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Some topics of research interest in the Matang Working Plan (2010–2019)

The Matang Working Plan (2010−2019) has been published (Roslan Ariffin & Nik Mohd Shah, 2013). Copies are available and can be purchased from the Perak State Forestry Department, Ipoh, Perak, Malaysia. In a new A4 format with a refreshing front cover (Fig. 1) and attractive layout, the hardcover document of 229 pages has 24 chapters, 9 maps, 3 boxes, 23 tables, 63 figures and 23 appendices. Illustrations including photos are relevant and of commendable quality.

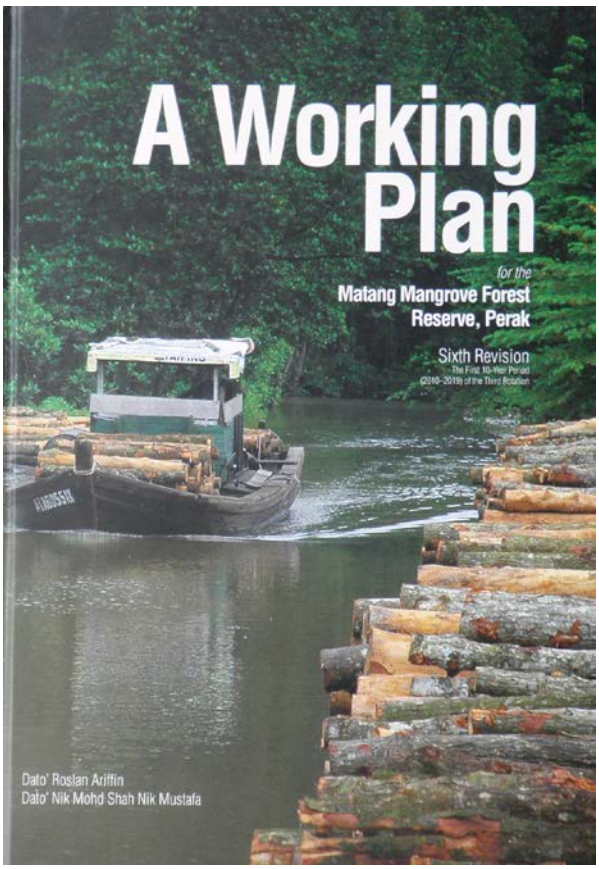

Fig. 1 The Matang Working Plan (2010–2019)

This revision has maintained the approach adopted by the previous 2000−2009 working plan in terms of zoning, silviculture, and allocation of final felling and intermediate sub-coupes. All the chapters have been retained to provide for continuity. The chapters on mangrove flora and fauna, and on forest products have been expanded, with a new chapter on research and development.

Management highlights

• *Total area*: 40,288 ha • *Management objectives*: To supply mangrove wood on a sustainable basis for the production of charcoal & poles • *Rotation*: 30 years • *Regulation of yield*: volume and area • *Silvicultural system*: Stick thinning, clear felling & direct planting of propagules • *Annual budget*: RM 2.8 million in revenue & RM 1.2 million in expenditure

The following topics needing research have been identified in the working plan:

- Monitor the succession from transitional *Avicennia* to *Rhizophora* forests, from transitional *Rhizophora* to dryland forests and reversion from dryland to *Rhizophora-Bruguiera* forests
- Determine the causes and effects of circular zones of dead trees occurring throughout Matang
- Evaluate the problem of collapsing old trees along riverbanks endangering boat navigation
- Screen mangrove plant species for pharmacological activities

The most significant change in this working plan is the 40% and 67% increase in the number of charcoal kiln and charcoal contractors allowed to operate in the Matang Mangroves, from 350 kilns and 86 contractors in the previous plan (Roslan Ariffin & Nik Mohd Shah, 2013). This has been attributed to the policy of the State Government of Perak to foster greater participation of Bumiputra entrepreneurs in the lucrative charcoal industry. With more participants, there is a need to maximize the availability of resource by allocating more forest for final felling. There is continuing high demand for charcoal from Matang especially from overseas markets such as Japan, which is consistent in yield and quality, and produced from the sustainably managed forests (Fig. 2).

Fig. 2 High quality Matang charcoal is packed for export

Based on the present working plan, there are at least three topics noteworthy of special mention as they are of research interest. They are the reversion dryland forest, circular zones of dead trees, and dolphins in Matang.

