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Seaweed resources of South Andaman and their Bioprospecting Potential

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Abstract

Seaweeds are one of the most important components from the marine environment. Their contribution towards ecology and economy is endless. As a result seaweed research is gaining significant attention with a view to augment several growing demands for energy, food, material and medicine in recent years. It is thus paramount to assess the availability of these green resources from the sea around us. In this pretext, an attempt was thus made to assess the seaweed availability along the coast of South Andaman, A & N Islands. The detailed survey of the study area along the south Andaman coast showed the availability of 88 seaweed species comprising 31 from Chlorophyta; 25 from Phaeophyta and 32 from Rhodophyta. All these available species found during the study period were tabulated and a check list was made. From the Andaman Sea prospective, commercial use of all the species are yet to be explored. But some of the species already in commercial use globally were recorded from the south Andaman coast. These include ten *Sargassum* sp.; three *Turbinaria sp.;* five *Caulerpa* sp.; three *Ulva* sp.; seven *Gracilaria* sp.; *Gelidiella acerosa* and *Acanthophora spicifera*. It can be concluded that bioprospecting of seaweed bioresources from the Andaman Sea has high potential and can be sustainably utilised towards food, fodder, organic manure, biofuel, biopolymer, biomedical purposes.

Keywords: *Sea Weed, diversity South Andaman, Checklist, Bioprospecting,*

Introduction

Seaweeds are taxonomically diverse group of marine plants with potential for bioprospecting since time immemorial. Traditionally they are classified as Chlorophyta (green), Phaeophyta (brown) and Rhodophyta (red) based on their pigment constituent pattern and each phylum is represented by extraordinarily diverse group of species. These diverse seaweed resources are being utilised for several purposes globally. Even a good number of seaweeds are projected as a promising future food source and have several other important applications for the human being, including a source of food supplements, feed and fodder, industrial chemicals, organic fertilizers, medicines and as a potential candidate for biofuel production.

The vast Indian coastline of about 7,500 km support very rich seaweed diversity with the presence of about 1,153 species with significant economic importance recorded in Indian waters (Rao and Mantri, 2006). The seaweeds from the Andaman Sea has high species diversity and several works have been carried out on their distribution pattern. Studies by Gopinathan and Panigrahy (1978) reported 55 species of seaweeds from North and South Andaman in which 29 species were from South Andaman. Following Jagtap (1992) reported 66 species from Nicobar group of Islands. Palanisamy (2012) reported that 77 species from South Andaman but mentioned about the availability of 206 species in Andaman and Nicobar Islands, while the estimated number remains above 300 species as reported by the author. On the other hand, some more studies also have been carried out, which gives varying numbers of species distribution such as 27 seaweeds (genus level) from South and Little Andaman (Mohanraju and Tanushree, 2012); 72 species from North and South Andaman Island (Karthick et al., 2013a); 52 species from little Andaman (Karthick et al., 2013b), 7 species of genus *Caulerpa* at Wandoor, South Andaman (Karthik et al., 2013c) and studies by Anuraj et al. (2016) reported 23 species (genus level) from South Andaman.

However, there are several common species among all these reports. But all these studies extending from the year 1978 to 2016 gave a glimpse of varying number of species diversity and are suggestive of the fact that there is a gap in the studies pertaining to the sea weed diversity in the Andaman Sea. The coast of South Andaman has better accessibility and exposed to more anthropogenic activities. It is thus paramount to have a systematic study and assess species diversity in South Andaman with a view to make a checklist of the species for probable bioprospecting in future. In this pretext, attempt was made in enlisting the species available along South Andaman coast covering all seasons of the year in order to prepare a baseline database of seaweeds with their pictorial representation.

Material and Methods

Study Area

The present study was carried out during December 2016 - December 2017 by covering seven sampling stations along the coast of South Andaman (Table – 1).

