 1 in Ad.F. 30/45. Kathirithamby-Wells, *Nature and Nation* cit., pp. 234-235.

¹⁹ R. Bryant, *The Political Ecology of Forestry in Burma, 1824-1994*, Hurst, London 1997, pp. 134, 154.

supply Japan. All pre-existing large licences and permits were transferred to the *kaisha*, which exercised sole monopoly over all supplies and promptly engaged the original licensees as sub-contractors.²⁰

Forest Reserves previously constituted to serve environmental protection, sustainable forestry, and peasant domestic needs in non-timber forest produce (NTFP), were released for exploitation by the insatiable *kaisha*. Supervision of extraction activities were hampered by the kidnapping and occasional murder of forest staff by the jungle-based Malayan Communist guerrillas and, consequently, their reluctance to venture into the forest. Those who did faced difficulty with law enforcement and were barely able to collect revenues. The pre-war silvicultural and regeneration programmes were disrupted and indiscriminate harvesting superseded logging by coupes. Young trees, both soft and hard wood species, were felled.²¹ Laws governing the licensing of non-timber forest produce were widely challenged. The extraction of *jelutung* (from *Dyera costulata*) and gutta-percha (from *Palaquium gutta*), previously almost exclusively in the hands of Chinese – now engaged in more lucrative food cultivation – was eagerly taken up by inexperienced Malay speculators whose practices of over-tapping destroyed trees.²² Increasingly, the Forest Department served merely as a tool for endorsing irregular practices. The cancellation of existing contracts and extension of concession boundaries became part of the culture of corruption, since perpetuated in the forest sectors of the region.²³

By 1944 Japanese enterprise expanded into a vast network of monopoly companies serviced by Chinese contractors under the overall authority of the semi-government concern, *Nippon Mokuzai Kabushiki Kaisha*. Liberated from the codes of scientific forestry, Chinese

²⁰ Kathirithamby-Wells, *Nature and Nation* cit., pp. 235-236.

²¹ J. Wyatt-Smith, *Manual for Malayan Silviculture in Inland Forest*, Malayan Forest Records 23, Vol. I, Malayan Forest Research Institute, Kepong, Kuala Lumpur 1959, pp. 275-276.

²² Kathirithamby-Wells, *Nature and Nation* cit., pp. 254.

²³ Ibid., pp. 232, 375-378. P. Dauverge, *Loggers and Degradation in the Asia-Pacific: Corporations and Environmental Management*, Cambridge University Press, Cambridge 2001, pp. 99, 122-126, 136-138.

organized as syndicates (*kumiai*) to serve the sub-contractors, logged indiscriminately to feed the demands of the *kaisha*.²⁴ They formed formidable gangs and openly defied forest laws. In 1943 the northern Malay states (Kedah, Perlis, Terengganu and Kelantan) were ceded to Thailand, aimed at freeing up the Japanese army for the Burma campaign. This threw forest administration into further confusion inviting the defiance of the various *kaisha* who refused to pay royalties and resisted inspection by field staff.²⁵ Towards the end of the war, despite intensive felling, shortfalls in the transport infrastructure and the disruption of shipping resulted in the abandonment of wood in some areas despite acute shortage in others due to poor distribution and management.²⁶

Forests for food

Apart from administrative failure and *kaisha* intervention, forestry was seriously compromised by the spectacular expansion of the “Grow-More-Food” programme. Under Japanese administration, the amalgamated Forestry, Agriculture and Irrigation Department (*Norin Ka*) gained a momentum of its own as the war intensified. The food situation was exacerbated by the subsistence demands of the Japanese army. Its predation in Pahang, for example, reduced the pre-war stock of timber-dragging buffaloes to a bare 20 percent. Starvation created an eager market even for rats, cats and snails, which fetched exorbitant prices. Agricultural imperatives created also a demand among the Chinese for “night soil” (human waste) to enrich market and home gardens. Apart from raising the productivity of poor soils, the practice adopted from China, alleviated the breakdown in sanitary services in urban enclaves.

²⁴ V.L. Bain, Extra. Asst. Conservator of Forests, Kuala Lumpur, 26 September 1945, Enclosure No. 1 in Ad.F. 30/45.

