

RHODOPHYTA OF OMAN GULF (SOUTH EAST OF IRAN)

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Received: 29.01.2008. Accepted for publication: 27.05.2008.

Sohrabipoor, J. & Rabiei, R. 2008 06 30: *Rhodophyta* of Oman Gulf (South East of Iran). –*Iran. J. Bot.* 14 (1): 70-74. Tehran.

About 600 Km. coastal lines of the Gulf of Oman occur in southeast of Iran. The *Rhodophyta* of intertidal regions of Chabahar area (25° 10' to 25° 21' N / 59° 52' to 61° 31' E) were studied from 1999 to 2003. Samples of algae were collected from 8 sites including Gavater, Beris, Ramin, Kachu, Chabhar, Pozm, Joud and Tang. In this study 74 species of 19 families of *Rhodophyta* was identified. *Rhodomelaceae* has higher number of genera and *Gracilaria* has higher number of species in studied areas. Nineteen species were new records for algal flora of Iran and 45 species were not recorded in Catalogue of Benthic marine algae of Indian Ocean. The specimens were deposited in the Herbarium of Agriculture and Natural Resources Researches Centre of Hormozgan province, Iran.

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Key words. Gulf of Oman, *Rhodophyta*, Iran, Chabahar.

جلبکهای قرمز خلیج عمان در جنوب شرقی ایران

جلوه سهرابی‌پور و رضا ربیعی،

حدود ۶۰۰ کیلومتر از خطوط ساحلی ایران در ناحیه جنوب شرقی همجوار با آبهای دریایی خلیج عمان می‌باشد. در این تحقیق که از سال ۱۳۷۸ به مدت ۳ سال به اجرا در آمده است جلبکهای دریایی نواحی جزر و مدی منطقه چابهار در مختصات جغرافیایی (۲۵° تا ۲۱' ۱۰' شمالی و ۵۹° تا ۶۱' ۳۱' شرقی) جمع‌آوری و شناسایی گردیده‌اند. نمونه‌های جلبکی از ۸ ایستگاه شامل مناطق ساحلی گواتر، بریس، رمین، کچو، چابهار، پزم، جود و تنگ جمع‌آوری و آماده‌سازی و شناسایی آنها انجام شد. از مجموع گونه‌های شناسایی شده ۷۴ گونه جلبک قرمز متعلق به ۱۹ خانواده جلبکی در این گزارش فهرست گردیده است. خانواده *Rhodomelaceae* دارای بیشترین تعداد جنس‌ها و جنس *Gracilaria* دارای بیشترین تنوع گونه‌ای در مناطق مورد مطالعه می‌باشند. ۱۹ گونه از این مجموعه گزارش جدید برای فلور جلبکی ایران و ۴۵ گونه گزارش جدید هستند که به فهرست جلبکهای ناحیه خلیج فارس در کاتالوگ جلبکهای اقیانوس هند افزوده می‌شود. نمونه‌های هرباریومی در هرباریوم مرکز تحقیقات کشاورزی و منابع طبیعی استان هرمزگان نگهداری می‌شود.

Introduction

Red algae are main sources of agaran, agarose, agaropectine, carageenan and some other biopolymers that are used in modern industries and sciences. Therefore identification of the algae in marine ecosystems is very important and provides fundamental information for applied utilizations of the marine plants.

First record of marine algae of Persian Gulf consists of 8 species by Endlicher and Deising (1845) from Khark Island. Børgesen (1939) recorded 103 species of marine algae from Persian Gulf including 79 species from Iranian seashores. Nizamuddin and Gessner (1970) reported 68 species from Iranian islands of

Persian Gulf and Pakistan coastal lines and introduced 25 species from Iranian coastlines.

In the recent years investigations have been carried out on macroalgae of Iranian coastlines of Persian Gulf (Sohrabipour and Rabii 1999, 2006; Sohrabipour et al. 2004) revealed that the red algae are more than green and brown algae. The benthic marine algae of the southern areas of the Gulf of Oman in Sultanate Oman also were studied in recent decade (Wynne, 1999, 2000, 2001a, 2001b, 2002a, 2002b, 2003).

The present study reports Rhodophyte algae of Bandar Chabahar in southeastern parts of Iran along the coastlines of Oman. The findings will added to the exiting knowledge about marine algae, especially red algae of this region.



Fig.1: Map of the studied area.

Materials and methods

Chabahar is located at 25°10'-25°21'N / 59° 52'- 61°3' E in southeast of Iran (Fig. 1) that consist of 300 Km coastline along Oman Gulf. Eight sites were chosen for seasonal sampling of the algal vegetation as show in Table 1.

Table 1: Sampling sites with their latitude and longitude.

	SITE	LATITUDE	LONGITUDE
1	GAVATER	25° 10' N	61° 31' E
2	BERIS	25° 8' N	61° 11' E
3	KACHU	25° 15' N	60° 51' E
4	RAMIN	25° 12' N	60° 25' E
5	CHABAHAHAR	25° 17' N	60° 39' E
6	POZM	25° 21' N	60° 18' E
7	JOUD	25° 21' N	59° 52' E
8	TANG	25 ° 21' N	59 ° 52' E

Algal specimens were collected from selected sites from 2000 to 2003 during spring tide from intertidal regions. The collected samples were fixed in formalin solution in sea water (4%) and transferred to laboratory. After cleaning, voucher samples of each specimen were prepared.

Specimens were studied by Olympus stereomicroscope model SZH and then transverse or lengthier section of vegetative and reproductive parts were prepared and finally studied by Olympus microscope model BH2. All voucher specimens were deposited in herbarium of Agriculture and Natural

Resources Researches Center of Hormozgan, Bandarabbas, Iran.

