

ANALYSIS REPORTS ON THE EFFECTIVENESS OF HCV MONITORING IN NORTHERN GN RARA SFM PROJECT.

1.0 Objectives:

1. To evaluate the effectiveness by which HCV management and protection measures to maintain and/ or enhance the pertinent conservation attributes
2. As a guidance for Forest Manager to modify/ adjust/ enhance HCV management prescription to cater for any weaknesses
3. To comply with FSC indicator 9.4.3 and to close Minor CAR in the last surveillance audit

References:

- Annual Report 2013
- Annual Report 2014
- Annual Report 2015
- Wildlife monitoring report 2014
- Wildlife monitoring report 2015
- Wildlife monitoring report 2016
- Quarterly wildlife monitoring 2014-2016
- List of Enforcement Activities/ Arrests/ Prosecution Cases 2013 – 2016
- High Conservation Values in Northern Gunung Rara Forest Management Unit: Assessment Report and Management Recommendations (July 2016)

2.0 HCV Attributes/ Elements found in Northern Gn Rara SFM Project area, the management prescription and monitoring activities:

HCV	Findings	Management Prescription	Monitoring
1.1	NorthernGunung Rara Sustainable Forest Management Project Area is about 55,942.6 ha and consist of four Totally Protected Area, i.e. Mt Magdalena FR (Class I), Batu Timbang FR (Class VI) and Imbok FR (Class VI).	<ul style="list-style-type: none"> • All designated HCV areas are manage under natural forest Management and no conversion of forest is permitted. • Conduct periodic patrolling and surveillance in accessible HCV areas to curb illegal activities such as encroachment and poaching. Any signs of encroachment should be reported and dealt with immediate actions. • Demarcation of HCV boundaries on the ground for all designated HCVs within the TPAs is not required Since 100 % overlaps occurred among other HCV elements. 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the FMU. • Twice yearly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan (AWP), encompassing • reporting of monitoring results of know HCV attributes
1.2	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 NGR project area 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 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 Forestry Department CITES and Sabah Wildlife Enactment) as listed in Appendix II, in permanent sample plots and nature trails in NGR project area, they should be clearly marked on the ground and on the maps. • Migratory pathway of wildlife on logging roads, along streams or wildlife 	<ul style="list-style-type: none"> • Periodic monitoring and control should be carried out to prevent encroachment in the HCV areas. 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. • Periodic monitoring by conducting re-enumeration of all the trees in the permanent

		<p>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.</p> <ul style="list-style-type: none"> 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 management team of the upgrade or downgrading of threat status locally and globally. 	<p>sample plots and to be conducted once every three years to get indication of changes in tree structure and species assemblages.</p> <ul style="list-style-type: none"> Periodic 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.
1.3	<p>The presence of considerably high number of endemic fauna and flora from both past research findings and the recent HCV assessment may conclude that NGR project area is an important natural plan habitat or for wildlife nesting and foraging habitats.</p>	<ul style="list-style-type: none"> Conduct periodic patrolling and surveillance in designated HCV areas to curb illegal activities, such as encroachment and poaching. Any signs of encroachment should be reported and dealt with immediate actions. 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 Forestry Department, CITES and Sabah Wildlife Enactment) as listed in Appendix II, in permanent sample plots and nature trails in NGR project 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. 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 	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the HCV areas. 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. Periodic monitoring by conducting re-enumeration of all the trees in the permanent sample plots and to be conducted once every three years to get indication of changes in tree structure and species assemblages. Periodic 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
1.4	<p>The limestone karst in Batu Timbang FR is an important nesting site for swiftlet, bats and other troglifauna.</p>	<ul style="list-style-type: none"> Conduct periodic patrolling and surveillance in designated HCV areas to curb illegal activities such as encroachment and poaching. Any signs of encroachment should be reported and dealt with immediate actions. In the event that any salt licks and potential nesting sites are found within the NGR area in the future, demarcation of HCV boundaries on the ground and installing clear signage along existing road, foot trails and navigable rivers/streams indicating critical values. 	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the HCV area. In the event that any salt licks and potential nesting sites are found within the NGR project area in the future, periodic monitoring as prescribed above will be conducted.
2	<p>NGR project area forms a critical link that connects the three larger undisturbed natural forest of protected areas, namely Danum,</p>	<ul style="list-style-type: none"> Conduct periodic patrolling and surveillance in designated HCV areas to curb illegal activities such as encroachment and poaching. Any signs of 	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the FMU.

	<p>Imbak Canyon and Maliau Basin forest reserves to support greater landscape connectivity of lowland areas.</p>	<p>encroachment should be reported and dealt with immediate actions.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. • Periodic monitoring by conducting re-enumeration of all the trees in the permanent sample plots and to be conducted once every three years to get indication of changes in tree structure and species assemblages. • Periodic 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 prescription also applies to endangered and endemic plants. • Long term monitoring of NGR landscape using remote sensing technology and produce forest quality map to be conducted once every three years to detect changes within the reserve and also vicinity areas. If threats are detected, precautionary approach will be taken and potential mitigation measures will be incorporated in the management plan.
3	<p>There are considerable number of plants and animals species but Low in abundance value, including mammals, birds and insects that are listed as endangered or endemics especially those residing in the extreme lowland classified as mixed dipterocarp with mixture of kerangas forest and limestone vegetation.</p>	<ul style="list-style-type: none"> • Conduct periodic patrolling and surveillance in designated HCV areas to curb illegal activities such as encroachment and poaching. Any signs of encroachment should be reported and dealt with immediate actions. • 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 HCV areas. • Twice yearly 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. • Periodic monitoring by conducting re-enumeration of all the trees in the permanent sample plots and to be conducted once every three years to get indication of changes in tree structure and species assemblages.
4.1	<p>No area known in NGR to provide as immediate source of water to the</p>	<ul style="list-style-type: none"> • No HCV area is indicated 	<ul style="list-style-type: none"> • No HCV area is indicated