A unique forest type in Matang, the reversion dryland forest was first reported in the 2000−2009 working plan (Azahar Muda & Nik Mohd Shah, 2003). The forest found in Compartments 34 and 40 has enlarged considerably (Fig. 3). In the normal course of mangrove succession, *Rhizophora-Bruguiera* forest would transit into the dryland forest. In this situation, mangrove succession has reversed and such a natural phenomenon is rare in nature. Monitoring such a reverse successional pattern would provide insights into the processes involved. In Compartment 40, ground investigations revealed the formation of depressions and the existence of a small channel and inlet, which bring in regular inundation and water-dispersed propagules into the area. This probably explains the re-establishment of *Rhizophora-Bruguiera* forest in an otherwise dryland forest.

Fig. 3 A reversion dryland forest in Compartment 40 (left) and circular zone of dead trees (right)

Identified as a research topic in the working plan, circular zones of dead trees are prevalent in the Matang Mangroves (Fig. 3). These gaps, visible from aerial photographs and satellite images, have been attributed to lightning strikes (Amir, 2012). However, Ong & Gong (2013) considered the various possible causal factors including lightning strikes, fungal growth and stem borers. Their hypothesis is that water in the xylem vessels of the Rhizophoraceae are under very high tension (Ong et al., 1995) so that if enough of these water columns are broken due to xylem vessel embolism and cavitation (Clough, 2013), water can no longer be delivered to the shoots. This may explain the mass defoliation and mortality of trees where these gaps are formed.

Recently, dolphins made waves in the Matang Mangroves (Fig. 4). Groups of the Indo-Pacific humpback dolphin (*Sousa chinensis*) were sighted in Kuala Sangga (Ponnampalam, 2013). Their presence created much excitement as there had been no such previous sightings in Matang. A recent survey confirmed the presence of yet another species of dolphin, the Irrawaddy dolphin (*Orcaella brevirostris*). They have been recently sighted off the mudflats south of Kuala Sangga indicate that the species is likely to be distributed along the coast bordering the Straits of Malacca. No data is currently available on the distribution and ecology of dolphins in Matang, and it is not possible to assess the effects of the fishing industry on their populations.

Fig. 4 Dolphins in the Matang Mangroves (Photos by L.S. Ponnampalam)

Matang is the largest tract of mangroves in the world that has come under sustainable management for more than 100 years. The present working plan reflects the unwavering commitment of the State Government of Perak to continue managing the Matang Mangroves and their associated ecosystems sustainably.

The International Society for Mangrove Ecosystems (ISME) would like to congratulate the State Forestry Department and State Government of Perak for publishing the 2010−2019 working plan, which will guide the sustainable management of the Matang Mangroves for the coming decade. Prof. Shigeyuki Baba, the Executive Director of ISME, is proud to have received a copy of the book. It is being displayed as a reference document in the library of the Secretariat Office in Okinawa, Japan.

References

Amir, A.A., 2012. Canopy gaps and natural regeneration of Matang mangroves. *Forest Ecology and Management*, 269, 60–67.

Azahar Muda & Nik Mohd Shah, N.M. 2003. *A Working Plan for the Matang Mangrove Forest Reserve, Perak: The Third 10-year Period (2000-2009) of the Second Rotation (Fifth Revision)*. State Forestry Department, Perak, Malaysia, 320 pp.

Clough, B., 2013. *Continuing the Journey Amongst Mangroves*. ISME Mangrove Educational Book Series No. 1. ISME and ITTO, Japan, 86 pp.

Ong, J.E. & Gong, W.K., 2013. *Structure, function and Management of Mangrove Ecosystems*. ISME Mangrove Educational Book Series No. 2. ISME and ITTO, Japan, 71 pp.

Ong, J.E., Gong, W.K. & Clough, B., 1995. Structure and productivity of a 20-year-old stand of *Rhizophora apiculata* mangrove forest. *Journal of Biogeography*, 22, 417–424.

Ponnampalam, L.S., 2013. The dolphins of the Matang Mangroves. In: *A Working Plan for the Matang Mangrove Forest Reserve, Perak: Sixth Revision of the first 10-year Period (2010–2019) of the Third Rotation*. State Forestry Department of Perak, Malaysia, p. 110–112.

Roslan Ariffin & Nik Mohd Shah, N.M., 2013. *A Working Plan for the Matang Mangrove Forest Reserve, Perak: Sixth Revision of the first 10-year Period (2010–2019) of the Third Rotation*. State Forestry Department of Perak, Malaysia, 229 pp.

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