Results and Discussion

The study revealed from 74 identified species of red algae (*Rhodophyta*) (Table 2) nineteen species are new records for the marine algal flora of Iran (two star signs) are reported for the first time from the Iranian seashores. Based on previous publications (Børgesen 1939; Nizammudin and Gessner 1970; Sohrabipour and Rabiei 1996, 1999, 2006) 45 species (one and two stars signs) were not reported in catalogue of benthic marine algae of Indian Ocean (Silva et al. 1996) from the Iranian coastlines. The name of taxa were checked in updated classification of algae website (www.algaebase.com) and follows this web site classification.

The results show that *Rhodomelaceae* has the greater number of genera while *Gracilaria* (*Gracilariaceae*) has the greater number of species diversity among investigated red algae. *Gracilaria corticata* and *Gelidiella acerosa* were distributed in the all sites. Gavater, Ramin and Chabahar sites showed higher diversity than the other sites. Most of species were present in the protected habitats inside rock pools and channels because of strong wave actions. The number of species was high in winter and spring but decreased in summer because of monsoon.

The study revealed that there were similarity between red marine algae of investigated area and Persian Gulf. However some families such as *Gracilariaceae* and

Hypneaceae has more species than Persian Gulf. There was no record of *Sebdeniaceae* from Persian Gulf. *Grateloupia somalensis* and *Halymenia porphyraeformis* (*Halymeniaceae*), *Gracilaria arcuata*, *Gracilaria armata*, *Gracilaria robusta*, *Gracilaria* sp. and *Gracilaria vieillardii* (*Gracilariaceae*), *Hypnea boergesenii* and *Hypnea charoides* (*Hypneaceae*), *Gelidiopsis variables* (*Rhodymeniaceae*) are some of the species that were not reported from Persian Gulf coastlines (Endlicher and Deissing 1845; Børgesen 1939; Sohrabipour and Rabiei 1996, 1999; Basson 1992; Silva et al. 1996). The study revealed there are some commercial marine red algae in the studied area that are used in some countries.

Acknowledgments

We would like to thank Mr. Latifi, director of Agriculture and Natural Resources Research station of Chabahar, for providing field trips facilities and Mr. Khosravifar for collection and preparing of herbarium samples.

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Table 2: Continued.

<i>Gracilaria</i> sp. **	+				+		+	+
<i>Gracilaria textorii</i> (Suringar) Detoni **	+	+	+	+				+
<i>Gracilaria veleroae</i> Dawson **	+		+	+				
<i>Gracilaria vieillardii</i> P.C. Silva **							+	+
HALYMENIACEAE								
<i>Grateloupia filicina</i> (J.V. Lamouroux) C. Agardh **	+				+		+	+
<i>Grateloupia somalensis</i> Huck **							+	+
<i>Halymenia porphyraeformis</i> Parkinson **				+				+
HYPNEACEAE								
<i>Hypnea boergesenii</i> T.Tanaka **	+		+	+	+			+
<i>Hypnea cervicornis</i> J. Agardh *	+							
<i>Hypnea cornuta</i> (Kützting) J. Agardh *							+	
<i>Hypnea charoides</i> J.V. Lamouroux **			+				+	
<i>Hypnea musciformis</i> (Wulfen) J.V. Lamouroux	+	+		+	+	+	+	
<i>Hypnea pannosa</i> J. Agardh	+							
<i>Hypnea valentiae</i> (Turner) Montagne	+				+			
LIAGORACEAE								
<i>Helminthocladia australis</i> Harvey **	+		+					
RHODOMELACEAE								
<i>Acanthophora muscoides</i> (Linn.) Bory de Saint-Vincent *					+			
<i>Acanthophora spicifera</i> (M. Vahl) Børgesen			+					+
<i>Chondria dasyphylla</i> (Woodward) C. Agardh							+	
<i>Chondria cornuta</i> Børgesen*							+	
<i>Chondrophyucus papillosus</i> (C. Agardh) Garbary & Harper	+			+	+			
<i>Digenea simplex</i> (Wulfen) C. Agardh							+	
<i>Herposiphonia secunda</i> (C. Agardh) Ambronn								
<i>Laurencia filiformis</i> (C. Agardh) Montagne **	+			+	+		+	+
<i>Laurencia intricata</i> J.V. Lamouroux *	+							
<i>Laurencia majuscula</i> (Harvey) A.H.S. Lucas	+			+	+		+	+
<i>Laurencia snyderiae</i> Dawson *	+		+	+	+		+	
<i>Leveillea jungermannioides</i> (Hering & Martens) Harvey	+				+			
<i>Polysiphonia scopulorum</i> var. <i>villum</i> (J. Agardh) Hollenberg	+				+			
<i>polysiphonia variegata</i> (C. Agardh) Zanardini *	+				+		+	
<i>Tolypocladia glomerulata</i> (C. Agardh) F. Schmitz	+			+			+	
RHODYMENYACEAE								
<i>Botryocladia leptopoda</i> (J. Agardh) Kylin *	+		+					
<i>Gelidiopsis variables</i> (J. Agardh) Schmitz *	+		+	+	+			
SCINAIACEAE								
<i>Scinaia hatei</i> Børgesen **	+		+					
<i>Scinaia tsinglanensis</i> C.K.Tseng *	+							
SEBDENIACEAE								
<i>Sebdenia flabellata</i> (J. Agardh) P.G. Parkinson *	+							
SOLIERIACEAE								
<i>Solieria filiformis</i> (Kützting) Gabrielson*					+			+
<i>Solieria robusta</i> (Greville) Kylin*	+		+	+				
WURDEMANNIACEAE								
<i>Wurdemannia miniata</i> (Sprengel) Feldmann & G. Hamel **	+							