

NOTE ON THE DISTRIBUTION OF ALGAL FLORA IN EL-GEMAIH AND EL-KHARG, EL-RIYADH, SAUDI ARABIA

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SUMMARY

35 Species of algae (Bacillariophyceae, Cyanophyceae and chlorophyceae) belonging to 2 genera were collected and identified in El-Gemaih and El-Kharg localities. The diatoms are abundant and represented by 24 species. The Cyanophyceae though represented by a smaller number of species yet they were most conspicuous having a well marked distribution especially *Oscillatoria* and *Nostoc*. Desmids are represented by *Cosmarium*.

INTRODUCTION

The present work represents an investigation of the algal flora found in two localities near Riyadh, Saudi Arabia.

The first locality is El-Gemaih which lies about 7 Km. to the North-West of Riyadh. It is a cultivated land covered with trees and shrubs and irrigated by several narrow, shallow canals, receiving their water from a number of wells and running through the land.

The second locality is the public garden of El-Kharg which lies also to the North-West of Riyadh but at a distance of 88 Km. The garden is supplied with a water pump and a swimming pool. Water supply comes from some springs in the area.

The samples were collected from different sites (ditches, irrigation canals etc.) in the two localities ; 7 from El-Gemaih and 11 from El-Kharg. The sites were chosen such as to give a more or less full representation of the algal flora of the two localities. Most of the sites are shadowed by a dense plant cover of *Casuarina*, *Eucalyptus* and *Nerium*. The samples were collected in early summer of 1973.

Intensive microscopic examination of the samples was carried out at Girl's college of El-Riyadh.

Green and blue-green taxa were determined by the examination of fresh samples, however, for the determination of diatoms previous clearing of the samples by a mixture of conc. H_2SO_4 and conc. HNO_3 was necessary.

The algal flora of Saudi Arabia has received-up till now — but a little attention by a few workers. Elwan and Khodair (unpublished) found that the bluegreens were abundant in samples collected from «Wadi Hanifa» cliffs at Riyadh. Mohsen (1972 a, b and c) working on the marine algal flora of the Red Sea shore bordering Jeddah zone noticed that this shore is free from laminariales and that some fucales are present in the Islands near by. He noticed also that the sea shore of Jeddah is richer than that of Alexandria in its marine algal flora which he said to be due to the tide.

A full list of all algae identified in the present work is compiled at the end of this paper.

RESULTS AND DISCUSSION

The investigation of the collected samples showed that blue-greens and diatoms were the dominant algal forms and that greens were present. This is not unexpected since blue-greens are known to be of great ecological importance as pioneer forms than any other forms of algae, Fritsch (1959). This is in accordance with the results obtained by Elwan and Khodair (unpublished) and El-Saadawy and Abou El-Kheir (1972).

Diatoms as well are known to be the most abundant algae living in soil including desert soil, Prescott (1969). The presence of chlorophyceae is also expected since they together with the Cynaophyceae and Bacillariophyceae comprise the main forms of soil algae.

However, it is worth mentioning here that all the recorded forms of the chlorophyceae were met with in El-Gemaih locality, but in El-Kharg one species only were recorded namely *Chlorococcum*.

The algal flora is generally characterised by the presence of copious masses of blue-greens and by rich development of *Nitzschia obtusa v. scalpelliformis* and *Oscillatoria sp.* in El-Kharg, and *Nostoc sp.* and *Rivularia sp.* in El-Gemaih.

The investigation also showed that some Cyanophyceae and Bacillariophyceae were dominant in the two localities these are : *Oscillatoria* sp., *Nostoc* sp., *Rivularia* sp. of the Cyanophyceae, and *Nitzschia obtusa* v. *Scalpelliformis*, *N. vitrea* v. *recta*, *N. thermalis* v. *intermedia*, *Navicula cryptocephala* and *N. cryptocephala* v. *veneta* of Bacillariophyceae. It was found also that the following taxa were present in the two localities : *Chlorococcum* sp. (green) *Spirolena* (bl. green) *Navicula elliptica*, *Nitzschia Kützingeriana*, *Hantzschia amphioxys* and *Cymbella affinis* (diatoms).

The low salinity at El-Gemaih may explain the presence of copious masses of the pioneer blue-green forms especially *Nostoc*, *Rivularia*, and *Oscillatoria* (see Rich 1933). The last genus is known to have a number of very common species which occur in a wide range of habitats Chapman (1964).