Table – 1. Location of Sampling Stations along the Coast of South Andaman

S. No.	Sampling Station	Geographic position
1.	Chatham (Sea Shore)	Lat. 11°68.0735 N; Long. 92°72.9713 E
2.	Marina Park (Sisostris Bay)	Lat. 11°66.927 N; Long. 92°74.9347 E
3.	Carbyns cove (Opp. Hornbill Nest resort)	Lat. 11°64.7677 N; Long. 92°75.5828 E
4.	Brookshabad (Quarry)	Lat. 11°62.785 N; Long. 92°75.2263 E
5.	Kodiyaghat	Lat. 11°52.8367 N; Long. 92°72.3485 E
6.	Chidiyatapu	Lat. 11°50.1607 N; Long. 92°70.142 E
7.	Wandoor	Lat. 11°59.1343 N; Long. 92°61.2007 E

Seaweed Collection and Identification

The seaweeds were collected from the intertidal region through hand picking along with seawater and collected in a sterile air tight bag. Then the samples were washed properly in running tap water to remove all the epiphytes and sand or debris particles. The cleaned seaweeds were identified for their morphological characters with keys proposed by different authors (Kaliaperumal et al., 1995; Maneveldt et al., 2008; Dhargalkar and Devanand, 2004; Tsiamis et al., 2014; Rath and Adhikary, 2006; Margaret and Charles, 2009; Mary et al., 2012; Baldock, 2104) and also online seaweed database (www.portaltodicovery.og/aday; www.world register of marine species; Macroalgal Herbarium Portal; MACOI - Portuguese Seaweeds Website.htm; www.algaebase.org). The identified specimens were noted and photographed for further studies.

Results and Discussion

Andaman Sea has a unique marine habitat with heterogeneity associated with high degree of biodiversity. As suggested by Satheesh and Wesley (2012), the richness of seaweed resources is due to the intertidal rocky reefs and this is in agreement with the present study, where excellent growth of seaweeds was recorded from intertidal rocky reefs along all sampling stations of the South Andaman coast. During the present study, out of the 88 species studied, 16 reported species of Gopinathan and Panigrahy (1978), 37 reported species of Palanisamy (2012), 40 reported species of Karthick et al. (2013a) and 4 reported species of (Karthick et al., 2013c) were common.

It was observed that the representation of seaweeds was dominated mainly by Rhodophytes with 32 species

(36%), followed by Chlorophytes with 31 species (35%) and Phaeophytes with 25 species (29%) of the total recorded species (Fig. 1) along the South Andaman coast during the study period.

