



## Lignicolous Marine Fungi from Libya

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**Abstract-** Examination of driftwood and landed phanerogamic debris found loose on sea shores along the western coast of Libya, yielded (20 species) of marine fungi. Ascomycetes (16) and (4) Hyphomycetes. (5) Species of these were reported for the first time in Libya. Brief descriptions of the recorded species are presented.

نمعاون 4 و قيسيكلا ايرجبل ايرطفلا نم عون 20 فيرعتو لزعت مت قساردا مده يف -صخلما يلعت فوؤقما و قبطرلا ايرجبل ايرطفلا تامزيرو باشخالل قبحاصما قصقانلا ايرجبل ايرطفلا تعاون 5. ايربرغلا ايبيل طوش تعاون مده قساردا مده يف ايرجست مت يتل.

**Keywords:** driftwood, phanerogamic debris, marine fungi, ascomycetes.

**GJSFR-H Classification:** DDC Code: 589.2 LCC Code: QK601



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# Lignicolous Marine Fungi from Libya

Kafu R. <sup>α</sup>, Almasri T. <sup>σ</sup> & Ghenghish M. <sup>ρ</sup>

**Abstract-** Examination of driftwood and landed phanerogamic debris found loose on sea shores along the western coast of Libya, yielded (20 species) of marine fungi. Ascomycetes (16) and (4) Hyphomycetes. (5) Species of these were reported for the first time in Libya. Brief descriptions of the recorded species are presented.

نم عون 20 فيرعتو لزعت ةساردل هذه يف -صخلمل ةيرحبلا تايروطفلا نم عاونأ 4 و ةيسيكلا ةيرحبلا تايروطفلا ةبطلرلا ةيرحبلا باشعأل تامزيرو باشخألل ةبحاصملا ةصقانل مت اهنم عاونأ 5. ةيبرغلل ايبيلا ئطاوش يلعل ةفوذقملا و نع ةرصتخم ةذببن ةباتك عم ايبيلا يف ةرم لوال اهلجست ةساردل هذه يف اهلجست مت يتل عاونأل.

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## I. INTRODUCTION

The role of marine fungi associated with plant debris in marine and aquatic habitats is immense and they are responsible for the most of the decomposition of organic materials, thus contributing in nutrient regeneration cycles (1). Marine fungal taxa have been isolated from submerged woody substrates in marine habitats(2)(3)(4)(5)(6). Few studies have been

carried out to document lignicolous marine fungi from African shores of Mediterranean Sea. Most collections have been made predominantly in southeast of Asia, Europe, and North America (7). However there is little information on marine fungi from Libya (8) and North Africa (9). The present work would commence with traditional approach to such problem that is collection, identification and description of the organisms.

## II. MATERIALS AND METHODS

To collect marine lignicolous fungi, the remains of drift wood and phanerogamic plants remains found loose on the sea shores were collected from several locations along the western coast of Libya in sterile plastic bags and brought to the laboratory, rinsed with tap water, placed on moist filter papers in glass chambers and incubated at room temperature for (4-8 weeks). Samples were examined periodically for any fungal growth. These were then transferred to slides for examination under light microscope. Lacto phenol cotton blue mounts of squash fungal fruit bodies were prepared for permanent specimens. The recorded fungi were identified using morphological traits (3) (4) (5).

## III. RESULTS

*Table 1:* Shows the fungal species identified

Class	Ascomycetes
1. Family	Halosphaeriaceae
Species	(11)
	1. <i>Arenariomyces majusculus</i> Kohlm
	2. <i>Ceriosporopsis cambrensis</i> Wilson
	3. <i>Ceriosporopsis halima</i> , Linder
	4. <i>Corollospora gracilis</i> Nakagiri & Tokura
	5. <i>Corollospora maritima</i> Werderm
	6. <i>Halosarpheia fibrosa</i> Kohlm
	7. <i>Halosphaeria circumvestita</i> Kohlm
	8. <i>Halosphaeria maritima</i> (Linder) Kohlm
	9. <i>Halosphaeria mediosetigera</i> Cribb
	10. <i>Lulworthia medusa</i> (Ellis & Everh) Cribb & Cribb.
	11. <i>Toorpedospora radiata</i> , Meyers
12. Family	Pleosporaceae
Species	5
	1- <i>Halotthia Posidonia</i> (Durieu&Mont.)Kohlm
	2- <i>Leptosphaeria albopunctata</i> (west) Kohlm
	3- <i>Leptosphaeria orea - maris</i> Linder
	4- <i>Pontoporeia biturbinata</i> (Durieu&Mont.)Kohlm
	5- <i>Verroculina enalia</i> Kohlm
1. Class	Deuteromycetes
1. Family	Dematiaceae
Species	4