²⁵ SFO, Kedah, Sungei Patani, to Director of Forests, 9 February 1946, N. 14. Ad.F. 30/45. Forest Ranger Kemaman, Terengganu, Report, 1942-45, 24 Oct. 1945, Ad.F. 113/45, 1A; Acting State Forest Officer to Civil Affairs Officer, Terengganu, 13 October 1945, Ad.F. 113/45, 3A.

²⁶ Kathirithamby-Wells, *Nature and Nation* cit. pp. 236-238.

As the food crisis escalated, both the insufficiency of land and the generally degraded soils around the rubber estates and mining settlements spurred public penetration of Forest Reserves, which gave way to mosaics of cassava, maize and sweet potatoes. To encourage cultivation, the Japanese introduced new strains of rice and opened Malay Reservations to non-Malays thereby sowing the seeds for the racially-charged post-war squatter problem (see below).²⁷ Against the better judgement of foresters, the army sanctioned the entry of out-of-work Chinese in Selangor into Forest Reserves, not excluding Protection Forests, to fell trees and cultivate food for Kuala Lumpur's large urban populace. Some Forest Reserves were irretrievably ruined by clearance for rice cultivation, as was the valuable Kanching Forest Reserve, situated some 15 miles from the capital and the site of the country's most valuable camphor stand (*Dryobalanops aromatica*).²⁸ Though such transgressions were in the face of hunger, lack of agricultural experience and haphazard opportunistic cultivation resulted, often, in poor land use and wastage. In the state of Negeri Sembilan, for example, only some 20 percent of the total area of Forest Reserve felled was actually under cultivation when war ended. Returning British foresters estimated an overall loss of some 40 years work in regeneration and stock improvement, including large-scale experimentation begun in 1934 with artificial regeneration.²⁹

Disease threat

The cumulative effects of extensive forest clearance during the Japanese Occupation in breach of pre-war land management practices were manifested in the post-war era. In the early development of forestry in Malaya erosion had been identified as a major problem associated with tropical deforestation. Consequently, appropriate laws for mitigation were instituted, principally the 1922 Silt Control En-

²⁷ Ibid., pp. 104-105, 107.

²⁸ Lieut.-Col. R.A. Mead, Officer-in Charge-Forests, B.M.A., 26 September 1945, Situation Report on the Forest Department, Ad.F. 30/45, 2A.

²⁹ *Annual Report, Federated Malay States* (Hereafter FMS), 1934.

actment and the 1937 Hill Lands Ordinance, but these were widely contravened by cultivation and logging practices during the Occupation. Shifting cultivation of dry paddy and tapioca on steep land affected water regimes well into the post-war years. Clearance of a mere 1-2 ha catchment in the Bukit Legung Forest Reserve in the state of Selangor, for example, severely reduced storage in the reservoir serving the nearby township of Kepong. Filter beds and chemical purification plants were not maintained.³⁰ Local damage through siltation, though seemingly insignificant in some instances, was pronounced “far-reaching, cumulative and unquestionably serious” by returning British agricultural officers. Eroded soils contaminated water supply and blocked irrigation canals in paddy fields. This further increased the risk of annual floods on the lower reaches of rivers, posing damage to crops and exposing settlements to epidemics.³¹

Another area of pre-war environmental initiative which suffered a setback during the Occupation was control of the malaria vectors, *Anopheles umbrosus* and *Anopheles maculatus*, initiated by the medical doctor, Malcolm Watson, based on the researches of Dr. Ronald Ross in India. Indiscriminate clearance and the breakdown of the health and sanitary services during the war were conducive to the breeding of the *umbrosus* in stagnant pools within agricultural clearances and garbage accumulated around settlements. Furthermore, erosion related siltation of underground drainage damaged anti-malarial drainage, earlier instituted to eliminate the breeding of the *maculatus* in open running water. No anti-malarial measures such as oil spraying were undertaken.³² Malaria was particularly rife in construction sites and forced labour (*romusha*) camps, which provided ideal breeding ground. Shortage of quinine, previously produced locally, resulted in high mortality. In one project, involving some 2,000 labourers employed between 1942 and

³⁰ Lieut.-Col. R.A. Mead, Officer-in Charge-Forests, B.M.A., 26 September 1945, Situation Report on the Forest Department, Ad.F. 30/45, 2A.