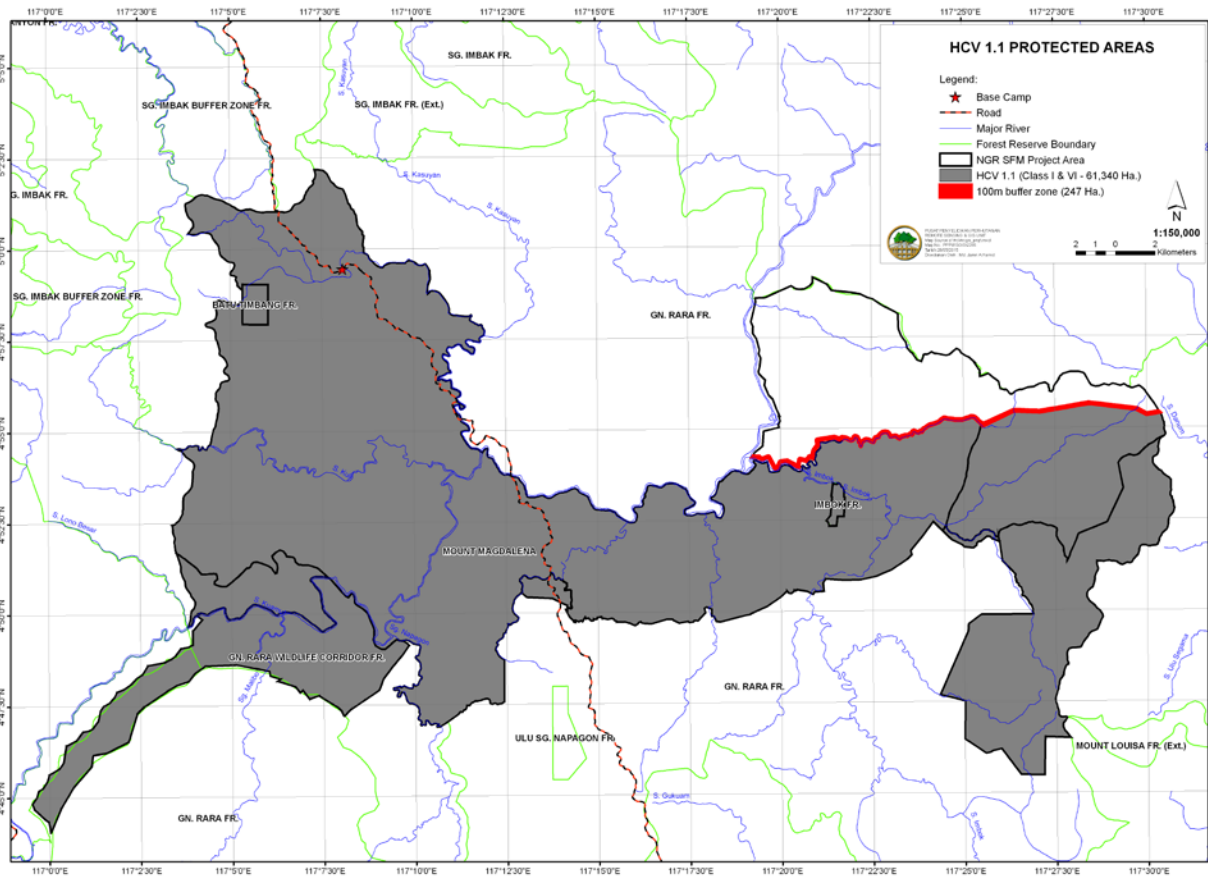
	surrounding community.		
4.2	All areas with slopes >25° and 30 m riparian buffer strips should be categorised as HCV 4.2 for their importance in erosion control.	<ul style="list-style-type: none"> Conduct periodic patrolling and surveillance in designated HCV areas to curb illegal activities such as encroachment and poaching. Any signs of encroachment should be reported and dealt with immediate actions. 	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the HCV areas. Quarterly progress reports in reporting of the progress of activities as prescribed in the approved Annual Work Plan.
4.3	Forest barrier of 50 m inside the southern boundaries of NGR project area 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. Any signs of encroachment should be reported and dealt with immediate actions. The Forest Fire Management Plan has to be updated periodically. Identification of low vegetation structure that is susceptible to catch fire, i.e. grasslands and shrubs along the 50 m band inside the FMU boundaries is crucial. Forest restoration of Indigenous tree species as part of the remedial action to increase forest structural diversity and mitigate any forest fire incidence spreading into the FMU core area, especially area dominated with lalang grassland and ferns. 	<ul style="list-style-type: none"> Periodic monitoring and control should be carried out to prevent encroachment in the forest barrier. Twice yearly 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 regular basis (at least once a year), especially during the drought season.
5	No community basic need is indicated within NGRSFM.	<ul style="list-style-type: none"> No HCV area is indicated 	<ul style="list-style-type: none"> No HCV area is indicated
6	The mixed dipterocarp forest and limestone vegetation of VJR Batu Timbang are categorized as HCV 6 to depict the cultural value importance for nine <i>teriti</i> of Kg Kuamut	<ul style="list-style-type: none"> Establish a long term biodiversity monitoring system for critical forest ecosystem (HCV 6). NGR management team are to constantly conduct meeting with the village representatives to mitigate any potential issues pertaining to the management of HCV 6. 	<ul style="list-style-type: none"> The designated HCV 6 should be jointly monitored and maintained by the NGR management team and the nine <i>teriti</i> of the edible bird's nest collection.

