iBSC 2018
ABSTRACT BOOK

FROM RESEARCH TO COMMUNITY / SOCIETY / INDUSTRY

THE INTERNATIONAL BIOSCIENCE CONFERENCE AND
THE 7th JOINT INTERNATIONAL PSU-UNS
BIOSCIENCE CONFERENCE 2018

AONANG VILLA RESORT
KRABI, THAILAND, SEPTEMBER 17-18, 2018

NSTDA HTT Hollywood International Bio-Active Co.,Ltd.

What lies beneath: Southeast Asia's hidden seaweed diversity

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Abstract

Southeast Asia is a marine biodiversity hotspot. Assessments of marine flora diversity in the region are traditionally based on the morphological species concept. However, several molecular studies have revealed that there is more species diversity in seaweeds than the naked eye can see. The present study explores the phylogenetic species diversity and distribution patterns of red algal genera (Rhodophyta) in Southeast Asia using DNA sequence data. Circumtropical *Dichotomaria marginata* (J. Ellis & Solander) Lamarck (Galaxauraceae) and tropical Indo-West Pacific *Gibsmithia hawaiiensis* Doty (Dumontiaceae), and *Portieria hornemannii* (Lyngbye) P.C. Silva (Rhizophyllidaceae) were all found to represent a complex of multiple cryptic species. Several species show a restricted distribution suggesting low dispersal capacity. Connectivities between populations of species with a wider distribution are further evaluated by inferring the distributions of plastid and mitochondrial haplotypes. The results are congruent with low dispersal capacity, probably enforced by ocean currents.

Keywords: cryptic diversity, genetic connectivity, haplotype diversity, phylogeography, Rhodophyta