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	1- <i>Cirrenalia macrocephala</i> (Kohlm.) Meyers & Moore
	2- <i>Dendryphiella arenaria</i> Nicot
	3- <i>Dictyosporium pelagicum</i> (Linder.) Hughes
	4- <i>Zalerion maritima</i> (Linder.) Anastasiou

#### IV. TAXONOMY AND DESCRIPTION

Class: Ascomycetes

a) Family: Halosphaeriaceae

Species (11)

With exclusively marine taxa generally have deliquescent asci and diverse spores/ spores appendage morphology.

1. *Arenariomyces majusculus* Kohlm.

Ascospores hyaline (8) 10 -14×30  $\mu$ , 2- celled and with 3-4 terminal appendages at each end. Previously reported El-khoms and Misurata (8).

2. *Ceriosporopsis cambrensis* Wilson.

Ascospores hyaline 2- celled, 1-- terminal thin filiform deliquescent appendage at each end, up to 45  $\mu$  long. New reports from Libya.

3. *Eriosporopsis halima*, Linder.

Ascospores hyaline 2- celled 6-8 × 18-26 (30)  $\mu$  with terminal appendages, one at each end, filiform 8  $\mu$  long and thick at base. Previously reported in Tripoli (10).

4. *Corollospora gracilis* Nakagiri & Tokura.

Ascospores hyaline 2-celled 1-4 × 20- $\mu$  with single stiff appendage at each end ribbon shaped setae around the septum. Previously reported from Zuwara (8).

5. *Corollospora maritima* Werderm.

Ascospores hyaline, one septate, 8-10 × 26-34 excluding appendages. One slender appendage at each end and several hairs like equatorial appendages. Previously reported from Susa , Misurata, El Khoms , Tajoura , Tripoli and Zuwara (8).

6. *Halosarphaea fibrosa* Kohlm.

Ascospores 2- celled 14-16 × 23-36  $\mu$  with cap like appendage at each end, almost transforming into delicate ligament .previously reported from Zuwara (8).

7. *Halosphaeria circumvestita* Kohlm.

Ascospores hyaline, 2- celled, 9-12×22-30  $\mu$ , surrounded by an irregular lobed mucilaginous sheet. First reports for Libya.

8. *Halosphaeria maritima* (Linder) Kohlm

Ascospores hyaline 2- celled, 8-12×18-26  $\mu$ , One subgelatinous yoke - shaped at each end. Previously reported from Misurata (8).

9. *Halosphaeria mediosetigera* Cribb.

Ascospores hyaline, 2- celled, 8-16 × 28-34  $\mu$ , around the septum attached more than one crescent

shaped stiff appendage. Previously reported from Tripoli (10).

10. *Lulworthia medusa* (Ellis & Everh) Cribb & Cribb.

Ascospores hyaline, 4-6× (110)160 -216  $\mu$ , filiform non septet with apical mucus filled chambers or processes. First reports from Libya.

11. *Toorpedospora radiata*, Meyers

Ascospores hyaline, triseptate, 4-8, 5×36-40  $\mu$ , Provide d with 3 slender appendages on the lower end. Previously reported from Tajoura , Tripoli and Susa (8).

b) Family: Pleosporaceae

Species: (5)

Marine fungi In the Family Pleosporaceae mostly belong to some well known terrestrial genera such as *Leptosphaeria* species. While others are known only from marine habitats.

1. *Halotthia Posidonia* (Durieu&Mont.)Kohlm.

Ascospores 1 - septate, 16-20× 36-46  $\mu$ , with dark band around the septum. Previously reported from landed rhizomes of the seagrass *Posidonia oceanica*, Zuwara (8).

2. *Leptosphaeria albopunctata* (west) Kohlm

Ascospores yellow brown, 4-6 (8) ×22-30  $\mu$ , more than 4 cells, mostly seven cells. Previously reported from Tripoli and Tajoura (8).

3. *Leptosphaeria orea - maris* Linder

Ascospores pale brown, 6-8 ×16-22  $\mu$ , mostly one septet. Previously reported from Tripoli (8).

4. *Pontoporeia biturbinata* (Durieu & Mont.)Kohlm

Ascospores 2- celled 42-52 × 46-80  $\mu$ , black, provided with germ pores at both ends. Previously reported from landed rhizomes of the seagrass *Posidonia oceanica* at Zuwara (8).