3.0 Summary of Monitoring Activities and actions taken according to HCV Attributes/ Elements by the Project Team:

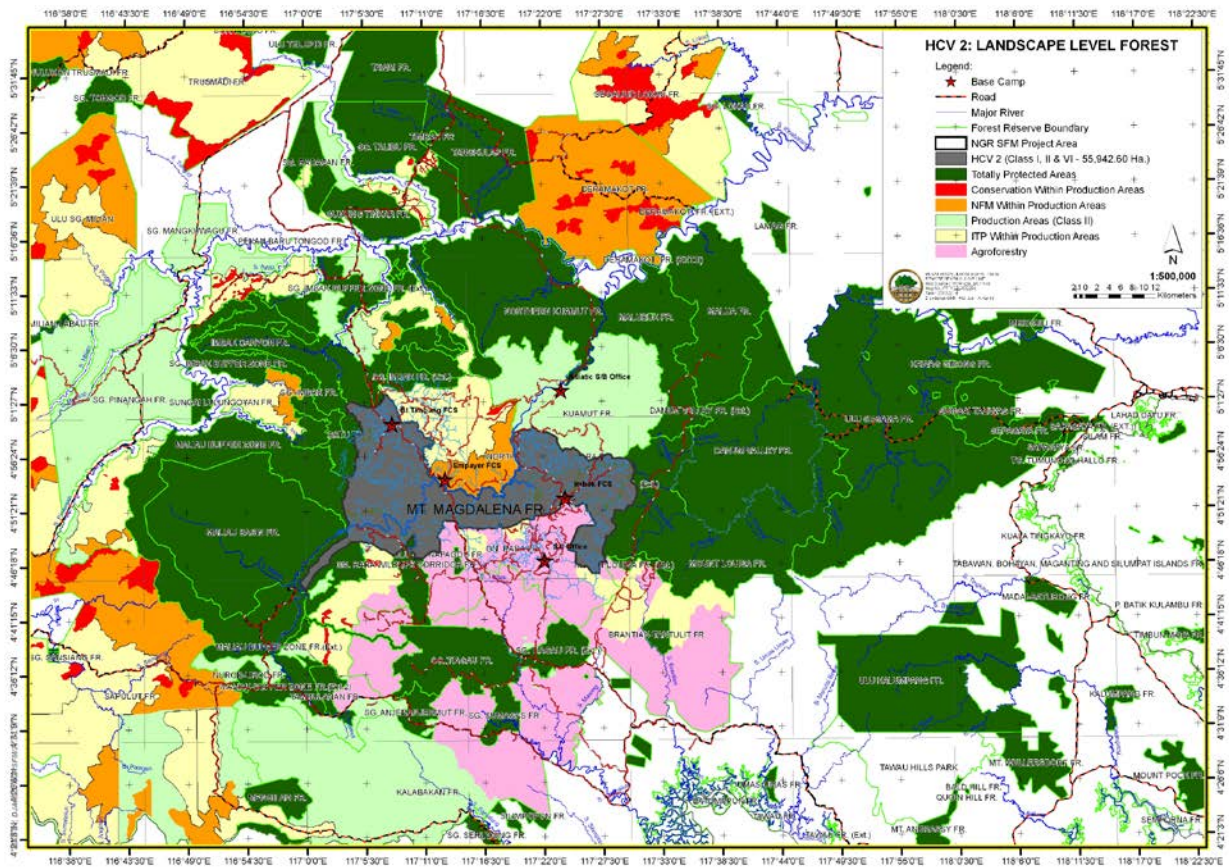
HCV		Monitoring activities and actions taken by Project Team
1	1.1	<ul style="list-style-type: none"> Patrolling was conducted all year round Aerial surveillance conducted twice or more yearly
	1.2	<ul style="list-style-type: none"> Inspection of boundaries Re-brushing of main boundaries Establishment of enforcement gates to curb poaching activities and entering without permit
	1.3	<ul style="list-style-type: none"> Establishment of two Forest Checking stations for enforcement and monitoring Consultation with birds nest collectors' and committee was formed.
	1.4	<ul style="list-style-type: none"> Wildlife monitoring activities conducted extensively, reporting by quarterly and yearly. Four methodologies were used i.e. camera traps, recce walk, night drive survey and Opportunistic sighting. Establishing PSP Plots and yearly maintenance, re-enumeration conducted in every 3 years Proper signboards were erected at all main boundaries, as well as all

