

EXECUTIVE SUMMARY

High Conservation Value (HCV) assessment for Pin-Supu Forest Reserve (PSFR) or known as Pin-Supu Forest Reserve (PSFR) area was carried out in two stages. An assessment and discussion with the management team, the representative from the community and Rakuno Gakuen University were carried out from 8–9th December 2014, and 15th January 2015. The main objective of this assessment is to enhance relevant information on the HCV elements within the PSFR area. The assessment was carried out by a multidisciplinary team with experienced assessors from various fields. Generally, there were 5 HCV elements which were elaborated for PSFR area. Appropriate management and monitoring actions have been recommended and discussed with the management team of PSFR for further actions to be undertaken.

One of the major recommendations is to enhance forest resource condition and tree diversity through various activities, design specifically for conservation purposes, especially on forest restoration and the silvicultural treatment on schedule blocks which were mentioned in the FMP. Through the analysis of the many species recorded, about 85% of the species have yet to be assigned IUCN status and not much research work has been conducted on such species, especially within the flora group. Therefore, by looking at the current condition of the PSFR area, it is essential for actions to be taken in setting the entire PSFR area for conservation, consisting of lowland forest below 200 m in elevation and freshwater swamp habitats with the aim to preserve the species diversity and also taking into account of species that are unique to particular forest types. It is recommended that further studies should be done in understanding and documenting the rich flora and fauna diversity within PSFR area.

On a landscape level (HCV 2), PSFR area is part of the Kinabatangan floodplain ecosystems. Pin-Supu FR consists of three units of land separated by highway and rivers at considerable distance. In the mosaic landscape of the Kinabatangan, Blocks A and B border onto other protected area, such as Lot 8 in the west and Lot 7 of the Wildlife Sanctuary. However, Block C is completely isolated and being surrounded by oil palm estates. HCV fauna assessment has shown that diverse fauna can be found within the PSFR area. Therefore, PSFR does not only provide habitats for the fauna but also acts as a transient wildlife migratory path between the different forest reserves it borders.

Most of PSSFM boundaries are commonly shared with oil palm estates, local communities and other stateland, such as Sandakan–Lahad Datu highway that splits between Block A and Block B. During the significant drought in 1997, large tract of the peatswamp and freshwater swamp forests in Block A was burnt. Therefore, the Sustainable Forest Management (SFM) Division of Sabah Forestry Department has prepared a Forest Fire Management Plan to develop and manage the detection,

prevention and eradication of forest fire in the PSFR. Buffer strips of 50 m inside PSSFM boundary providing barriers from fire from adjacent areas were identified.

From the social aspect, there is no major conflict by the surrounding villages with the sustainable management of PSFR as there is no community use in the reserve. The only cultural value element (HCV 6) that has been identified is the management of Supu Caves by community cooperative initiative (KOPEL) that warrant sustainable harvesting of edible bird nests and protection of the limestone caves. Many of the villages are aware of the Forestry Rules and Law, and also the management team frequently engages with them on the protection of the reserve through restoration programme and join monitoring exercise under the training of NAHIYA project. Their understanding to protect forest reserve and its content was also part of their role as stakeholder within the management unit of the area. There is much effort initiated by the Sabah Forestry Department to manage and to ensure the goal set aside for PSFR area is consistent with the social needs and development adjacent to it and to achieve maximum equilibrium on environment, social and economic aspects in general.

Table 1: The followings are the findings of HCV elements in PSFR area and the management and monitoring recommendations for each HCV.

HCV	Findings	Management Prescription	Monitoring
1.1	Pin-Supu Forest Reserve is Class VI Protection Forest.	Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities, such as encroachment and poaching.	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes.

1.2	<p>The presence of considerably high number of high conservation significant fauna and flora from both past research findings and the recent HCV assessment may conclude that PSFR is an important natural plant habitat or for wildlife nesting and foraging habitats.</p>	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities, such as encroachment and poaching. • Establish a long term biodiversity monitoring system for critical forest ecosystem, flora and fauna. • If the management team discover high conservation value plant species (IUCN red list, prohibited species under Sabah Foretry Department, CITES and Sabah Wildlife Enactment) as listed in Appendix II, in permanent sample plots and nature trails in PSSFM area, they should be clearly marked on the ground and on the maps. • Migratory pathway of wildlife on logging roads, along streams or wildlife trails in the forest should be marked on the map and kept to ensure wildlife are able to use it for movement within and between forest reserves. • Collaboration amongst department, private land owners and individuals surrounding the proposed wildlife crossing is crucial in setting up connectivity that will allow movement of wildlife between Block A and Block B of PSFR. • Field staff is required to attend training courses on plants and wildlife to further enhance their botanical and wildlife knowledge on species that are currently listed in the threatened, endemic and forestry prohibited lists to ensure they do not harvest or damage and also for monitoring purposes. • Update current biodiversity conservation status to 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes. • Periodical monitoring by conducting re-enumeration of the trees in the permanent sample plots to be conducted once every three years to get an indication of changes in tree structure and species assemblages. • Periodical monitoring of endangered, endemic and migratory wildlife species will be practiced using Wildlife Management System adopted by the management team. Any changes in terms of population count or migratory pathways observed by either researchers or ground staffs, the management team must be alerted. Similarly, this monitoring prescription also applies to endangered and endemic plant.
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		<p>management team of the upgrade or downgrading of threat status locally and globally.</p>	
1.3	The presence of considerably high number of endemic fauna and flora from both past research findings and the recent HCV assessment may conclude that this FMU unit is an important natural plant habitat or for wildlife nesting and foraging habitats.	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities, such as encroachment and poaching. • Establish a long term biodiversity monitoring system for critical forest ecosystem, flora and fauna. • If the management team discover endemic plant species in permanent sample plots and nature trails in PSFR area, they should be clearly marked on the ground and on the maps. • Migratory pathway of wildlife on logging roads, along streams or wildlife trails in the forest should be marked on the map and kept to ensure wildlife are able to use it for movement within and between forest reserves. • Collaboration amongst department, private land owners and individuals surrounding the proposed wildlife crossing is crucial in setting up connectivity that will allow movement of wildlife between Block A and Block B of PSFR. • Field staff is required to attend training courses on plants and wildlife to further enhance their botanical and wildlife 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly Progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring attributes. • Periodical monitoring by conducting re-enumeration of the trees in the permanent sample plots to be conducted once every three years to get an indication of changes in tree structure and species assemblages. • Periodical monitoring of endangered, endemic and migratory wildlife species will be practised, using Wildlife Management System adopted by the management team. Any changes in terms of population count or migratory pathways observed by either researchers or ground staffs, the management team must be alerted. Similarly, this monitoring