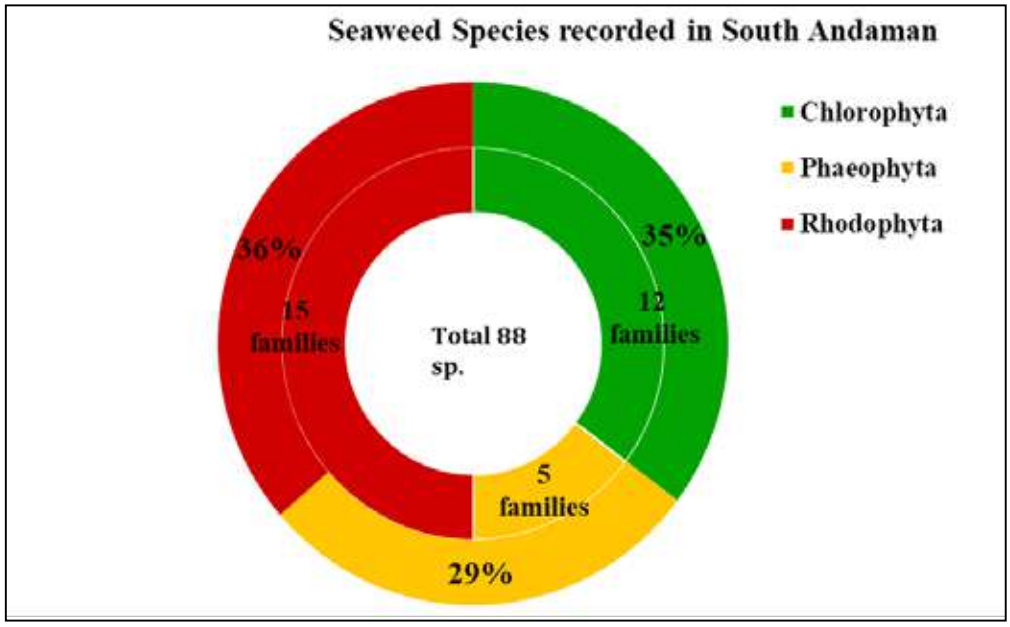

Fig. 1. Total percentage of seaweed species recorded in sampling stations

The 31 species from Chlorophyta (Table – 2) were distributed under 12 families Caulerpaceae, Codiaceae, Halimedaceae, Derbesiaceae, Siphonocladaceae, Boodleaceae, Cladophoraceae, Valoniaceae, Dasycladaceae, Polyphysaceae, Ulvaceae and Ulotrichaceae. The family Caulerpaceae represents total five species *Caulerpa racemosa* (Forsskal) C. Agardh; *Caulerpa serrulata* (Forsskal) C. Agardh; *Caulerpa sertulariodes* (S.G. Gmelin) M. Howe; *Caulerpa taxifolia* (Vahl) C. Agardh and *Caulerpa verticillata* J. Agardh. The Codiaceae family include two species *Codium tomentosum* Stackhouse and *Codium edule* P.C. Silva. The Halimedaceae family include six species *Halimeda opuntia* (Linnaeus) J.V. Lamouroux; *Halimeda tuna* (J. Ellis & Solander) J.V. Lamouroux; *Halimeda macroloba* Decaisne; *Halimeda discoidea* Decaisne; *Halimeda gracilis* Harvey ex J. Agardh and *Halimeda incrassata* (J. Ellis) J.V. Lamouroux. Derbesiaceae family represents only one species *Derbesia marina* (Lyngbye) Solier. Siphonocladaceae family represents three species *Dictyosphaeria versluysii* Weber Bosse; *Dictyosphaeria cavernosa* (Forsskal) Borgesen and *Boergesenia forbesii* (Harvey) Feldmann. Boodleaceae family represents one species *Boodlea composita* (Harvey) F. Brand. Cladophoraceae family represents four species *Chaetomorpha linum* (O.F.Muller) Kutzing; *Cladophora laetevirens* (Dillwyn) Kutzing; *Cladophora columbiana* Collins and *Cladophora sericea* (Hudson) Kutzing. Valoniaceae family represents one species *Valonia utricularis* (Roth) C. Agardh. Dasycladaceae family represents one species *Neomeris annulata* Dickie. Polyphysaceae family represents two species; *Acetabularia acetabulum* (Linnaeus) P.C. Silva and *Acetabularia ceranulata* J.V. Lamouroux. Ulvaceae family was represented by four species; *Ulva reticulata* Forsskal, *Ulva fasciata* Delile, *Ulva lactuca* Linnaeus and *Enteromorpha intestinalis* (Linnaeus) Nees and the Ulotrichaceae family consist of one species *Acrosiphonia arcta* (Dillwyn) Gain.