		identified HCV area
2		<ul style="list-style-type: none"> ▪ Patrolling was conducted all year round ▪ Aerial surveillance conducted twice or more yearly ▪ Inspection of boundaries ▪ Re-brushing of main boundaries ▪ Establishment of enforcement gates to curb poaching activities ▪ Establishment of two Forest Checking stations for enforcement and monitoring ▪ Wildlife monitoring activities conducted extensively, reporting by quarterly and yearly. Four methodologies used i.e. camera traps, recce walk, night drive survey and Opportunistic sighting. ▪ Establishing PSP Plots and yearly maintenance, re-enumeration conducted in every 2 years ▪ Proper signboards were erected at all main boundaries, as well as all identified HCV area
3		<ul style="list-style-type: none"> ▪ Patrolling was conducted all year round ▪ Aerial surveillance conducted twice or more yearly ▪ Inspection of boundaries ▪ Re-brushing of main boundaries ▪ Establishment of enforcement gates to curb poaching activities ▪ Establishment of two Forest Checking stations for enforcement and monitoring ▪ Wildlife monitoring activities conducted extensively, reporting by quarterly and yearly. Four methodologies used i.e. camera traps, recce walk, night drive survey and Opportunistic sighting. ▪ Establishing PSP Plots and yearly maintenance, re-enumeration conducted in every 2 years ▪ Proper signboards were erected at all main boundaries, as well as all identified HCV area
4	4.1	<ul style="list-style-type: none"> ▪ No area known in NGR that corresponds with HCV (4.1). However, yearly assessments of water quality at designated water samples plots were done. ▪ Patrolling was conducted all year round to curb illegal activities such as encroachment to steep areas and riparian ▪ Aerial surveillance conducted twice or more yearly ▪ Inspection of boundaries ▪ Re-brushing of main boundaries ▪ Establishment of enforcement gates to curb poaching activities ▪ Establishment of two Forest Checking stations for enforcement and monitoring ▪ Establishing PSP Plots and yearly maintenance, re-enumeration conducted in every 3 years ▪ Proper signboards were erected at all main boundaries, as well as all identified HCV area ▪ Forest Fire Management Plan was made available September 2016 forest fire awareness to stakeholders and contractors ▪ Fire drill was conducted on the 5th of April 2017 ▪ Periodic monitoring of Environmental was done according to prescription from the Environmental Impact Assessment report
	4.2	
	4.3	
5		No area known in NGR that corresponds with HCV (5).
6		<ul style="list-style-type: none"> ▪ Consultation with birds nest collectors and committee was formed.

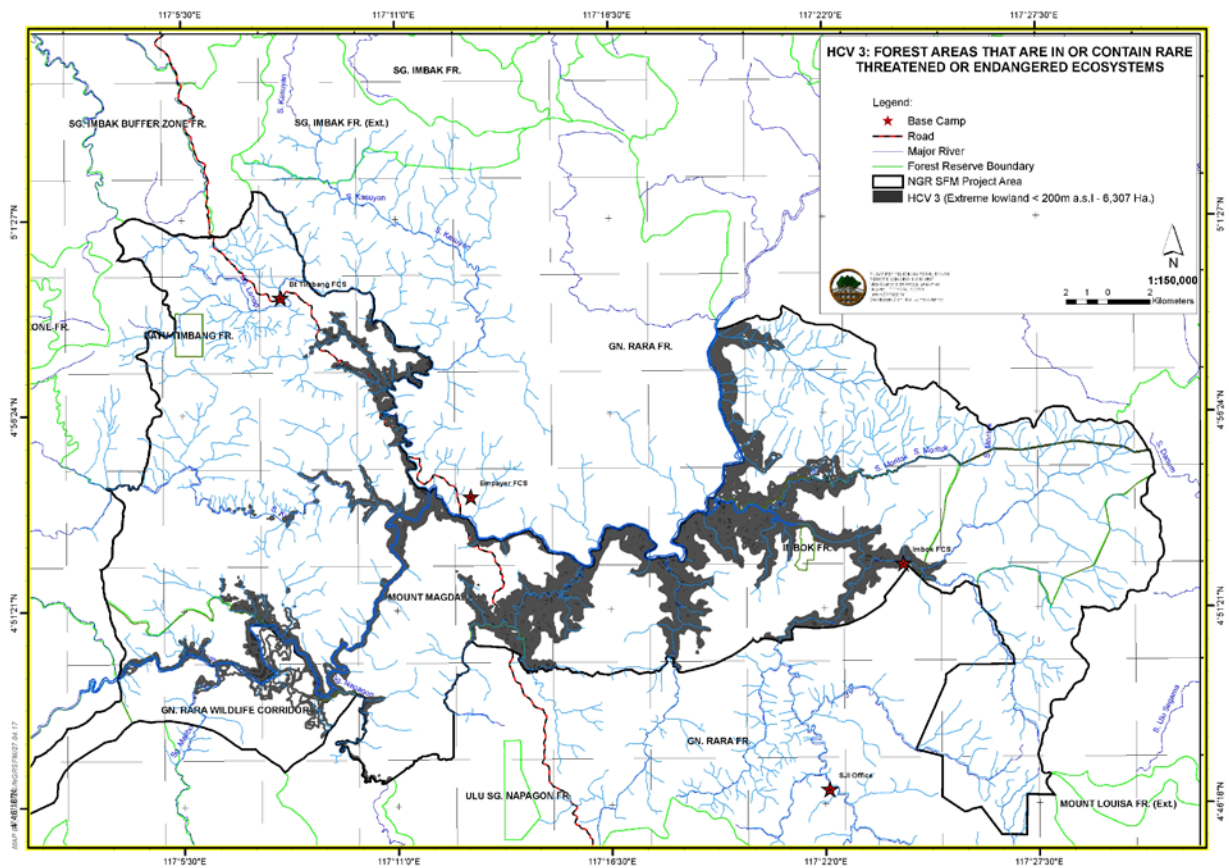
- After several Bird Nest's Stakeholder Consultations had been conducted, the Social Forestry Committee had agreed to come up with a cooperation agreement. The purpose of the cooperation agreement is to have an agreement between SFD (NGR SFM Project and the Teritis' and Heirs of the Bird Nest's collectors) on on certain issues (i.e Rules & Regulations, State Forest Policy, etc), without disregarding the welfare of the Teritis' and Heirs of the Bird Nest's collectors.



