Institute of Biodiversity and Environmental Conservation

Autecology of the Endangered Spiny Hill Turtle, *Heosemys spinosa* in Sarawak, Malaysia (Borneo)

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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ABSTRACT

In tropical forested regions, such as Borneo, knowledge on turtle biology remains inadequate, perhaps due to a combination of factors, including rarity, cryptic lifestyle, logistic issues, as well as the general lack of expertise, interest and opportunity available in the past for such research. Despite being on the IUCN Endangered species list, virtually nothing is known of the life history of *Heosemys spinosa*, the Spiny Hill Turtle. The main objective of this study is to provide detailed information on spatial, thermal and trophic biology of the target species, such knowledge valuable for understanding conservation requirements as well as enhancing knowledge of the life history of a rainforest obligate. Six individuals, consisting of two males and four females from Kubah National Park were fitted with radio-transmitters and tracked from Apr 2017 to Jan 2019, and a total of 251 locations were obtained. Home range estimates from Minimum Convex Polygon (MCP) were 1.68–60 ha and 0.43–3.45 ha using 95% KDE. These figures were not correlated to sex of individuals. Sexual and individual variation seen in cumulative distance displaced indicate males as the more explorative and active of the sexes, with mean monthly distances of 416.67 m; 148 m was noted for females. Body mass did not influence distances covered, although changes in temperatures (ambient and ground) were correlated with movement. The species showed a strong association with canopy density, as well as association with ground covers, such as logs, trees, water bodies, leaf litter, overground vegetation and boulders. A total of 11 individuals (with comprising individuals from other parts of Sarawak) was used to describe sexual dimorphism in the species, emphasizing variation in shell morphology and colouration. Growth trend showed an indeterminate pattern, with continuous growth post maturity and males of the species demonstrating a more rapid growth rate. The size of maturity of females in this population was inferred from the presence of areas of