³¹ “Soil Erosion”, Chief Secretary to all Soil Conservation Agricultural Officers, 23 November 1945, Ad.F. No. 15A.

³² J. Kathirithamby-Wells, “Peninsular Malaysia in the Context of Natural History and Colonial Science”, in *New Zealand Journal of Asian Studies*, 11, 1, 2009, pp. 370-371.

1943, an average of 3-4 workers reportedly died daily of malaria or malnutrition. In Bahau, Pahang, malaria rendered an agricultural venture – typically by inexperienced urban dwellers – “a living hell”.³³ The problem of malaria lingered during the early years of British reoccupation. In the district of Kelang, near Kuala Lumpur, its incidence was calculated to have doubled since the Occupation.³⁴

In addition to the debilitating effects of malaria, contamination of water catchments overrun by squatters and woodcutters, and lack of maintenance of filter beds and chemical plants posed the danger of cholera. There was also a high incidence of scrub typhus transmitted by the vector *Orientia tsutsugamushi* through proliferation of scrub-related shifting cultivation. Potential risk of the debilitating effects of disease on the military prompted research under the aegis of Lt. Col. Kioshi Hayakawa, Deputy Director of the Japanese Army Institute of Preventive Medicine (the former King George V College of Medicine, Singapore). However, little progress was made in combating the disease, which the returning British found to be still prevalent.³⁵

Respite for wildlife

Contrary to the adverse effects of war on the health and nutrition of humans, the period offered a welcome respite for fauna, especially big mammals, which pre-war plantation development had put seriously at risk. In fact, the Peninsular Malaya had been the site of a fierce wildlife controversy between game hunters-turned-conservators and gun-happy rubber planters committed to the twin purposes of sport and crop protection. The scrub surrounding rubber plantations, as well as the saplings within, were attractive to elephants, deer, gaur and

³³ C. Bayly, T. Harper, *Forgotten Armies: The Fall of British Asia: 1941-1945*, Allen Lane, London 2004, pp. 413.

³⁴ P.H. Kratoska, *The Japanese Occupation of Malaya: A Social and Economic History*, Hurst & Co., London 1998, pp. 186, 268, 321. *Annual Report*, F.M.S. Medical Dept. 1948, p. 20.

³⁵ J.W. Field, R. Green, F.E. Byron, *The Institute of Medical Research, 1900-1950*, Studies from the Institute of Medical Research in Malaya, Jubilee Volume No. 25, I.M.R., Kuala Lumpur 1951, pp. 193-205.

pig, which inflicted substantial damage to crops.³⁶ The long drawn out and bitter campaign for appropriate laws to protect big mammals from the gun pitted the tenacious Honorary Game Warden, Theodore Hubback (1872-1942) – backed by the London-based Society for the Protection of Fauna in the Empire – against the influential Rubber Growers' Association. With Parliamentary intervention, the issue was settled in favour of a compromise solution for constituting wildlife parks as the basis of a policy for containing mega fauna within protected parks, thus allowing freedom for crop protection elsewhere. The outcome was the formation of the King George V National Park in 1939 (renamed at independence as *Taman Negara*).³⁷

Situated in a remote and isolated location in the upper reaches of the east-coast river system, the National Park fell within the sphere of the guerrilla activity of the Malayan Peoples' Anti-Japanese Army (MPAJA) during the Occupation, and, later, the Malayan Communist Party (MCP) during its prolonged resistance under the 'Emergency' (1948-60). The Occupation placed the park out of the reach, equally, of the timber-hungry *kaishas*, the slash-and-burn food cultivators, and Malay hunters from downriver. Thus, the park, in common with other remote upriver forests of the Peninsula, survived the scars of the Occupation. It remained in the safe custody of the small population of resident hunter-gatherer aboriginal Batek whose life style had a low impact on the environment. Retaining the full diversity of habitat ranging from lowland Dipterocarp forest to dwarf Upper Montane ericaceous vegetation, the park lent refuge to the near-extinct gaur (*Bos*

³⁶ On the environmental impacts of plantation rubber see J. Kathirithamby-Wells, "The Implications of Plantation Agriculture for Biodiversity in Peninsular Malaysia", in *Beyond the Sacred Forest: Complicating Conservation in Southeast Asia*, M. Dove, P.E. Sajise, A.A. Doolittle (eds), Yale University Press, Durham 2011, pp. 68-69.

