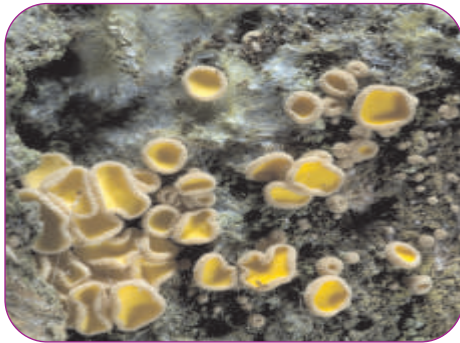




DIVERSITY OF MARINE ASCOMYCETOUS FUNGI FROM MAHARASHTRA COAST (INDIA).



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ABSTRACT :

Present paper deals with four marine fungi: *Aigialus mangrovei*, *Antennospora quadricornuta*, *Arenariomyces parvulus*, which were isolated from intertidal wood and foam samples from the coast of Thane District of Maharashtra.

KEYWORDS : foam samples, intertidal wood, marine fungi.

INTRODUCTION:

Marine fungi are not a taxonomic and physiologically defined group (Hyde et al. 2000). Several workers have tried to define the marine fungi. Kohlmeyer and Kohlmeyer (1979) categorized marine fungi into two groups- 1) "Obligate marine fungi" - are those that grow and sporulate exclusively in marine or estuarine habitat, 2) "Facultative marine fungi" - are those from freshwater or terrestrial milieu able to grow (and possibly also sporulate) in the marine environment. This is the most widely accepted definition of marine fungi (Hyde et al. 2000).

From marine habitats, majority of the fungi recorded so far were Ascomycetous forms with new genera and species being constantly added to the list. The recent update of novel Ascomycota described from marine habitats was that of Jones et al. (2015). The Ascomycota is the most numerous and common taxonomic group in mangroves, with the Basidiomycota least frequently collected (Alias and Jones, 2009). Biodiversity studies have highlighted a wide variation in the frequency and abundance of mangrove fungi-139 from Malaysia (Alias et al. 2010). Chalkley et al. (2010), Abdel-Wahab et al. (2014) from Saudi Arabia, Zhang et al. (2009), Chen et al. (2009) studied diversity of marine fungi from Taiwan.

Higher marine fungi along the East coast of India were studied by various researchers such as Becker and Kohlmeyer (1958), Pawar et al. (2009), Sridhar (2009a), Sarma and Vittal (2004), Ravikumar et al. (2009) and Babu et al. (2010).

Recent work on higher marine fungi includes Borse et al. (2013) revised checklist of marine fungi of India. Sarma and Raghukumar (2013) studied manglicolous marine fungi from Chorao mangroves, Goa, West coast of India. Sivakumar (2013, 2016) reviewed biodiversity of marine and mangrove fungi. Manohar et al. (2014) reviewed the anoxic zone of the Arabian Sea.

Material and Methods- Samples of intertidal woody debris, drift wood, dead stems, roots, leaves and fruits of mangroves, and foam samples from sandy beaches were collected during 2012-2013 at low tide at study sites along the coastal regions of Thane district and placed in polythene bags. Samples were transported to the laboratory. Collections contaminated by sediments or fouling organisms were washed with seawater. Specimens were observed for sporulating structures (Ascomata). After initial observations, samples were placed in plastic

boxes and after two weeks examined for the presence of fungal fruiting bodies. Permanent voucher slides were made by using double cover glass method (Volkman-Kohlmeyer and Kohlmeyer, 1996). Identifications of marine fungi were confirmed with the help of Monographs and illustrated taxonomic keys provided by Kohlmeyer and Kohlmeyer (1979), Kohlmeyer and Volkman - Kohlmeyer (1991), Hyde et al. (2000), Jones et al. (2009), Borse et al. (2012) and other relevant published literature.

1) *Aigialus mangrovei* Borse

Trans. Br. Mycol. Soc., 88-424 (1987). (Fig. 1 ; Photo -1).

