

<b>Policy Area:</b> Field Team Operations	<b>Subject:</b> HCV Assessments
<b>Title of Policy:</b> HCV Assessment Field Protocol - Plant Survey and Ecosystem Typing	<b>Number:</b>
<b>Effective Date:</b> 02 February 2013	<b>Page Number:</b> 7
<b>Approved by:</b> Loy Jones	

**1. Rationale or background to policy:** All field surveys shall be conducted following the guidance provided in the HCV Toolkit Indonesia (2008). This protocol is intended to provide additional details related to field survey methodology that are not specified in the Toolkit to ensure consistency in data collection. The objectives of field flora survey and ecosystem typing are to: 1) confirm the presence of HCV 1.2 & 1.3 species determined to be likely or potentially present during the pre-assessment in the remaining natural forest areas; 2) examine the ecological integrity of remnant forest areas that comprise HCV 3 and other natural areas as habitat for HCV 1.2 & 1.3 plant and animal species; 3) assess the population viability of HCV 1.3 species confirmed or considered likely present; 4) determine condition of areas where connectivity between remnant natural areas within the plantation has been lost or is currently tenuous in order to assess feasibility of re-establishing connectivity.

The large area and variety of vegetation types to be surveyed requires using a rapid assessment method that combines sampling on the ground and analysis of satellite and aerial photography data, as well as soil and geological maps. Structured plant observations will be made of trees and juvenile regeneration in three or more examples of each natural vegetation type identified from desktop GIS analysis and field observations.

Species identifications for select taxa (suspected HCV 1.2 and 1.3 species) will be made in the field, supplemented with digital photographic documentation and limited collection of voucher samples pressed and air dried in the field or preserved in alcohol depending on the weather conditions and availability of alcohol. Species of concern under HCV 1.2 and 1.3 shall be given highest priority for identification to species level using experience of the survey team, field manuals, and comparison with identified collections from Herbarium Bogoriense.

Survey priority in the field shall be given to the following vegetation types in order of importance:

- a. Remnant natural forest areas in relatively good condition
- b. Degraded/secondary forest
- c. Agroforests (rubber or non-rubber)
- d. Active or recently abandoned ladang agriculture
- e. Cleared but unplanted areas

**2. Policy Statement:** Members of the ecology field assessment team will operate in a unified approach to ensure that field protocols for data collection are consistently followed in the field and that all required data are collected and accurately recorded precisely in the provided datasheets. While the Field Team Leader and the Ecology Assistant has the ultimate responsibility to ensure this is carried out, each ecology field team member especially the

vegetation specialist has equal responsibility to ensure their performance meets all of the requirements.

**3. Procedures:** Prior to and during HCV field assessments all teams shall ensure that the following occur:

Prior to survey

- a. Review the pre-assessment report for the concession in question, in particular pre-assessment findings for HCV 1, 2 and 3, as well as recommendations for the main assessment fieldwork.
- b. Print and become familiar with list of HCV 1.2 and 1.3 species likely or potentially present identified in the pre-assessment.
- c. Obtain maps of the concession with relevant information (land cover, forest type, rivers and other water bodies, slope, soils, peat depths, location of villages, etc.) from the Data Management Team.
- d. Determine preliminary sampling locations (stratified sampling) for each land/forest cover type in the order of priority mentioned previously in this document. At least three transects shall be used in each class of natural forest. Number the transects with a running number starting with 1 for each concession.
- e. Prepare all required equipment and tools, including
  - o GPS
  - o Map of the study area
  - o Binoculars
  - o Compass
  - o Optical range-finder with clinometer function (optional)
  - o A 100-m rope marked at 20-m intervals.
  - o Altimeter (or use GPS)
  - o 50-m measuring tape
  - o Diameter tape
  - o Digital camera
  - o Material and tools needed for plant collections (secateurs/scissors, machete, sling shot, label, alcohol/ethanol)
  - o Plastic bags (for plant specimen)
  - o Datasheet, stationery, clipboard.
  - o Extra batteries
  - o Alcohol for preserving plant specimen

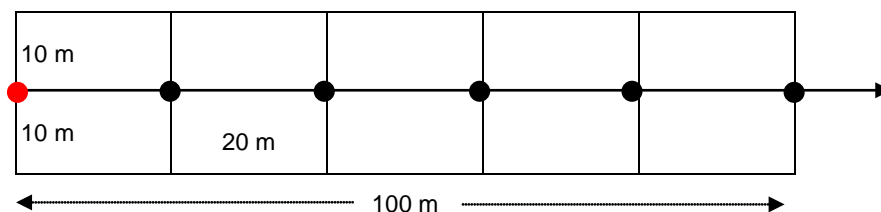
### During field survey

Before each day's survey, tracking should be turned on in the handheld GPS unit. Also, a photograph of the GPS unit showing the coordinates and time shall be taken with the digital camera that will be used with the GPS unit to allow for geo-coding of the photographs.