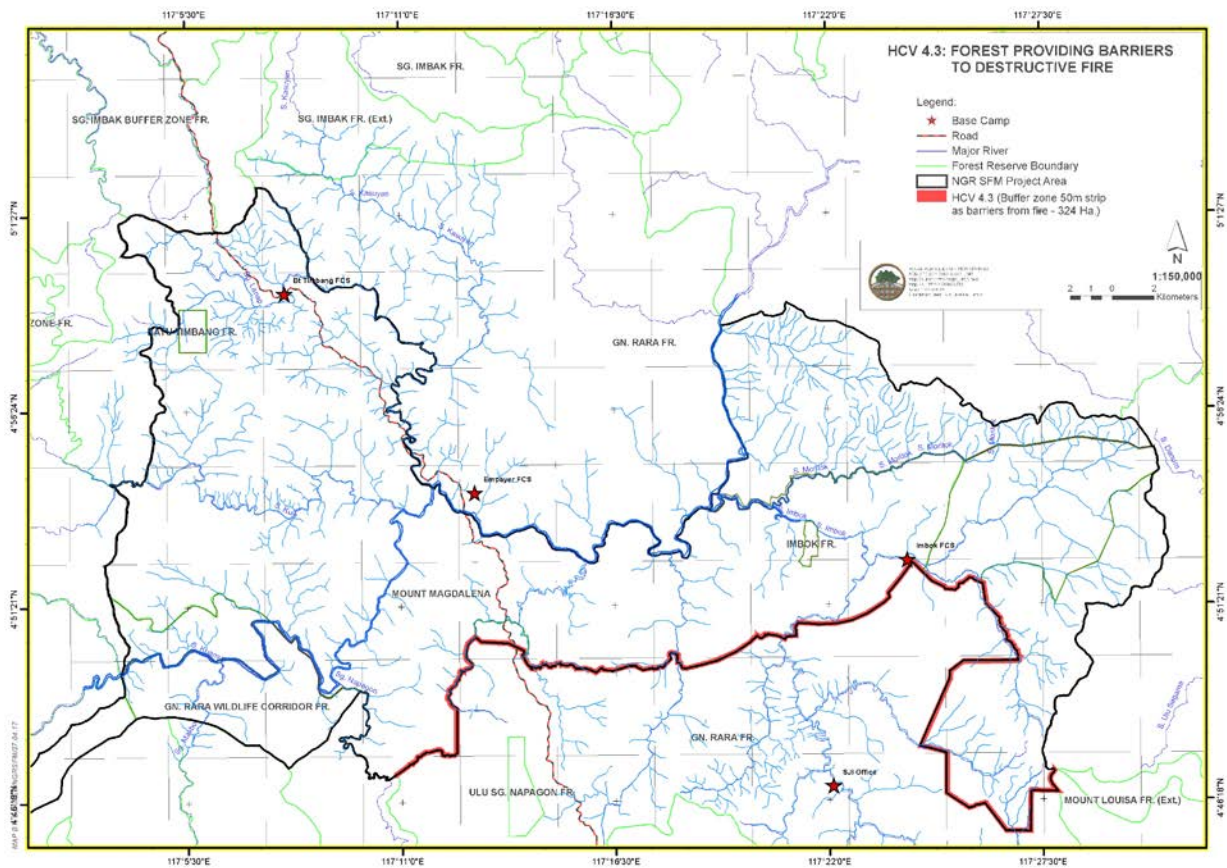
Map of HCV 1: Biodiversity Value



Map of HCV 2: Landscape Level Forest



Map of HCV 3: Forest Areas that are in or Contain Rare Threatening or Endangered Species