Ascomata are 600-850 µm high, 600-800 µm wide, 150-200 µm thick. Ostioles are 40-50 µm diam. *Pseudoparaphyses* are 1.5-2 µm diam. Asci are 300-425 x 20-30 µm. Ascospores are 35-55 x 10-16 µm, muriform, with 6-7 transverse septa and 1-2 longitudinal septa in all but the end cells, slightly constricted at the septa, yellow-brown except for the hyaline apical cells, glabrous, with a gelatinous cap, around the apical and sub apical cells may be present.

Material examined- On intertidal prop roots of *Rhizophora mucronata*, Kalamb-Rajodi; S. A. Gosavi 1101a (PGDB); 22 Feb. 2012.

Distribution in India-West Coast- Maharashtra - Borse (1987), Sohal and Negi (2015); Karnataka - Shridhar (2009); Pondicherry (Mahe)- Nambiar and Raveendran (2007); Kerala- Raveendran and Manimohan (2007). East Coast- Tamilnadu - Nambiar and Raveendran (2008); Aandhra Pradesh - Vittal and Sarma, (2005); West Bengal - Pawar et al. (2005) (Source- Borse et al. 2012, 2013).

Remarks- The descriptions and measurements of Ascomata, Asci and Ascospores are agreed with that of *A. mangrovei* Borse (1987). Therefore, it is assigned to that species. It is an addition for the fungi of Thane district.

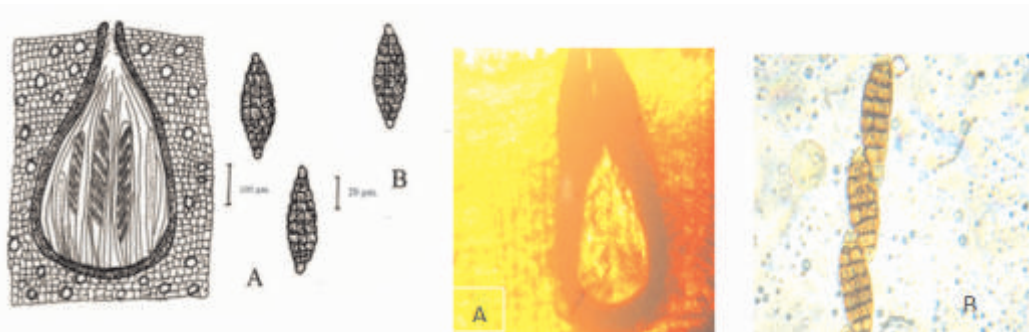


Fig. 1 Camera lucida of

A- V.S of Ascoma B- Ascospores

Photo1. A: V.S. of Ascomata B: Ascospores

2) *Antennospora quadricornuta* (Cribb & J.W. Cribb) T.W. Johnson

J. Elisha Mitchellia Sci. Soc., 74- 46 (1958). (Fig. 2; Photo - 2).

= *Halosphaeria quadricornuta* Cribb & J.W. Cribb, *Univ. Queens. Pap. Dept. Bot.*, 3- 99 (1956); = *Antennospora caribbea* Meyers, *Mycologia*, 49- 503 (1957).

Ascomata are subglobose or ellipsoidal, dark brown to black, 232-274 x 158-220 mm. *Peridium* is 8-12 mm thick. Necks are 90-300 x 28-64 mm. *Asci* seen as they are early deliquescing. *Ascospores* are 20-28 x 8-12 mm (excluding appendage), ellipsoidal, one-septate, not or slightly constricted at the septum, hyaline, appendaged. *Appendages* are two subterminal, cylindrical; attenuate, stiff appendage at each end, 18-36 x 1.5-2 mm, pairs of appendages at right angles to one another.

Material examined- On intertidal wood, Kalamb-Rajodi; S. A. Gosavi 1102a (PGDB); 22 Feb. 2012.