³⁷ See Jeyamalar Kathirithamby-Wells, "Malaysia's 'Taman Negara' National Park: Interconnections between Nature, Political Culture and Development", in *Civilizing Nature: National Parks in Transnational Historical Perspective*, P. Kupper, S. Höhler, B. Gissibl (eds), International Environmental History Series, vol. 1, Rachel Carson Center and European Society for Environmental History, Berghahn, New York 2012, Chapter 4.

gaurus), the Malayan tapir (*Tapirus indicus*) and the rare Sumatran rhinoceros (*Dicerorhinus sumatrensis*). Its preservation inadvertently subscribed to the conservationist stance shared by Japanese scientists.

The war favoured mega fauna outside the park as well. The extension of scrub in abandoned rubber estates proved a bonanza for herbivores.³⁸ The gains in mammal population are likely to have compensated for declines in the pre-war period from clearance for rubber planting. At the same time, the Japanese ban on arms, combined with fear of Communist guerrillas, reduced the taking of quarry by urban-based hunters and contributed to the survival of the rarer mega fauna including elephants and tigers. In the absence of arms, the rural Malays, adept at trapping and keen on venison, kept deer numbers low but, as Muslims, abstained from pork. The resulting upsurge in pig numbers, in turn, boosted the tiger population.³⁹ In Terengganu the increase in the tiger population posed a serious problem in the immediate post-war years.⁴⁰ The resulting danger to human life and crops upon resumption of post-war plantation and agricultural activity obliged the Game (Wildlife) Department to conduct a massive cull. A record number of 1,009 pigs, 25 elephants and 16 tigers culled in 1947 reflected the gains of the war for mega fauna and signalled the resumed threat to wildlife posed by post-war economic recovery.⁴¹

Post-war ills

In political terms, the free run on land which the Japanese Occupation unleashed proved a source of ethnic tension in the immediate post-war era. The problem of Chinese squatter settlements in

³⁸ On the attraction of herbivores to forest-edge scrub see J. Kathirithamby-Wells, "Human Impact on Large Mammal Populations in Peninsular Malaysia from the Nineteenth to the Mid-Twentieth Century", in *Paper Landscapes: Explorations in the Environmental History of Indonesia*, P. Boomgaard, F. Colombijn, D. Hanley (eds), KITLV, Leiden 1997, pp. 215-47.

³⁹ *Annual Report, Game Department*, 1947.

⁴⁰ A. Locke, *The Tigers of Trengganu*, Museum Press, London 1954, p. 2

⁴¹ *Federal Forest Administration Report 1947*, pp. 41-42.

Malay Reserves constituted a particularly sensitive issue. There were grievances in Kedah, for example, about the destruction brought by Chinese cash-crop cultivation – of notoriously inimical tapioca and tobacco – to water regimes in downstream paddy land. But post-war government evictions were at the risk of playing into the hands of leftist elements. Illegal occupation for subsistence cultivation, accommodated within the traditional framework of usufruct under the plight of war, gave way to resentment when used as a basis for post-war land acquisition. The long-simmering grievance, well into the 1970s, was summed up in the brash comment of the Chief Minister of Kedah: “Why should we give up good Malayan land for occupation by them [the Chinese], when such lands are likely to be needed for future expansion by the Malays?”⁴² Poor practices of shifting cultivation, moreover, were inimical to forest regeneration. As one forester observed: “After three years of [cultivation] all dormant seed in the forest was exhausted, the vigour of the coppice re-growth from the stumps lost, and the soil usually so poor that woody secondary growth was almost non-existent”.⁴³

In the Cameron Highlands and Bukit Tinggi in the Main Range, unabated expansion of Chinese market gardening on steepland since the Japanese Occupation precipitated the 1951 Hill Lands Bill prohibiting any cultivation beyond a 26 degrees gradient. Here, as elsewhere, the interests of erosion control had to be carefully balanced against the needs of food production. A survey, conducted between 1948 and 1955 showed alarming erosion levels of soil loss at 45,000 kg/ per ha/ per year on untterraced and 22,000 kg on terraced gardens in the third year of planting after clearing virgin forest.⁴⁴ Elsewhere, post-war rehabilitation, involving afforestation or planting of suitable cover crops to arrest erosion, proved slow and expensive.