Table – 2. Seaweed under Chlorophyta along the coast of South Andaman

S.No	Seaweed species	CH	MP	CC	BRB	KG	CHT	WAN
Chlorophytes								
1.	*Caulerpa racemosa* (Forsskal) C. Agardh	+	+	+	+	+	+	+
2.	*Caulerpa serrulata* (Forsskal) C. Agardh	-	+	-	+	-	-	-
3.	*Caulerpa sertulariodes* (S.G.Gmelin) M.Howe	-	+	+	+	-	-	-
4.	*Caulerpa taxifolia* (Vahl) C. Agardh	-	+	+	+	-	-	-
5.	*Caulerpa verticillata* J. Agardh	+	+	+	+	+	+	-
6.	*Codium tomentosum* Stackhouse	+	+	+	+	+	+	+
7.	*Codium edule* P.C.Silva	+	+	+	+	+	+	+
8.	*Halimeda opuntia* (Linnaeus) J.V.Lamouroux	+	+	+	+	+	+	+
9.	*Halimeda tuna* (J.Ellis & Solander) J.V.Lamouroux	-	-	-	-	+	+	+
10.	*Halimeda macroloba* Decaisne	-	-	-	-	+	+	+
11.	*Halimeda discoidea* Decaisne	+	-	-	-	+	+	+
12.	*Halimeda gracilis* Harvey ex J.Agardh	-	-	-	-	+	+	+
13.	*Halimeda incrassata* (J.Ellis) J.V.Lamouroux	+	+	+	+	+	+	+
14.	*Derbesia marina* (Lyngbye) Solier	-	-	+	-	-	-	-
15.	*Dictyosphaeria versluysii* Weber Bosse	+	+	+	+	+	+	+
16.	*Dictyosphaeria cavernosa* (Forsskal) Borgesen	-	-	-	-	+	+	
17.	*Boergesenia forbesii* (Harvey) Feldmann	-	-	-	-	-	-	-
18.	*Boodlea composita* (Harvey) F.Brand	+	-	-	-	-	-	+
19.	*Chaetomorpha linum* (O.F.Muller) Kutzing	-	-	+				
20.	*Cladophora laetevirens* (Dillwyn) Kutzing	+	-	-	-	-	-	-
21.	*Cladophora columbiana* Collins	+	-	-	-	-	-	+
22.	*Cladophora sericea* (Hudson) Kutzing	-	+	+	+	+	+	-
23.	*Valonia utricularis* (Roth) C. Agardh	-	-	-	-	+	+	-
24.	*Neomeris annulata* Dickie	-	-	-	+	+	+	+
25.	*Acetabularia acetabulum* (Linnaeus) P.C.Silva	+	+	+	+	+	+	+

26.	*Acetabularia ceranulata* J.V.Lamouroux	+	+	-	-	-	-	-
27.	*Ulva reticulata* Forsskal	+	+	-	+	-	-	-
28.	*Ulva fasciata* Delile	+	+	-	+	-	-	-
29.	*Ulva lactuca* Linnaeus	+	+	-	+	-	-	-
30.	*Enteromorpha intestinalis* (Linnaeus) Nees	-	-	-	+	-	-	-
31.	*Acrosiphonia arcta* ((Dillwyn) Gain	-	-	+	+	+	+	

NB:CH- Chatam; MP- Marina Park; CC- Carbyns cove; BRB- Brookshabad; KG- Kodiyaghat; CHT- Chidiyatapu; WAN-Wandoor

Similarly, 25 species from Phaeophyta (Table – 3) were represented under five families Dictyotaceae, Sargassaceae, Scytosiphonaceae, Cladostephaceae and Ralfsiaceae. The Dictyotaceae family represents eight species *Padina tetrastromatica* Hauck; *Padina gymnospora* (Kutzing) Sonder; *Padina japonica* Yamada; *Padina pavonica* (Linnaeus) Thivy; *Dictyota acutiloba* J. Agardh; *Dictyota divaricata* J. V. Lamouroux; *Dictyota sandvicensis* Sonder and *Canistrocarpus cervicornis* (Kutzing) De Paula et De Clerck. The Sargassaceae family represents fourteen species *Sargassum wightii* Greville ex J.Agardh; *Sargassum duplicatum* Bory; *Sargassum myriocystum* J. Agardh; *Sargassum echinocarpum* J. Agardh; *Sargassum muticum* (Yendo) Fensholt; *Sargassum filipendula* C. Agardh; *Sargassum tenerrimum* J. Agardh; *Sargassum crassifolium* J. Agardh; *Sargassum oligocystum* Montagne; *Sargassum swartzii* C. Agardh; *Hormophysa triquetra* (C. Agardh) Kutzing; *Turbinaria ornata* (Turner) J. Agardh; *Turbinaria conoides* (J. Agardh) Kutzing and *Turbinaria decurrens* Bory. The family Scytosiphonaceae represented one species *Hydroclathrus clathratus* (C. Agardh) M. Howe. The Cladostephaceae family represents one species *Cladostephus spongiosum* (Hudson) C. Agardh and also the family Ralfsiaceae represented one species *Analipus japonicas* (Harvey) M. J. Wynne.

