A SURVEY AND NEW DISTRIBUTIONAL FINDINGS OF CAULERPA SPECIES IN WANDOOR, SOUTH ANDAMAN, INDIA

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ABSTRACT
Caulerpa (Chlorophyta) species inhabit the intertidal and shallow subtidal region along the coast of Wandoor Marine National Park, South Andaman, India. In a survey conducted during the month of January 2012 to January 2013, we found seven species of Caulerpa, Caulerpa serrulata (Forskal) J. Agardh, C. peltata (Lamouroux), C. racemosa (Forskal) J. Agardh, C. racemosa var. Lamourouxii (Turner) Weber-van Bosse, C. mexicana var. pluriseriata W.R. Taylor, C. taxifolia (M. Vahl) C. Agardh and C. verticillata J. Agardh. Among these two species C. racemosa var. Lamourouxii (Turner) Weber-van Bosse and C. mexicana var. pluriseriata W.R. Taylor, are found to be a new distributional records for these Islands as well as for the Indian waters. This is the first time these species are being reported. These were found to be observed during the month of October 2012.

KEY WORDS: Caulerpa, Distribution, South Andaman.

INTRODUCTION
Genus Caulerpa (Chlorophyta, Caulerpales) are common in intertidal and subtidal zones of tropical and subtropical warm waters throughout the world (Dawes et al. 1967, Benzie et al. 1997). Species among this genus are primarily classified, according to the morphological characters. Earlier studies had reported the presence of Caulerpa filicoides var andamanensis in Andaman group of Islands (Taylor 1965). C. racemosa var. lamourouxii are frequently observed in the Red Sea (Taylor 1967). C. racemosa var. lamourouxii is always found in stagnant waters and in culture ponds along with C. lentillifera which is the commercial species cultivated in culture ponds in kalawisan, Cebu (Belleza & Liao 2007). Two-ranked, three-ranked and multi-ranked branching was observed in Caulerpa species (Taylor 1975). Present study focuses on the seasonal distribution of Caulerpa species in Wandoor Marine National Park, South Andaman, India.

MATERIALS AND METHODS
Samples were handpicked from the intertidal region of Wandoor, a part of Wandoor Marine National Park, South Andaman Island, India (11°35.668’ N, 92°36.427’ E) (Fig.1). Seaweed samples were transported to the laboratory washed with tap water to remove epiphytes and preserved in 4% formalin and herbarium was prepared for further identification studies. Identification of Caulerpa specimens was based on the morphological measurements, descriptions and remarks of earlier herbarium sheets. The checklist of (Oza & Zaidi 2001, Silva et.al. 1996) along with algae base, referred to confirm the species distribution in Andaman and Nicobar Islands and mainland India.
RESULTS
A survey was conducted to understand the seasonal wise distribution of Caulerpa species in Wandoor, South Andaman from January 2012 to January 2013. Totally seven species were reported during this period (Table.1). Caulerpa racemosa was observed in large numbers in this region mainly during the summer and rainy season (Jan to Sept 2012). During this survey five species were found mostly along the Wandoor coast except Caulerpa racemosa var lamourouxii and Caulerpa mexicana var pluriseriata. These two species were found to be new distributional reports to Andaman Islands as well as Indian waters, mainly observed during the month of October 2012. The species description of the two species given below.

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<th>TABLE 1: Caulerpa species in seasonal wise pattern in Wandoor Marine National Park</th>
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Note: + Observed, - Not observed

Caulerpa racemosa var. Lamourouxii (Turner) Weber-van Bosse
Description
Thalli strap-shaped 2-3cm in juvenile stage, 5-8 cm tall in fully grown plants, erect shoots partly naked, a few erect with globular ramuli, axes slightly compressed, simple or branching, with sharp edges, to 4 mm wide, dichotomous ramuli from margins, either clavate, slender, slightly inflated distally and pedicillate or spherical and inconspicuously pedicillate, to 8 mm long, ramuli usually sparsely and irregularly distributed (especially the clavate forms); becoming more regularly distributed (especially the clavate forms); stolons slender, to 2 mm in diameter, issuing long descending branches having serrated edges arising from the main axis, to 5 mm long, with prominently branched rhizoids at the ends (Belleza & Liao 2007).

Remarks
Caulerpa racemosa var. lamourouxii plants are female parents of C. lentillifera based on their spherical ramular morphology resembling eggs, while C. sertularioides represents the male parent with its slender, needle-like ramuli suggesting male copulatory structures (Belleza & Liao 2007) (Fig.2).

FIGURE 2: Caulerpa racemosa var. Lamourouxii (Turner) Weber-van Bosse

Caulerpa mexicana var. pluriseriata W.R. Taylor
Description
Plants dark green in color grows on sandy bottom of near shore zone near Sargassum beds. Partings of the rhizoids are much closed on the stolon (<1cm). The pinnules are wide and short. The plants reach an average length of 1.0-5.5 cm tall ascending branches irregularly distant along the rhizomatous system; upright axes heavily beset with elongate ramuli, in verticillate arrangement or in a combination of three-ranked or multiseriate configuration, to 2 mm long, slightly up curved, distinctly tapered distally, with mammililate tips.

Remarks
Typical two-ranked forms of C. mexicana may be present in the same plant there are many branching variations seen within one plant. The ramuli are notably crowded with a
prepon-erance of multiseriate and three-ranked ramuli near the basal portions of this plant.
Taylor (1975) describes two-ranked, three-ranked and multi-ranked branching in Caulerpa species may only be
recognized at the varietal level. (Belleza & Liao 2007) (Fig.3).

DISCUSSION
Taylor (1965) had reported Caulerpa filicoides var andamanensis to be new distribution in Andaman group of
Islands. Earlier study by (Silva et al. 1996) eight species of Caulerpa were reported along the coast of Andaman.
Palanisamy (2012) had reported six species of Caulerpa in South Andaman waters. From the above two studies five
species were observed in common which are also observed during this present study but Caulerpa racemosa var
lamourouxxii and Caulerpa mexicana var pluriseriata were reported for the first time in the waters of Andaman as
well as mainland India. Caulerpa racemosa var lamourouxxii and Caulerpa mexicana var pluriseriata which were earlier reported in phillipine waters (Belleza & Liao 2007).

CONCLUSION
Andaman and Nicobar are a group of 572 Islands where
studies on seaweeds are meagre and most of the Islands
are unexplored. New distributional records were found to
be common in all the groups of seaweeds due less
exploration and lack of continuous monitoring. This study
will provide the baseline data for future studies on
economic importance of Caulerpa species diversity in this
group of Islands.

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