Only the provided datasheets should be used for recording data, and all categories of data included in the datasheets need to be completed. A notebook can be used for any particular notes to be made relevant to the assessment that does not fit the datasheet format. (Appendix 1)

The flora survey will be led by the vegetation specialist on each ecology team. There will be a plant taxonomist with knowledge on dipterocarps to aid the identification of HCV 1.2 and 1.3 species. This specialist can be roaming (shared among multiple field teams). If so, Field Team Leader and Ecology Assistant shall coordinate with the plant taxonomist to arrange his field program.

- a. Establish a 20 x 100 m transect sub-divided into 20 x 20 m subplots at locations based on pre-determined sampling plan.
  - The exact plot location can be adjusted as needed based on actual field conditions.
  - The plot can be laid out in any direction as appropriate for the field conditions
  - The entire transect lays within one forest type of similar condition (avoiding heterogeneity in physical and biological site conditions)



- b. Record waypoint and other biological and physical information on the site information datasheet at the starting point of the transect. Also take 2-3 photographs of the forest conditions at each transect
- c. In each 20 x 20 m subplot, look for and record the presence of all confirmed or suspected HCV 1.2 and 1.3 species on the datasheet. If field identification of suspected HCV 1.2 and 1.3 species is difficult, record all species present within the subplot.
- d. Plant identification:
  - For species that can be confidently identified to species in the field, record the exact species name in the datasheet.

- For any species for which species-level identification is uncertain, take photograph(s) of the individual showing as much of the characteristics needed for botanical identification (including flowers and fruits if present). Record the photo code in the datasheet.
  - Collect a limited number of plant samples to confirm species identification by comparing to herbarium specimen at Herbarium Bogoriense later. At least one sample should be taken for each HCV 1.2 and HCV 1.3 species identified.
- e. If any confirmed or suspected HCV 1.2 or HCV 1.3 plant species are encountered outside of the transects, these should be recorded in a separate datasheet provided (unless the species is abundant and has already been recorded in transects).

**Appendix 1.**

**Site Description Data Sheet**

Transect no.		Date:	
Concession name:		Recorder:	
GPS coordinates:		Altitude (m a.s.l.):	
Canopy cover (%):		Canopy height (m):	
Slope (degrees) :		Terrain:	
Location (local name):		Photo code	
Forest type and condition:			
Anthropological artefacts:			
Waterbodies or other important habitat features present nearby?			
Surrounding habitat / forest type			
Most abundant trees (diameter ≥10 cm)		Most abundant seedlings (<1.5m)	
1		1	
2		2	
3		3	
4		4	
5		5	
Most abundant tree saplings and poles (height ≥1.5 m and diameter < 10 cm)		Distinctive tree-like monocots (bamboo, palm, pandanus)	
1		1	
2		2	
3		3	
4		4	
5		5	
Other notes and observations			

**Appendix 2**

**Flora Data Sheet within Transect (HCV 1.2 and HCV 1.3 Species)**

Transect no.		Date:	Recorder:							
No.	Species	Abundance (number of individuals)	Section (20 x 20 m)					Maximum diameter (cm)	Herbarium sample no.	Photo code
			1	2	3	4	5			
		Mature tree								
		Pole								
		Sapling								
		Seedling								
		Mature tree								
		Pole								
		Sapling								
		Seedling								
		Mature tree								
		Pole								
		Sapling								
		Seedling								
		Mature tree								
		Pole								
		Sapling								
		Seedling								
		Mature tree								
		Pole								
		Sapling								
		Seedling								

### Flora Data Sheet outside the Transect (HCV 1.2 and HCV 1.3 Species)

Concession name:		Date:		Recorder:	
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No.	Species name	GPS coordinates (or way point number)	Forest / habitat type	Forest condition <sup>1</sup>	Size class distribution <sup>2</sup>	Herbarium sample code	Photo code

<sup>1</sup> Secondary or primary, level of degradation, causes, frequency and severity of disturbance, etc.

<sup>2</sup> Describe presence of mature trees, abundance of regeneration, maximum tree size.