⁴² A. Short, *The Communist Insurrection in Malaya*, Muller, London 1975, p. 195.

⁴³ J. Wyatt-Smith, “Forestry, Agricultural Settlements and Land Planning”, in *Malayan Forester*, 13, 3, 1950, pp. 207-248.

⁴⁴ Anon., “A Note on Land Erosion in the Cameron Highlands”, abstracted from Hydro-electric Memorandum No.3 of the Central Electricity Board, “River Flows in Cameron Highlands”, in *Malayan Forester*, 20, 1957, p. 31.

Notwithstanding the hardships of the war, Japan's audacious challenge to the West and the rhetoric of liberation with the promised creation of an "Asian Co-Prosperity Sphere" aroused ethnic and national consciousness among the Malays. Emergent Malay nationalist sentiments were expressed in literary outpourings about the encroachment on Malay life of immigrant communities whose loyalty allegedly lay elsewhere.⁴⁵ The situation was not helped by the contentious and ultimately aborted Malayan Union proposal of 1946 to place non-Malays on a par with indigenes. In Perak, with a largely Chinese constituency, racial tensions flared into violence between Chinese and Malays resulting in their mutual avoidance of the forest and precipitated severe disruption of logging and silvicultural operations.⁴⁶ New ideologies of nationhood challenged the pre-war status quo of plural identity. The now disillusioned MPAJA and other dissident elements, including Chinese squatters on the forest edge, were co-opted into a dangerous anti-British Fifth Column by the Malayan Communist Party.⁴⁷

Furthermore, landlessness and the culture of defiance bred by the war undermined efforts to restore forest and land management. Five years after the war hundreds of hectares of upland in Johor remained under pineapple cultivation in defiance of the law. Practices of slash-and-burn for tapioca and tobacco cultivation inimical to soils were rife especially in the more populated west-coast states and left vast swaths of *Imperata* grass.⁴⁸ These "illegal" agricultural settlements challenged the underpinnings of an ethnically structured pre-war economy and called for a more equitable share of the economic prosperity unleashed by post-war timber exploitation.

⁴⁵ "War in Malaya", *British Survey*, 1952, pp. 12-13. Kathirithamby-Wells, *Nature and Nation* cit., pp. 247-248, 292-293.

⁴⁶ From B.M.A. Peninsular Division to H.Q. B.M.A., Singapore, 18 Oct. 1945, Ad.F. 13/45, No. 44, Perak.

⁴⁷ J. Paget, *Counter-Insurgency Campaign*, Faber & Faber, London 1967, p. 59.

⁴⁸ Wyatt-Smith, *Forestry, Agricultural Settlements and Land Planning* cit., p. 207.

“Gains” of war

Severe food shortage, despite forests sacrificed to cultivation, summed up the hardships of the Occupation carried into the immediate post-war years. The level of rice rationing, the lowest in Asia, generated black-marketeering through supplies smuggled over the Thai border into the northern Malay states. The alarming rate of inflation was succinctly chronicled in one observation that “[a] pound of rubber in 1947 will buy one-fifth of the flour, one-half of the milk, and one-sixth of the textiles that it could buy before the war”.⁴⁹ A similar shortage was replicated in timber and wood. It was at this juncture of post-war economic crisis that Malayan forestry, previously based on a balance between preservation and productivity, made a historic shift to timber commodification, inaugurating an era of massive exploitation. The basic management tool that facilitated exponential exploitation was an inadvertent product of the Japanese era. Pivotal to the transition was the observation made by returning British foresters of unassisted regeneration following logging operations during the Occupation. Despite timber wastage due to shortfalls in management, low-impact logging during the course of the war, combined with disruption of forest management regimes by guerrilla insurgency had allowed for natural regeneration following clear felling. This persuaded foresters to abandon the pre-war system of Regeneration Improvement Felling (RIF) involving poly-cyclic felling of hard woods, coupled with silvicultural interventions for removal of “uneconomic” species. Instead, they adopted the principle of converting natural forest to more or less even-aged forest by monocyclic harvesting, followed by the removal of unwanted species by poison girdling. Officially adopted in 1948 as the Malayan Uniform System (MUS), it was well adapted to the post-war rise in market demand for light hardwood. The demand, especially for *meranti* (*Shorea*), resulted in tropical forestry’s shift away from