5. *Verroculina enalia* Kohlm

Syn. *Didymosphaeria enalia* Kohlm.

Ascospores brown 2- celled, 6-8×14-20  $\mu$  . Ascospores wall covered with worth - like structures (verruculose). First reports from western coast of Libya.

Class: Deuteromycetes

Family: Dematiaceae.

Species: (4)

Family: Dematiaceae: Are mostly asexual morphs of marine Ascomycetes.

1. *Cirrenalia macrocephala* (Kohlm.) Meyers & Moore.

Ascospores 2 to several cells curved, cells increasing in size and pigmentation from base to apex. First reports from Libya.

2. *Dendryphiella arenaria* Nicot.

Nicot Conidia  $3.6-8 \times 16-20 \mu$ , never longer than  $20 \mu$ , cylindrical, smooth and with distinct dark scar. Previously reported from landed rhizomes of the seagrass *Cymodocea nodosa* in Zuwara (8).

3. *Dictyosporium pelagicum* (Linder.) Hughes.

Conidia dark brown to black, multicellular more or less arising from single cell. Previously reported from Susa, El- Koms , Tajoura , Tripoli and Zuwara (8).

4. *Zalerion maritima* (Linder.) Anastasiou.

Conidia filiform, multicellular forming a more or less regular 1- 3 coiled spiral (10).