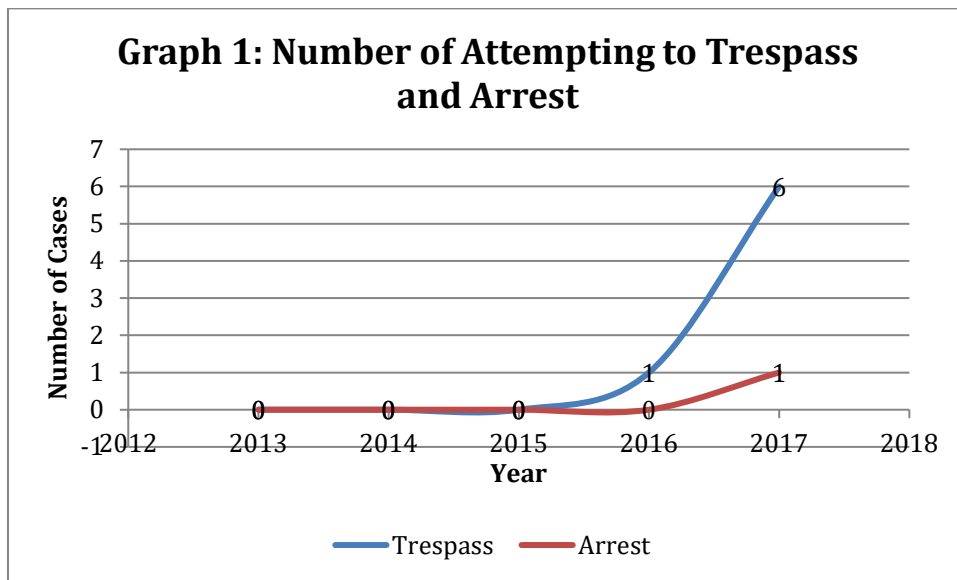
Map of HCV 4.3: Forest Providing Barriers to Destructive Fire

4.0 Effectiveness of monitoring program and enhancements by activities:

Based on the summary and monitoring activities table above, the effectiveness of the monitoring activities can be elaborated as follows:

1. Patrolling and aerial surveillance, enforcement, arrests, prosecution

Based on the Annual Reports 2013-2017, occurrence of poachers trying to enter without permission into the project area had increased from (1) case in 2016, (6) cases in 2017 (entering without permission). There were no arrests made from 2013-2016. There is only one arrest made in 2017.



Apart from that, the team conducts the aerial surveillance yearly. Data from year 2014-2016 shows that the aerial surveillance had been conducted, but not in the consistency of frequency of doing the aerial survey, as per table below:

Year	Frequency (Hours)
2014	8 Hours
2015	6 Hours
2016	2 Hours

2. Inspection of boundaries and re-brushing of main boundaries, and installing of proper signage along the main boundaries of NGR SFM

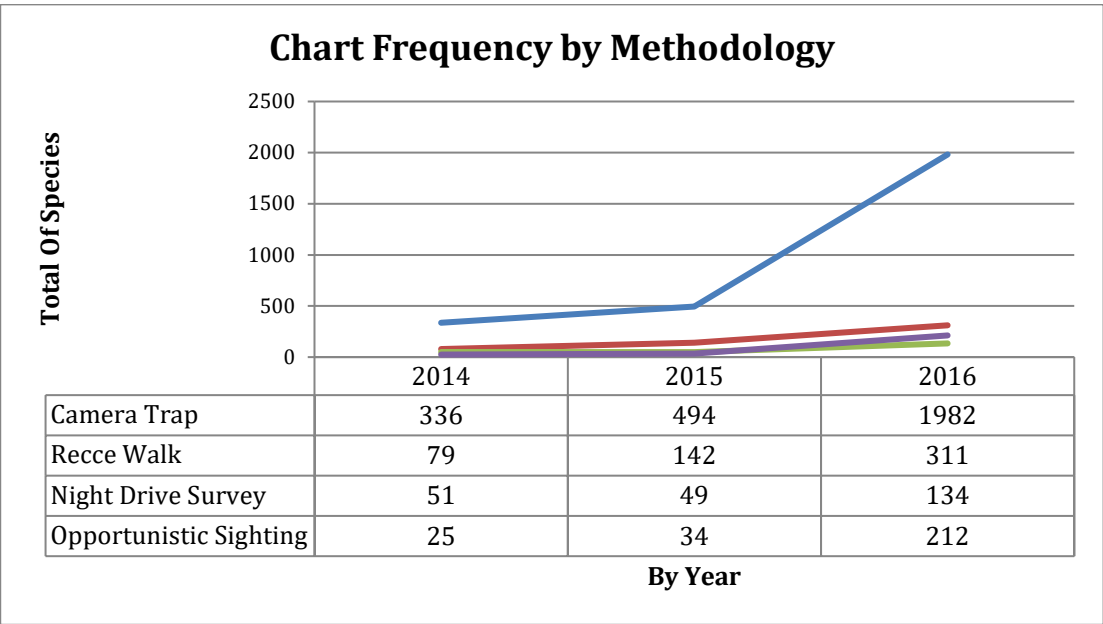
As stated in the AWP 2014 – 2016 and also Compliance Report 2014-2016, the inspection and re-brushing of main boundaries was conducted yearly. This corresponds to the responsibility of the team Management to protect the project area and installing of proper signages to ensure that all the stakeholders are aware of entering the area.