Distribution in India-East coast- Tamilnadu - Becker and Kohlmeyer (1958); West Bengal- Pawar and Borse (2004). West coast - Maharashtra.- Patil and Borse (1983a); Karnataka - Prasannarai and Sridhar (1997); Kerala- Nair (1970); Diu- Borse et al. (1999b); Goa- Borse et al. (1999a); Daman- Borse et al. (2000b); Gujarat - Patil and Borse (2001); Pondecherry Karaikkal (P.K)- Ravikumar et al. (2009). (Source - Borse et al. 2012, 2013).

Remarks-The descriptions and measurements of Ascomata, Asci and Ascospores are agreed with that of *A.*

quadricornuta (Cribb & J.W. Cribb) T.W. Johnson (Jones et al. 2009). Hence, it is assigned to that species. It is being reported for the first time from Thane district.

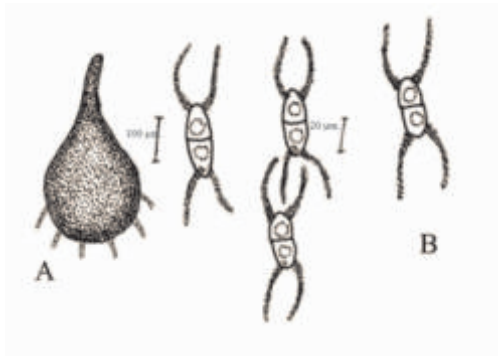


Fig. 2- Camera lucida of
A- Ascoma, B- Ascospores

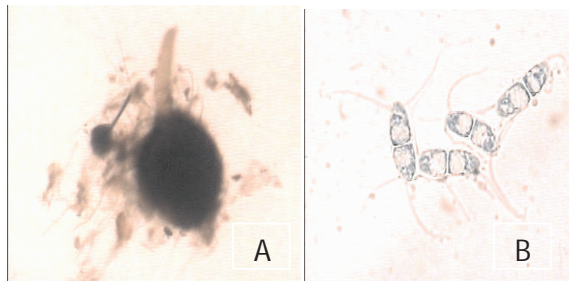


Photo 2. A- Ascoma, B- Ascospores

3) *Arenariomyces parvulus* Jorg. Koch
Nordic J. Bot., 6- 497 (1986). (Fig.3; Photo 3)

Ascomata are globose or subglobose, dark brown-black, 58-78 x 40-46 μm. Asci not seen as they are early deliquescing. Ascospores are 16-18 x 3-6 μm (excluding appendages), fusiform or oblong, one-septate, hyaline, appendaged; at both ends with three or four terminal or subterminal appendages, 10-23 μm long; 1 μm in diameter at the base.

Material examined- On intertidal wood and sand grains, Kalamb-Rajodi; S. A. Gosavi 1103a (PGDB); 23 Mar. 2013.

Distribution in India-East coast-Orissa- Borse et al. (2001b); West Bengal- Borse et al. (2001a); West coast- -Karnataka -Ananda et al. (1998); Kerala- Raveendran and Manimohan (2007); Maharashtra - Borse (2000), Sohal and Negi (2015); Pondicherry Mahae - Borse and Pawar (2005); Gujarat.- Kamble et al. (2008); Goa- Borse and Tuwar (2006). (Source- Borse et al. 2012; 2013).



Fig. 3 Camera lucida of
A- Ascoma, B- Ascospores

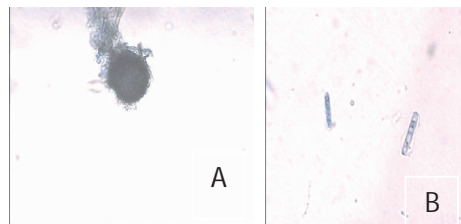


Photo 3. A- Ascoma, B- Ascospores

Remarks-The descriptions and measurements of Ascomata, Asci and Ascospores are agreed with that of *A. parvulus* Jorg. Koch Hence, it is assigned to that species. It is being reported for the first time from Thane district.

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