		<p>knowledge on species that are currently listed in the threatened, endemic and forestry prohibited lists to ensure they do not harvest or damage and also for monitoring purposes.</p> <ul style="list-style-type: none"> • Update current biodiversity conservation status to PSSFM team of the upgrade or downgrading of threat status locally and globally. 	<p>prescription also applies to endangered and endemic plants.</p>
2	Block A and B of PSFR should be categorised as HCV 2 due to its crucial location potential for linking Kinabatangan Floodplain between Lot 8 in the west and Lot 7 in the east of the Kinabatangan Wildlife Sanctuary.	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities such as encroachment and poaching. • Establish a long term biodiversity monitoring system for critical forest ecosystem, flora and fauna. • Migratory pathway of wildlife on logging roads, along streams or wildlife trails in the forest should be marked on the map and kept to ensure wildlife are able to use it for movement within and between forest reserves. • Collaboration amongst department, private land owners and individuals surrounding the proposed wildlife crossing is crucial in setting up connectivity that will allow movement of wildlife between Block A and Block B of PSFR. 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes. • Periodical monitoring by conducting re-enumeration of the trees in the permanent sample plots to be conducted once every three years to get an indication of changes in tree structure and species assemblages. • Periodical monitoring of endangered, endemic and migratory wildlife species will be practised, using Wildlife Management System adopted by the management team. Any changes in terms of population count or migratory pathways

			<p>observed by either researchers or ground staffs, the management team must be alerted. Similarly, this monitoring prescription also applies to endangered and endemic plants.</p> <ul style="list-style-type: none"> • Long term monitoring of PSFR landscape using remote sensing technology and to be conducted once every three years to detect changes within the reserve and also vicinity areas. If threats are detected, precautionary approached will be taken and potential mitigation measures will be incorporated in the management plan.
3	The forests located below 200 m a.s.l contain rare, endangered, threatened and also endemic species and thus appropriate to be categorised as HCV 3.	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities such as encroachment and poaching. • Establish a long term biodiversity monitoring system for critical forest ecosystem, flora and fauna. 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes. • Periodical monitoring by conducting re-enumeration of the trees in the permanent sample plots to be conducted once every three years to get an indication of changes in tree structure and species

			assemblages.
4.2	All areas with slopes >25° and 30 m riparian buffer strips should be categorised as HCV 4.2 for their importance in erosion control.	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities such as encroachment and poaching. • Demarcation of HCV boundaries on the ground and installing clear signage along existing road, foot trails and navigable riversstreams indicating critical values, especially 30 m strip riparian reserve along both sides of the river. 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes.
4.3	Buffer strips of 50 m inside PSFR boundaries that border local community land and northern boundary that bordering oil palm estate are categorised as HCV 4.3.	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in all designated HCV areas to curb illegal activities such as encroachment and poaching` • Demarcation of HCV boundaries on the ground and installing clear signage along existing road, foot trails and navigable riversstreams indicating critical values, especially 50 m strip firebreak forest. • The Forest Fire Management Plan is available and should be implemented and updated periodically. • Forest restoration of indigenous tree species as part of the remedial action to 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the buffer zone. Any signs of encroachment should be reported and dealt with immediate actions. • Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing reporting of monitoring results of known HCV attributes. • Ensure that all fire prevention procedures (monitoring, fire drills, public awareness campaign, etc.) to be practiced on a

		<p>increase forest structural diversity and mitigate any forest fire incidence spreading into the FMU core area, especially area dominated with lalang grassland and ferns.</p>	<p>regular basis (at least once a year), especially during the drought season.</p>
6	Sustainable harvesting of edible bird nests and protection of Supu Caves by KOPEL.	<ul style="list-style-type: none"> • PSFR management team are to constantly conduct meeting with the village representatives to mitigate any potential issues pertaining to the management of HCV 6. • Boundary of the Supu Caves in PSFR area should be clearly mark on the ground and on the map (HCV 6). 	<ul style="list-style-type: none"> • The designated HCV 6 should be jointly monitored and maintained by the PSFR management team and local communities.