There are few signages had been placed as follow:

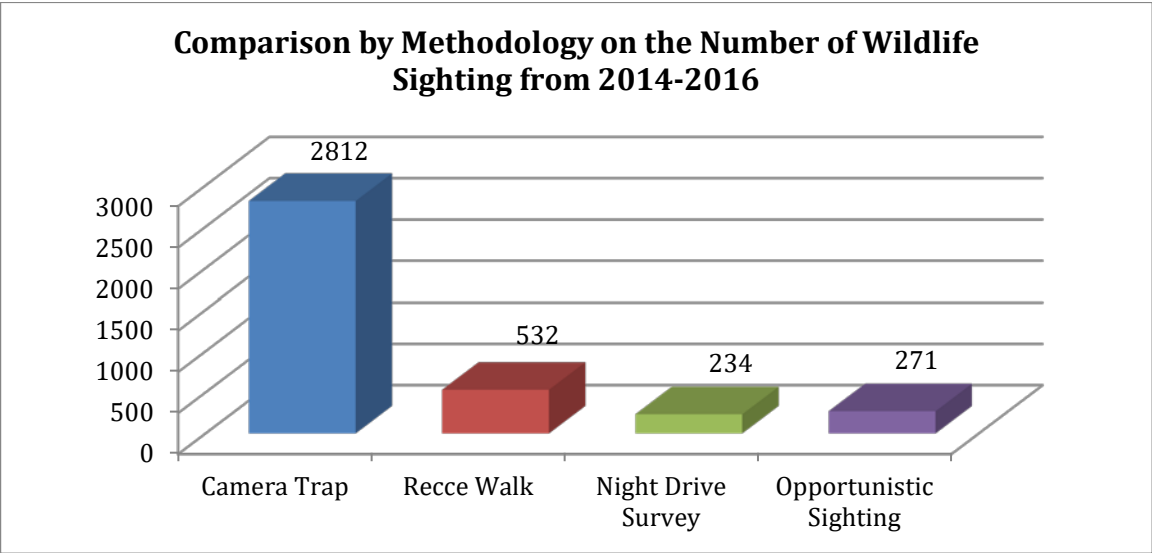
- a) Project signboards on all entries.
- b) Warning signboards on all entries.
- c) Safety signage.
- d) Riparian signage.
- e) HCV signage.
- f) PSP signage.
- g) Enforcement signage.
- h) Prohibited activities signage.

3. Wildlife Monitoring program

Based on the yearly report of Wildlife Monitoring, quarterly report and annual report, there are four (4) methodology of wildlife monitoring program in NGR SFM Project Area i.e. camera traps, recce walk, night drive survey and Opportunistic sighting. The frequency of data collection increases every year, are shown in the graph below:

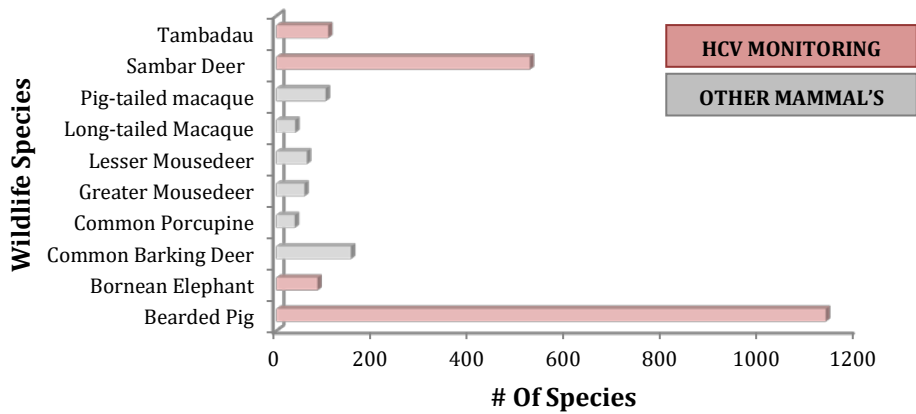


Based on the chart, the frequency of monitoring increases exponentially and this translates to better data coverage and better patrolling coverage.

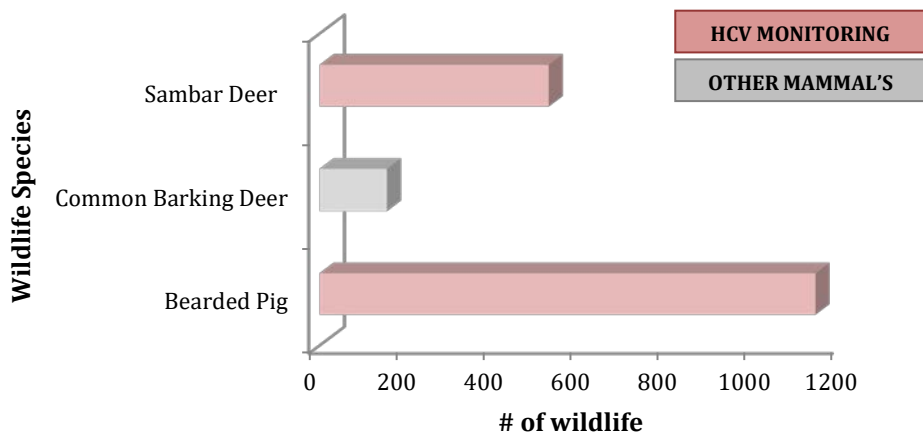


The table above shows the abundance of wildlife detected for all methodologies.