The desmids are fairly well represented by *Cosmarium* sp. at El-Gemaih where the pH is 7.1. This finding is in agreement with the statement of Rich (1935) that the desmids in the tropics a pH of about 7 is favourable for their development.

The abundance of the recorded forms of diatoms at El-Kharg is an indication of the prevalence of suitable conditions of a balance between the chemical and physical factors determining their growth (see Patrick 1948).

When comparing the algal flora of the shallow canals of Riyadh (El-Kharg and El-Gemaih) with that of much wider and deeper streams in Egypt (Nosseir & Abou El-Kheir (1970, 1972)) one may recognise that the main difference is that blue-green forms are well flourished in the first wheres they are rare in the second. This is probably due to the fact that the soil at Riyadh is sandy and rocky while that in Egypt is dark clay. The rocky and sandy soils have to be invaded first by blue-green forms before they become suitable for the growth of other forms of algae (see Gritsch 1959). The acidic nature of the water of the Egyptian locality has also its prohibiting influence (see Durrell 1964). However, more fair comparisons will be possible when periodical collection from the Saudi Arabian localities is done. This will be the aim of a forthcoming paper.

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SYSTEMATIC LIST OF THE ALGAE FOUND IN
EL-KHARG AND EL-GEMAIH LOCALITIES

	El-Gemaih	El-Kharg
<i>Bacillariophyceae</i>		
1. <i>Bacillaria paradoxa</i> Gmel.	+	—
2. <i>Cocconeis placentula</i> Ehr.	—	+
3. <i>Cymbella affins</i> Kütz.	+	+
4. <i>Epithemia gibberula</i> v. <i>producta</i> Grun.	—	+
5. <i>Epithemia sorex</i> Kütz.	—	+
6. <i>Hantzschia amphioxys</i> (Ehr.) Grun.	+	+
7. <i>Navicula atomoids</i> Grun.	+	—
8. <i>Navicula cryptocephala</i> Kütz.	+	+
9. <i>Navicula cryptocephala</i> v. <i>veneta</i> H.V.H.	+	+
10. <i>Navicula elliptica</i> Kütz.	+	+
11. <i>Navicula rhynchocephala</i> Kütz.	+	—
12. <i>Nitzschia fasciculata</i> Grun.	—	+
13. <i>Nitzschia Kützingiana</i> Kütz.	+	+
14. <i>Nitzschia longissima</i> Breb.	—	+
15. <i>Nitzschia linearis</i> v. <i>tenuis</i> Grun.	—	+
16. <i>Nitzschia obtusa</i> v. <i>brevissima</i> Grun.	—	+
17. <i>Nitzschia obtusa</i> v. <i>scalpelli formis</i> H.V.H.	+	+
18. <i>Nitzschia ovalis</i> Arnott.	—	+
19. <i>Nitzschia paradoxa</i> (Gmel.) Grun.	+	—
20. <i>Nitzschia</i> (Kütz.) Wism.	+	—
21. <i>Nitzschia thermalis</i> (Kütz.) Grun.	+	—
22. <i>Nitzschia thermalis</i> v. <i>intermedia</i> Grun.	+	+
23. <i>Nitzschia vitrea</i> Norman.	—	+

24. <i>Nitzschia vitrea</i> v. <i>recta</i> H.V.H.	+	+
25. <i>Nitzschia sigma</i> v. <i>intercedens</i> Grun.	—	+
26. <i>Pinnularia</i> sp.	+	—
27. <i>Synedra affinis</i> Kütz.	+	—
28. <i>Synedra ulna</i> Kütz.	+	—
<i>Cyanophyceae</i>		
29. <i>Anabaena</i> sp.	—	+
30. <i>Lyngbya</i> sp.	—	+
31. <i>Nostoc</i> sp.	+	+
32. <i>Oscillatoria</i> sp.	+	+
33. <i>Rivularia</i> sp.	+	+
34. <i>Spirolena</i> sp.	+	+
<i>Chlorophyceae</i>		
35. <i>Chlorococcum</i> sp.	+	+
36. <i>Mougeotia</i> sp.	+	—
37. <i>Spirogyra</i> sp.	+	—
38. <i>Volvox</i> sp.	+	—
39. <i>Cosmarium</i> sp. (Desmids)	+	—