Table – 3. Seaweed species under Phaeophyta along the coast of South Andaman

S.No.	Seaweed species	CH	MP	CC	BRB	KG	CHT	WAN
Phaeophytes								
1.	*Padina tetrastromatica* Hauck	+	+	+	+	+	+	+
2.	*Padina gymnospora* (Kutzing) Sonder	+	+	+	+	+	+	+
3.	*Padina japonica* Yamada	-	+	+	+	-	-	-
4.	*Padina pavonica* (Linnaeus) Thivy	+	+	+	+	+	+	+
5.	*Dictyota acutiloba* J. Agardh	-	-	-	+	-	-	+
6.	*Dictyota divaricata* J. V. Lamouroux	-	-	-	-	-	-	+
7.	*Dictyota sandvicensis* Sonder	-	-	-	+	-	-	-
8.	*Canistrocarpus cervicornis* (Kutzing) De Paula et De Clerck	+	-	-	+	-	-	-
9.	*Sargassum wightii* Greville ex J. Agardh	+	+	+	+	-	+	+
10.	*Sargassum duplicatum* Bory	-	-	-	-	-	-	+
11.	*Sargassum myriocystum* J. Agardh	-	-	-	+	-	-	-
12.	*Sargassum echinocarpum* J. Agardh	-	-	-	-	-	-	+
13.	*Sargassum muticum* (Yendo) Fensholt	-	-	-	+	-	-	-
14.	*Sargassum filipendula* C. Agardh	+	+	+	+	-	-	+

15.	*Sargassum tenerrimum* J. Agardh	-	-	-	-	-	-	+
16.	*Sargassum crassifolium* J. Agardh	+	+	+	+	-	-	+
17.	*Sargassum oligocystum* Montagne	+	+	+	+	-	-	+
18.	*Sargassum swartzii* C. Agardh	+	+	+	+	-	-	+
19.	*Hormophysa triquetra* (C.Agardh) Kutzing	-	-	-	-	-	-	+
20.	*Turbinaria ornata* (Turner) J. Agardh	-	-	-	-	-	-	+
21.	*Turbinaria conoides* (J.Agardh) Kutzing	-	-	+	-	-	-	-
22.	*Turbinaria decurrens* Bory	-	-	+	-	-	-	+
23.	*Hydroclathrus clathratus* (C.Agardh) M. Howe	+	-	-	-	-	-	+
24.	*Cladostephus spongiosum* (Hudson) C. Agardh	+	-	-	-	-	-	-
25.	*Analipus japonicas* (Harvey) M. J. Wynne	+	-	-	+	+	-	-

NB:CH- Chatam; MP- Marina Park; CC- Carbyns cove; BRB- Brookshabad; KG- Kodiyaghat; CHT- Chidiyatapu; WAN-Wandoor