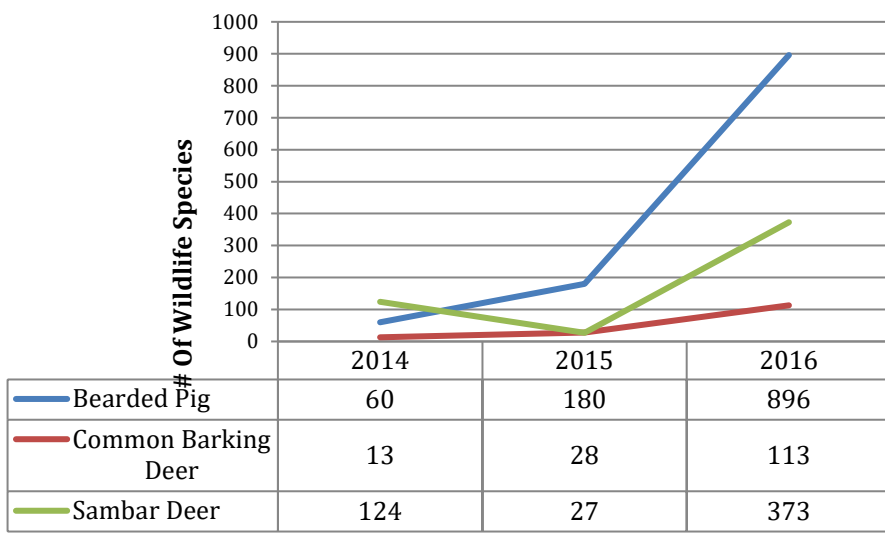
Top 10 Wildlife Detected by Camera Trap (2014-2016)



Top 3 Wildlife Detected by Camera Trap (2014-2016)



Top 3 Wildlife Sighting by Year



4. Establishment of enforcement gates and Forest Checking Stations.

The Project team has managed to established enforcement gates and new Forest Checking Stations at new locations, in regards to the team's responsibility to safeguard the HCVs as a whole. The two new established Forest Checking Stations are FCS Bt Timbang and FCS Imbok. FCS Bt Timbang was established due to the frequent number of complaints received on poachers entering from the northwestern route of the project area. It has another significant purpose that is to monitor the entering of the bird's nest collectors to Bt. Timbang cave. The FCS is manned 24 hours seven days a week by rotation of staffs.

Based on the bird's nest scaling data, about 152 kg were taken out from the Bt. Timbang cave to date.

5. Establishing PSP Plot and yearly maintenance.

Re-enumeration was done every 3 years. There are a total of 11 PSP Plots being established from 2014 onwards, and one newly established PSP Plot is made available in 2017. All the plots represented by certain type of forest condition as follow:

- a) Good forest silviculturally treated.
- b) Good forest not treated silviculturally.
- c) Swamp forest.
- d) Degraded forest.
- e) Buffer.
- f) Steep area.
- g) Lowland mixed dipterocarp forest.

6. Consultation with bird's nest collector and forming a committee.

To date, five times of meeting and consultation with the Bird's Nest Collector were conducted. Committee of Bird's Nest Collectors was formed the outcome of this meetings and consultations that a cooperation agreement, was agreed between SFD (NGR SFM Project and the Teritis' and Heirs of the Bird Nest's collectors). Certain issues (i.e Rules & Regulations, State Forest Policy, etc), without disregarding the welfare of the Teritis' and Heirs of the Bird Nest's collectors had been included in the cooperation agreement.

Results/Outcomes for HCV management prescription and effectiveness of monitoring and enhancement:

1. Patrolling and aerial surveillance, enforcement, arrests, prosecution

Based on the graph 1 (page 10), the number of attempt to enter increased by the years and one arrest was made in recent year. This show that the management have manage to implement the enforcement program adequately. Nevertheless, the management must improve on the enforcement practices i.e. increase the rate of patrolling within the area and outside the area, identify possible route of poachers coming in the area etc. Furthermore, the frequency of aerial surveillance must be increased.

2. Inspection of boundaries and re-brushing of main boundaries, and installing of proper signage along the main boundaries of NGR SFM must be maintained.

3. Based on the wildlife monitoring report compilation from year 2014-2016, the number of wildlife sighting recorded by the four methods use increase exponentially. There are two possible reason:
 - a) Data collecting skills and frequency increase.
 - b) The population of wildlife increase in the area. This can be attributed to the effectiveness of protection, controlling and enforcement activities.

This means, that the wildlife monitoring program conducted by the management is getting more improve by each year and the management should maintained for consistency.

There are a number of wildlife in the RTE list i.e. Tembadau, Pygmy Elephant, Clouded Leopard etc. were detected but the sightings of Orang Utan is quite less. It does not even get into the top ten list of wildlife detected by camera trap. So, the management must find a way to enhance the data gathering of Orang Utan especially because the project areas are neighbors to Ulu Segama Malua areas.

4. The two Forest Checking Station i.e. Bt Timbang FCS and Imbok FCS are to be maintained because these two stations play an integral part of monitoring, control and enforcement activities.
5. All the PSP plot are to be maintained yearly and re-enumeration must be done as indicated in the monitoring program. Additional plots to be added according to forest types and HCV value i.e. wildlife corridor, riparian, endemic etc. It will be up to the management on how the new plots will be added later i.e. where, how many, distance etc.
6. Consultation with the Bird's nest collector must be done twice a year and all the issues raised must be rectified by consensus. The resolution and agreement must be adhered. Monitoring of the bird's nest collector coming in to Bt timbang must be enhanced i.e. issuance if COI, demarcation of VJR Bt Timbang, participation of the stakeholder in the project, data collection on the bird's nest taken out and so on and so forth.