⁴⁹ G. Hawkins, “Marking Time in Malaya”, in *International Affairs*, 24, 1, 1948, p. 87.

heavy – to medium – and light hardwoods, reducing the harvesting cycles from 110-120 years to 70 years.⁵⁰

World War technology proved an indispensable aid to the restoration of forest management. Given the widespread invasion and destruction of forest reserves⁵¹ and the need for rapid inventorying before silvicultural work could commence, Malayan forestry was quick to take advantage of photographic reconnaissance. Ariel photography used extensively in India and Burma during World War II was made imperative by Communist insurgency in the immediate post-war years. Though considered too expensive for use in Indian forestry, photographic mosaics produced by the Royal Air Force were employed in the Peninsula to expedite the restoration of forest management,⁵² integral to civil order as to economic recovery.

The radical change in silvicultural policy intersected with the technological revolution in harvesting made possible by a number of innovations associated with the war. The post-war introduction of the monocyclic chainsaw replaced the polycyclic hand saw for the removal of all saleable trees in a single operation increasing the speed and spread of harvesting operations. Other technological innovations borrowed from the war facilitated mechanical extraction. Remarkable was the multi-purpose bulldozer, without which President Roosevelt claimed the war could never have been won. It proved ideal in difficult jungle terrain as a road maker, and as a tractor when fitted with bulldozer blades, replacing pre-war manual-, buffalo- and elephant haulage. The heavy loss of buffalos through disease or consumption during the war expedited the adoption of the tractor, complemented by another war residue, the

⁵⁰ Wyatt-Smith, *Manual for Malayan Silviculture* cit.

⁵¹ Perak, with some of the most extensive and productive forests in the Peninsula, 75 percent of forest reserves were estimated to have been damaged. Report, Collin Marshall, C.F.O. Perak, Dec. 1945, DF 119/45, n. 5.

⁵² "Aerial Forest Reconnaissance", in *Nature*, 158, 1946, pp. 562-563. Maj. Collin Marshall, Officer-in Charge-Forests, B.M.A. to Officer-in-Charge, Photographic Reconnaissance, RAF, HQ, Kuala Lumpur, 29 October 1945, DF, 38/45, No. 3A.

army truck for log conveyance. The 2-3 tons army vehicles, with log-hauling winches added, and known in local parlance as the *santai-wong* (“king of the jungle”), revolutionized Peninsular logging operations. It hauled swiftly and cheaply the 15 m logs generally used by sawmills and doubled as a “bus” for the daily transport of loggers into the jungle.⁵³ These radical changes, combined with the introduction of the chainsaw to replace the traditional axe and handsaw, increased the cost and effectiveness of harvesting the less valuable species for which there was an expanding market for post-war reconstruction. “Distance and steepness ceased almost overnight” and provided speed and efficiency for the pressing needs of pre-felling the large swaths of forest earmarked for post-war land development.⁵⁴

The intensity of logging interfaced with the increase in sawmill conversion leading to a radical change in forest policy that “management must in future cater for the sawmills”.⁵⁵ The projected four-fold increase in timber output was surpassed by the mercurial rise in output from under a million cu m in 1950 to around 13 million cu m³ by the 1990s, assisted by the new Selective Management System (SMS) that reduced the felling cycle to just 30-50 years – alarmingly short for biodiversity maintenance.⁵⁶

The technological and silvicultural innovations generated by World War II and the perceived needs of post-war development transported the Peninsula into an era of unprecedented forest exploitation, devastating to wildlife and the environment. The dominance of exploitation over conservation during the Japanese Occupation was tacitly endorsed by the 1957 constitution of the Independent Government of Malaya. It transferred all executive and administrative power over forests to the individual State Forest Departments under the jurisdiction of State governments, limiting

⁵³ P.A. Durnat, “31 Countries Buy Our Timber”, in *Progress: A Review of Malaysia's First Year of Independence*, Straits Times Press, Kuala Lumpur 1958, p. 32.