The Phylum Rhodophyta was represented by 32 species (Table – 4) belonging to fifteen families Rhizophyllidaceae, Endocladiaceae, Gracilariaceae, Rhodomelaceae, Delesseriaceae, Spyridiaceae, Galaxauraceae, Liagoraceae, Scinaiaceae, Halymeniaceae, Corallinaceae, Lithophyllaceae, Gelidiellaceae, Bonnemaisoniaceae and Plocamiaceae. The family Rhizophyllidaceae represents one species *Portieria hornemannii* (Lyngbye) P.C.Silva. Similarly, under the family Endocladiaceae, one species *Endocladia muricata* (Endlicher) J.Agardh was recorded. The family Gracilariaceae represents seven species *Gracilaria pygmaea* Borgesen; *G. tikvahiae* McLachlan; *G. salicornia* (C.Agardh) E.Y.Dawson; *G. crassa* Harvey ex J. Agardh; *G. edulis* (S.G.Gmelin) P. C. Silva; *G. Corticata* Var. *Cylindrica* and *G. coronopifolia* J. Agardh. The family Rhodomelaceae was represented by three species *Acanthophora spicifera* (M. Vahl) Borgesen; *Laurencia majuscule* (Harvey) A. H. S. Lucas and *Laurencia papillosa* (C. Agardh) Greville. Under the family Delesseriaceae one species *Cryptopleura lobulifera* (J. Agardh) Kylin was recorded and also under the Spyridiaceae family, one species *Spyridia filamentosa* (Wulfen) Harvey was recorded. Also, the Galaxauraceae family was represented by four species *Actinotrichia fragilis* (Forsskal) Borgesen; *Galaxaura rugosa* (J. Ellis & Solander) J. V. Lamouroux; *Tricleocarpa cylindrica* (J. Ellis & Solander) Huisman & Borowitzka and *T. fragilis* (Linnaeus) Huisman & R. A. Townsend. The family Liagoraceae was represented by four species *Trichogloea requienii* (Montagne) Kutzing; *Trichogloeopsis pedicellata* (M. Howe) I. A. Abbott & Doty; *Liagora tetrasporifera* Borgesen and *Liagora ceranoides* J. V. Lamouroux. The family Scinaiaceae represented by one species *Scinaia hormoides* Setchell and the family Halymeniaceae also represented two species *Halymenia durvillei* Bory and *H. formosa* Harvey ex Kutzing. Under the Corallinaceae family two species *Hydrolithon gardineri* (Foslie) Verheij and Prudhomme van Reine and *Lithophyllum lichenoides* Philippi were noted and also two species *Amphiroa rigida* J.V. Lamouroux and *A. anceps* (Lamark) Decaisne were recorded under the family Lithophyllaceae. Other families like Gelidiellaceae had one species *Gelidiella acerosa* (Forsskal) Feldmann and Hamel, the family Bonnemaisoniaceae had one species *Asparagopsis taxiformis* (Delile) Trevisan and also the family Plocamiaceae was represented by one species *Plocamium cartilagineum* (Linnaeus) P. S. Dixon.

Table – 4. Seaweed species under Rhodophyta along the coast of South Andaman.

S. No.	Seaweed species	CH	MP	CC	BRB	KG	CHT	WAN
Rhodophytes								
1.	*Portieria homemanni* (Lyngbye) P.C. Silva	-	+	-	+	+	+	-
2.	*Amphiroa anceps* (Lamark) Decaisne	-	+	+	+	-	-	-
3.	*Endocladia muricata* (Endlicher) J. Agardh	+	-	-	-	-	-	-
4.	*Gracilaria pygmaea* Borgesen	-	-	-	-	-	+	-
5.	*Gracilaria tikvahiae* McLachlan	-	-	-	-	-	+	-
6.	*Gracilaria salicornia* (C.Agardh) E. Y. Dawson	+	-	+	+	+	+	-
7.	*Gracilaria crassa* Harvey ex J. Agardh	-	-	-	-	+	-	-
8.	*Gracilaria edulis* (S.G.Gmelin) P. C. Silva	+	+	+	-	+	+	
9.	*Gracilaria corticata* Var. *Cylindrica*	-	-	-	-	+	-	-
10.	*Gracilaria coronopifolia* J. Agardh	+	-	-	+	+	-	-
11.	*Acanthophora spicifera* (M.Vahl) Borgesen	+	+	+	+	+	+	+
12.	*Laurencia majuscule* (Harvey) A. H. S. Lucas	-	+	+	+	-	-	-
13.	*Laurencia papillosa* (C. Agardh) Greville	-	-	-	-	+	+	+
14.	*Cryptopleura lobulifera* (J. Agardh) Kylin	-	-	+	-	-	-	-
15.	*Spyridia filamentosa* (Wulfen) Harvey	+	-	-	-	-	+	-
16.	*Galaxaura rugosa* (J. Ellis & Solander) J. V. Lamouroux	+	-	+	+	+	-	+
17.	*Tricleocarpa cylindrica* (J. Ellis & Solander) Huisman & Borowitzka	+	+	-	+	+	+	+
18.	*Tricleocarpa fragilis* (Linnaeus) Huisman & R. A. Townsend	+	+	+	+	+	+	+
19.	*Trichogloea requienii* (Montagne) Kutzing	-	+	+	+	-	-	-
20.	*Trichogloeopsis pedicellata* (M. Howe) I. A. Abbott & Doty	-	+	+	-	+	-	-
21.	*Liagora tetrasporifera* Borgesen	-	+	-	+	+	-	-
22.	*Liagora ceranoides* J. V. Lamouroux	-	+	+	+	+	-	-
23.	*Scinaia hormoides* Setchell	+	-	-	-	-	-	-