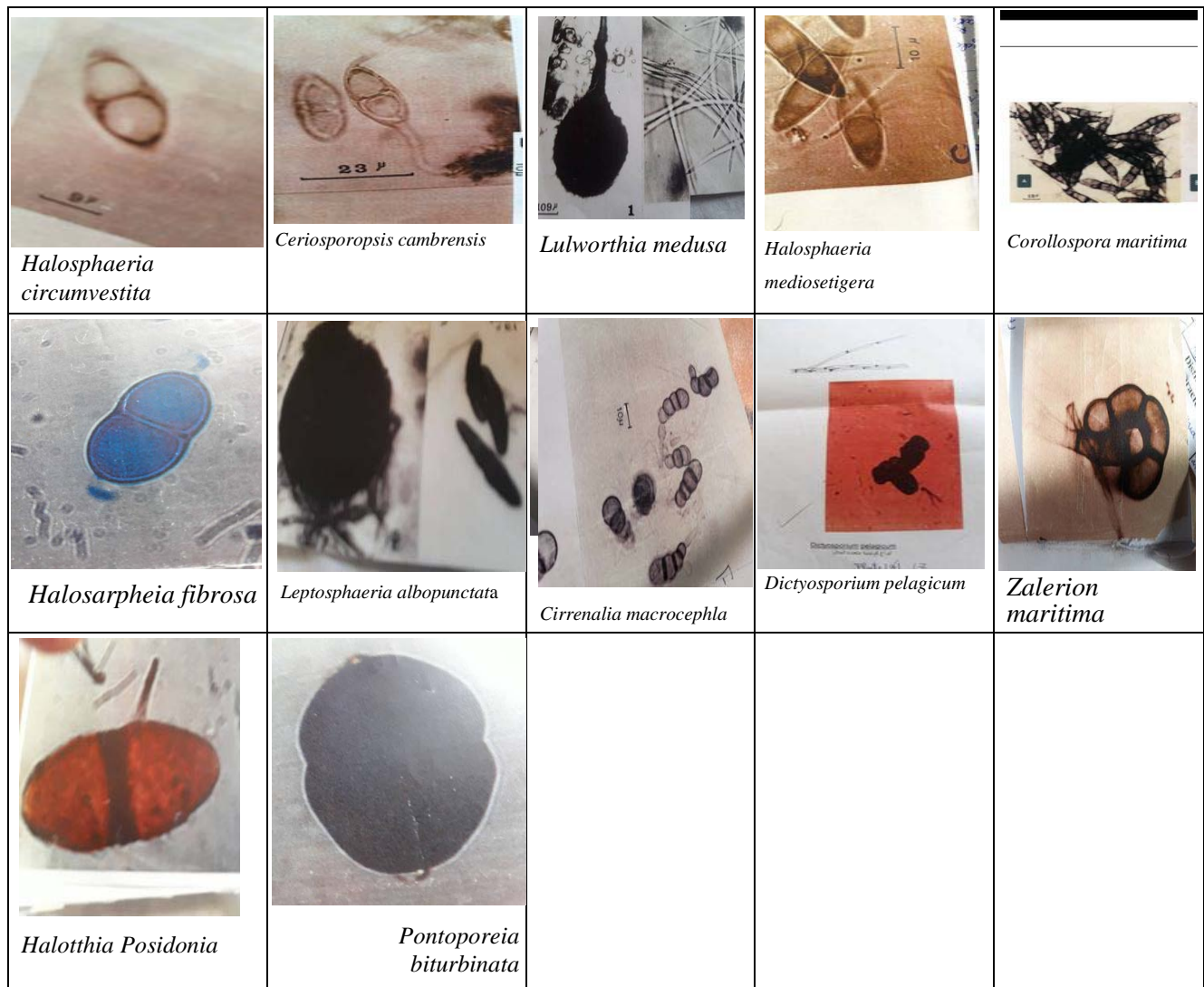


Fig. 1: Figures of most identified collected fungi in studied locations

## V. DISCUSSIONS

The present survey of lignicolous marine fungi reveals (11) species Halosphaeriaceae, (5) species Pleosporaceae and (4) species Dematiaceae (Table 1) (fig 1). Collecting procedure and a brief description of these fungi are also presented. (5) Species were reported for the first time in Libya: *Ceriosporopsis cambrensis* Wilson, *Halosphaeria circumvestita* Kohlm., *Lulworthia medusa* (Ellis & Everh) Cribb &

Cribb, *Verroculina enalia* Kohlm (Ascomycetes) *Cirrenalia macrocephala* (Kohlm.) Meyers & Moore (Hyphomycetes). The new recorded Ascomycetous species, *Ceriosporopsis cambrensis* Wilson and *Halosphaeria circumvestita* Kohlm. First reports for Libya, previously reported in the Bay of Fundy and eastern coast Canada (11). *Lulworthia medusa*, Meyers & Moore, This species is closely related to other members of the genus, mainly *L. grandispora*, Meyers and Moore. The only differentiated character can be

made on Ascospore measurement (12). *Verroculina enalia* Kohlm and Kohlm was the one of the frequently encountered taxon for all states and Territories investigated in India (4). The Hyphomycete *Cirrenalia macrocephala*, *macrocephala* common our collection is one of the most widely distributed marine lignicolous fungi in marine habitats (4).

## VI. CONCLUSION

Twenty marine lignicolous marine fungi have been identified. These species belong to the classes Ascomycetes (16) and Hyphomycetes (4). Collecting procedure and brief descriptions of these species are presented. (5) Of them were reported for the first time in Libya.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. Wong, M. K., Goh, T. K., Hodgkiss, I. J., Hyde, K. D., Raghoo, V. M., Tsui, C.K., & Yuen, T. K. (1998). Role of fungi in freshwater ecosystems. *Biodiversity & Conservation*, 7(9), 1187-1206.]
2. Barghoorn, E. S. & Linder, D. H. (1944). Marine fungi their taxonomy and Biology. *Farlowia* 1(3): 395-467.]
3. Johnson, T.w. & Sparrow, F. K. (1961). *Marine Fungi in Oceans and Estuaries*. Gramar, Weinheim, Germany, 391pp.
4. Kohlmeyer, J. & Kohlmeyer, E. (1979). *Marine Mycology. The higher fungi* Academic press, New York, 690pp.
5. Kohlmeyer, J. & Volkmann-Kohlmeyer, B.(1991). Illustrated key to the filamentous higher marine fungi, *Botanica marina*, 34: 1-61.
6. Jones, E. G. (2011). Fifty years of marine mycology. *Fungal diversity*, 50(1), 73-112.]
7. Kohlmeyer, J. (1984). Tropical marine fungi. *Marine Ecology*, 5(4), 329-378.
8. Ghenghish, M.S. (2017). New taxa for marine fungi from western coast of Libya, *American Journal of Biology and Life Science*, 5 (6):51-54.
9. Abdel-Aziz, F.A. (2011). Taxonomical studies on some selected genera of aquatic fungi in Egypt. M. Sci. Thesis, Sohag University, Egypt, 166.
10. El Buni, A. M. & Rattan, S.S. (1981). Check list of Libyan Fungi. Al Fateh University, Faculty of Science. Department of Botany. Tripoli. Libya, 169 pp.
11. Miller, J. D. & Whitney, N. J.(1981). Fungi from the Bay of Fundy I: lignicolous marine fungi. *Canadian Journal of Botany*, 59(7), 1128-1133.]
12. Booth, T. (1983). Lignicolous marine fungi from Sao Paulo, Brazil. *Canadian Journal of Botany*, 61(2), 488-506.]