

**CARBON STORAGE IN FOREST ECOSYSTEMS OF POPA
MOUNTAIN PARK, MYANMAR**



HELEN

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE
(NATURAL RESOURCE MANAGEMENT)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2012**

COPY RIGHT OF MAHIDOL UNIVERSITY

Copyright by Mahidol University

THESIS: CARBON STORAGE IN FOREST ECOSYSTEMS OF POPA MOUNTAIN PARK, MYANMAR

HELEN 5338148 ENRM/M

M.Sc. (NATURAL RESOURCE MANAGEMENT)

THESIS ADVISORY COMMITTEE: RATTANAWAT CHAIYARAT Ph.D.,
NATHSUDA PUMIJUMNONG Ph.D., SATHAPONG JAIARREE Ph.D.**ABSTRACT**

Forest ecosystems are sources of carbon that are stored in their biomasses. The carbon storage of forest biomass, as well as soil, were evaluated in one of the protected area systems, called Popa Mountain Park, which is the only extinct volcano located in the central dry zone of Myanmar. The study was conducted in four forests ecosystems: dry hill evergreen forest, dry mixed deciduous forest, deciduous dipterocarp forest and dry forest found in the study area.

Stratified random sampling was conducted with 6 sample plots of 30×30 m² in each forest ecosystem, in total 24 sample plots. Vegetation sampling was performed within 9 sub-plots of 10×10 m² for diameter at breast height (dbh) ≥ 4.5 cm of all trees. In 5×5 m², dbh < 4.5 cm with height ≥ 1.3 m, saplings and shrubs were collected. Litter, undergrowth and grass, were collected within 1×1 m² plots. Soil samples were randomly collected at three points in three sub-plots of 10×10 m² at two layers: 0-15 cm and 15-30 cm, a total of 144 samples. For carbon content estimation of forest vegetation, allometric equations, developed from tree dbh and height, were used.

The largest carbon content in forest biomass was found in dry hill evergreen forest with 59.57 ton/ha followed by dry mixed deciduous forest with 35.68 ton/ha, deciduous dipterocarp forest with 26.98 ton/ha and dry forest with 17.70 ton/ha, respectively. All mean values of soil organic carbon (SOC %) showed higher in soil depth of 0 - 15 cm above 15 - 30 cm. The total soil carbon storage of 0 - 30 cm contained 215.34 ton/ha in dry hill evergreen forest, 76.28 ton/ha in dry mixed deciduous forest, 56.31 ton/ha in deciduous dipterocarp forest and 36.12 ton/ha in dry forest, respectively. The research assessed soil organic carbon storage as being nearly two times more than the forest's carbon storage. The study found the current total carbon storage is 740,473.30 ton above-ground and below-ground of focused forest ecosystems. The research suggested the carbon storage status in different forest ecosystems of the protected forest area, which would be useful data for guiding policy making and forest conservation planning at both national and international levels.

KEY WORDS: CARBON STORAGE/ POPA MOUNTAIN PARK/ MYANMAR/ ALLOMETRIC EQUATION

120 pages