24.	*Halymenia durvillei* Bory	-	+	+	+	-	-	-
25.	*Halymenia formosa* Harvey ex Kutzing	-	-	+	+	-	-	-
26.	*Hydrolithon gardineri* (Foslie) Verheij & Prud'homme van Reine	+	+	+	+	+	+	-
27.	*Lithophyllum lichenoides* Philippi	-	-	+	+	-	-	-
28.	*Amphiroa rigida* J. V. Lamouroux	-	-	+	+	-	-	-
29.	*Gelidiella acerosa* (Forsskal) Feldmann & Hamel	-	+	+	+	+	+	+
30.	*Actinotrichia fragilis* (Forsskal) Borgesen	-	-	+	-	-	-	-
31.	*Asparagopsis taxiformis* (Delile) Trevisan	-	+	-	-	-	-	-
32.	*Plocamium cartilagineum* (Linnaeus) P. S. Dixon	-	+	-	+	+	-	-

NB:CH- Chatam; MP- Marina Park; CC- Carbyns cove; BRB- Brookshabad; KG- Kodiyaghat; CHT- Chidiyatapu; WAN-Wandoor.

The pictorial presentation of all 88 seaweed species representing Chlorophyta, Phaeophyta and Rhodophyta recorded during the study period are depicted in Plate – 1 (A-F). Though commercial importances of all the species are yet to be explored, some of the species are already being utilised globally with high economic value. From the Andaman Sea prospective, these seaweed bioresources also can be sustainably exploited towards food, fodder, organic manure, biofuel, biopolymer and several other applications including extraction of probable bioactive molecules with therapeutic value.

There were several commercially viable species recorded in the present study, which includes 10 species of *Sargassum* i.e. *Sargassum weightii, S. duplicatum, S. myriocystum, S. echinocarpum, S. muticum, S. filipendula, S. tenerrimum, S. crassifolium, S. oligocystum* and *S. swartzii* and three species of *Turbinaria* i.e. *Turbinaria ornata, T. conoides* and *T. decurrens* may be a potential source for the production of alginates from the Andaman Sea. Similarly, the Agar producing species *Gelidiella acerosa* available in the Andaman Sea will also be highly beneficial for commercial utilisation. Simultaneously, some of the edible seaweed species including five species of *Caulerpa* i.e. *Caulerpa racemosa*, *C. serrulata*, *C. sertulariodes*, *C. taxifolia* and *C. verticillate*; three species of *Ulva* i.e. *Ulva reticulata*, *U. fasciata* and *U. lactuca*; seven species of *Gracilaria* i.e. *Gracilaria pygmaea*, *G. tikvahiae*, *G. salicornia*, *G. crassa*, *G. edulis*, *G. corticata, G. coronopifolia* and one species *Acanthophora spicifera* found along the coast of South Andaman can be a potential export oriented seafood product if it is taken up as seaweed culture and processing industry. Apart from this many calcified seaweeds including six species of *Halimeda* i.e. *Halimeda opuntia, Halimeda tuna*, *Halimeda macroloba, Halimeda discoidea, Halimeda gracilis* and *Halimeda incrassate;* two species of *Tricleocarpa i.e., Tricleocarpa fragilis* and *T. cylindrica* recorded from the study area can be used in agricultural practices. Also, the therapeutic application of seaweeds can be a major area of contribution to the health science sector. Some reports from the Andaman Sea suggest that seaweeds also have potential antimicrobial, haemolyitic, antioxidant, antibiofilm, cytotoxic activity (Baskran et al., 2013; Chander et al., 2014; Karthik et al., 2015; Mishra et al., 2016; Deepa et al., 2017; Sivaramakrishnan et al., 2017). One recent study by the authors also suggested that red seaweed, *Tricleocarpa fragilis* from South Andaman possess high concentration of functional constituents (Banu and Mishra 2018a) and its extracts also have antibacterial properties (Banu and Mishra, 2018b).