⁵⁴ Kathirithamby-Wells, *Nature and Nation* cit., pp. 252-253.

⁵⁵ Wyatt-Smith, *Manual for Malayan Silviculture* cit., III-11/4.

⁵⁶ Kathirithamby-Wells *Nature and Nation* cit., pp. 350-52, 395, 430.

the Chief Conservator to research and advisory functions.⁵⁷ The arrangement opened the way for power politics and corruption at local level, foreshadowed by *kaisha* control during the Occupation. Ironically, Malaysia's post-war timber production proved a windfall for Japan's industrial upswing. By the end of the last century Japan siphoned off some four-fifths of over 10 million cu m of Malaysian tropical wood for its plywood industry.⁵⁸ By this time, out of the 15 leading *sogo shoshas* (general trading houses) servicing the Japanese import sector, at least three (Nichimen, Mitsui and Mitsubishi) had risen out of the ashes of the war enterprise.

The flipside

Apart from the material impacts of the war, a little appreciated but crucial outcome of the war, in the long term, was the strengthening of human-environmental relations, superseding British-imposed spatial segregation. Challenging pre-existing traditions of free access to forests for subsistence, cash cropping, mining and cultivation, the British colonial economy was premised on ethnic-cum-economic compartmentalization. Under colonial rule, the core indigenous Malay community, which traditionally had enjoyed mobility and usufruct, was sedentized within Malay Reservations as a wet-rice-producing peasant community. Imaged as rural idylls, such communities were physically set apart from the immigrant Chinese cash-croppers and miners and the Indian plantation workers, officially regarded as aliens. Yet, "privileged" Malay status was compromised by forest laws that restricted access to the forest whether for subsistence swiddening or foraging. Moreover, forest laws suppressed pre-colonial inter-ethnic commercial interaction. The winners were the European planters and miners, in favour of whom the colonial economy was biased, with substantial gains for the Chinese commer-

⁵⁷ Ibid., pp. 205, 266-67.

⁵⁸ K.S. Jomo, "Malayan Forests, Japanese Wood: Japan's Role in Malaysian Deforestation", in *Japan and Malaysian Development: In the Shadow of the Rising Sun*, K.S. Jomo (ed.), Routledge, London 1994, pp. 187, 189.

cial – labour – and service sectors. The resentment this bred among the Malays surfaced during the inter-war years of economic depression. It contributed substantially to the Malay nationalist awakening and fed the socialist propaganda of the Malayan Communist Party founded in 1930.⁵⁹ A central issue was Malay claims to land. One Malay nationalist described the Malay Land Reservations as “land traps, in which Malays like sheep [are] allowed to eat only the grass inside the pen, while non-Malays, like wild animals, are given complete freedom to take their will outside”.⁶⁰ Seemingly, the British retreat in the face of the Japanese advance held a future of new possibilities.

The pre-War Malayan, with the exception of the forest-dwelling Orang Asli, was generally jungle-averse for fear of predators and forest spirits. Malay peasants engaged in paddy cultivation did not generally venture beyond the forest fringe for the daily needs of trapping and foraging. The Indian immigrant labourer, confined within the gloom of rubber estates, had even less reason to embrace the forest. The rise of the logging industry under colonial development encouraged the Chinese, operating within the security of *kongsis* (clans), to venture far into the forest; but their number was small relative to the urban-oriented traders and artisans. All this changed with the outbreak of war. The exigencies of food and the insecurity of Japanese rule soon dispelled earlier inhibitions and transformed perceptions of the forest from alien space to refuge, however great the rigours of jungle-living.

Sino-Japanese animosity secured the Malays their favoured status during the Occupation. It contributed in a number of ways to their renewed affinity with the land and the freedom to seek alternative means of livelihood. Given the diminished returns from smallholder

⁵⁹ G. Means, *Malayan Politics*, Hodder and Stoughton, London 1976, pp. 68-69.

