REPEATED CORAL BLEACHING IN THE ANDAMAN SEA, THAILAND, DURING THE LAST TWO DECADES

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ABSTRACT: Widespread coral bleaching on the Andaman Sea coast of Thailand was first documented in 1991, and has subsequently recurred in 1995, 1998, 2003 and 2010. Since 1990, permanent transects at sites throughout the Andaman Sea have been used to monitor changes in coral cover and species. In this paper, data from 12 sites in three groups of reefs in different geographical locations is presented; Phuket Island and Phiphi Island (both near-shore reefs) and Surin Island (offshore reefs). Based on this data, the bleaching events can be grouped into mild (1998), moderate (1991, 1995, 2003), and severe (2010). In each case, bleaching occurred in May when sea surface temperatures (SST) reached their annual maximum and exceeded 30.4 °C. The occurrences of mild and moderate bleaching have resulted in fluctuations in both live coral cover and species diversity, together with changes in dominant species at certain sites. In 2010, severe bleaching drastically reduced both live coral cover and species diversity at all sites with the exception of Ao Patong and Racha-E (Phuket Island group). Since then, there has been some recovery of certain species, together with recruitment of Acropora spp. and some other genera. The severity of the 2010 bleaching, in terms of its effects on coral reefs, appears to be equivalent to the 1998 bleaching in the western and central Indian Ocean.

Certain species were highly susceptible to bleaching (Acropora spp., Lobophyllia hemprichii, Merulina ampliata, Hydnophora rigida, Porites lutea, P. rus, P. nigrescens, P. stephensonii, Pectinia spp., Pavona clavus, P. varians, Fungia spp., Montipora aequituberculata, M. crassituberculata), whilst a few species (Diploria heliopora, Heliopora coerulea, Pavona decussata) showed resistance. There was also variation in bleaching susceptibility within species at different study sites during different years. Additionally, reefs along the Andaman Sea coast of Thailand are subject to pronounced cool water upwelling in some years, particularly at offshore locations; as a consequence, the timing of bleaching on the Andaman Sea reefs is not uniform.

Key questions now centre on how frequent and severe such widespread bleaching will be in the future and whether the Andaman Sea reefs possess the resilience to survive more frequent and extreme events.