Plate – 1A. Chlorophytes from the coast of South Andaman

Plate – 1B. Chlorophytes from the Coast of South Andaman.

Plate - 1C. Phaeophytes from the Coast of South Andaman

Plate – 1D. Phaeophytes from the Coast of South Andaman

Plate -1E. Rhodophytes from the coast of South Andaman

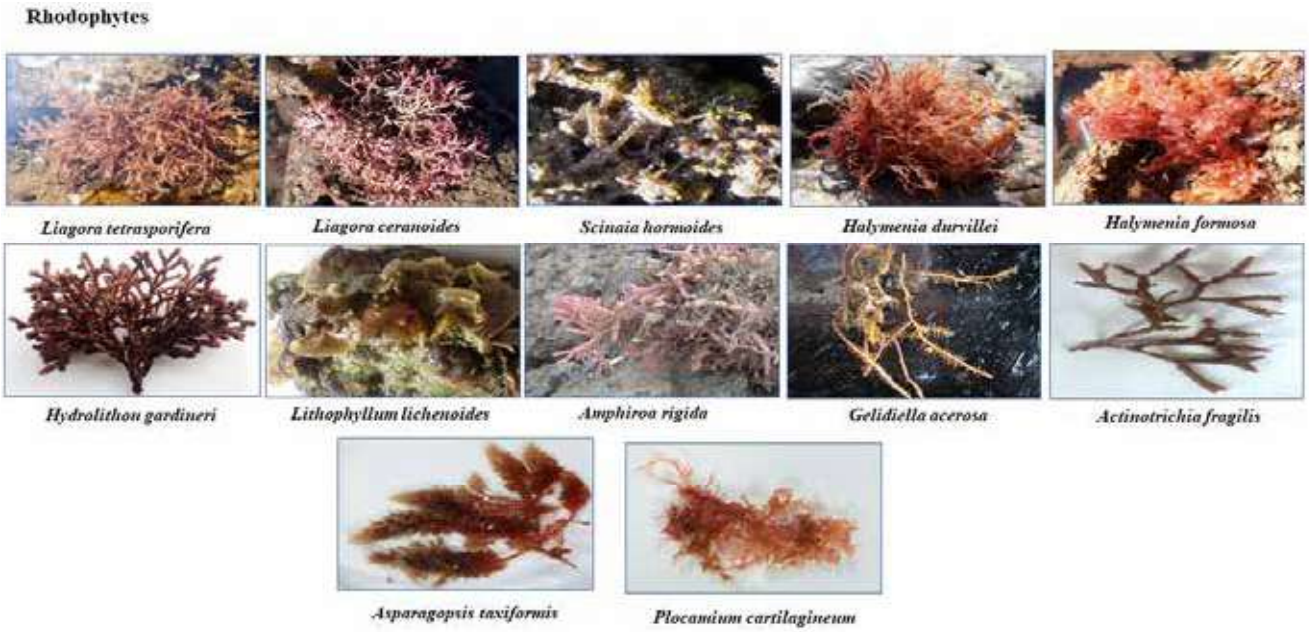

Plate -1F. Rhodophytes from the coast of South Andaman

As enlisted during the study, it is suggested that seaweed potential of South Andaman coast is enormous, but it is yet to be explored and exploited to its fullest capacity. This report provides pictorial presentation of available species composition at South Andaman coast during the study period towards a comprehensive approach for sustainable seaweed resource utilisation and management program.

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