⁶⁰ Mohd. Yunus Hamidi quoted in W.R. Roff, *The Origins of Malay Nationalism*, University of Malay Press, Kuala Lumpur 1976, p. 240. See also Kathirithamby-Wells, *Nature and Nation* cit., pp. 139-141. B. Watson Andaya and L. Andaya, *A History of Malaya*, Macmillan Press, Kuala Lumpur 1982, p. 251.

rubber through economic disruption, many sought the freedom to forage, cultivate swidden and hunt.⁶¹ Some took advantage of the pro-Malay policy to obtain licences to collect gums and resins such as gutta percha. On the part of the Chinese, those received into the Japanese timber industry often combined their livelihood interests with anti-Japanese subversion. Based in the logging camps on the forest fringe, they maintained vibrant clandestine networks for the supply of food and intelligence to the jungle-based guerrilla forces. A large number who suffered a sharp reversal in their business fortunes gained free access to rural land under the “Grow More Food” programme. Still others who suffered the brutality of the Japanese army garrisoned in the towns abandoned their urban strongholds to join the swell of unemployed coolies and the land-hungry to eke out a living on the forest edge.

For the Chinese forest refugees and the Communist guerrillas, the pre-war logging *kongsi* set the model for jungle survival. It fostered new sensibilities that drew people as much to nature as to each other. Chinese and Malay MPAJA guerrillas, bound by a common ideology – a phenomenon ordinarily rare – relied on the supply lines of squatter communities on the jungle fringe and the vital intelligence of a once disparaged aboriginal people (*Orang Asli*). All shared a common staple of sweet potatoes and maize, only occasionally supplemented by the much-preferred rice. The war broke ethnic barriers linking nature and people to a degree hitherto unknown.

Many urban-raised Chinese soon learned the codes of jungle survival and were drawn into a new intimacy with nature. They tracked the forest barefoot, learnt aboriginal ways of hunting and trapping and imbibed Malay folk tales of the much-loved mouse deer (*pe-landuk/ kancil: Tragulus javanicus*) and the were-tiger (*harimau jadian*). The pragmatics of survival included learning from the aborigines the time-worn indigenous skills of jungle survival.⁶² Chi-

⁶¹ P.H. Kratoska, *The Japanese Occupation of Malaya: A Social and Economic History*, Hurst & Co., London 1998, pp. 160-161.

⁶² S.F. Chapman, *The Jungle is Neutral*, Chatto & Windus, London 1949, pp. 185-186, 203.

nese-aboriginal relations were based on the long-established barter of jungle produce for salt and essentials. Their humane and friendly treatment, meted out with a measure of intimidation, and their not-infrequent cohabitation with aboriginal women, won the guerrillas vital network of food and intelligence.⁶³

Notwithstanding the environmental and human scars inflicted by World War II, the free run on land on which many were now able to make a claim, nurtured an affinity with the land for fomenting new concepts of identity. Though with Independence the politics of race and citizenship returned, the war experience, however brief, transformed immigrant perceptions of their adopted home. The war had made possible a claim on land and an intimacy with nature. This, and the decoupling of diasporic links with far-off ancestral lands, congruent with the new political order taking shape in Asia, lent the immediacy of the Malayan landscape a fresh meaning.

Conclusion

The environmental impacts of the Japanese Occupation of Malaya were the consequence of the unravelling of forest management by an army in cohort with corporate business, overriding the internationality of science. Post-war restitution of the forest service, in response to the exigencies of reconstruction and rising economic expectations was destined to follow a different trajectory. New silvicultural and harvesting techniques, assisted by technological innovations of World War II, effected a dramatic shift in forest policy from production for domestic consumption to commodification for an expanding global market. Happily, the back-to-nature experience of the war engendered new sensibilities and concepts of identity and citizenship. Hence from among the children of the very immigrants who collaborated in indiscriminately exploiting the land emerged Malaysia's first

⁶³ Anon., *War in Malaya, British Survey* cit. J. Leary, *The Importance of the Orang Asli in the Malayan Emergency*, Working Paper 56, Centre for Southeast Asian Studies, Monash University, Clayton 1989, p. 3.

generation of environmentalists, transcending ethnic boundaries, to challenge the forest attrition triggered by World War II.⁶⁴

⁶⁴ Kathirithamby-Wells, *Nature and Nation* cit., pp. 293-294.