

IDENTIFICATION OF ORDER PARAMETERS AND  
CORRELATION FUNCTIONS FROM CELLULAR AUTOMATA  
AND THE EFFECT OF FINITE SIZE ON THE  
ORDER PARAMETERS

CONTRIBUTION TO THE

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**IDENTIFICATION OF ORDER GELIDIALES (RHODOPHYTA) FROM  
SELECTED AREAS IN THE EAST COAST OF PENINSULAR MALAYSIA**

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**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Identification of Order Gelidiales (Rhodophyta) from Selected Areas in the East Coast of Peninsular Malaysia oleh Siti Asawani binti Awang No. Matrik UK 8608 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Biologi Marin),  
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## LIST OF ABBREVIATIONS

%	-	Percent
×	-	Magnification
°C	-	Celcius
μm	-	Micrometer
‰	-	Part per thousand
cm	-	Centimeter
g	-	Gram
g/L	-	Gram per Liter
L	-	Liter
m	-	Meter
m <sup>2</sup>	-	Square meter
mg	-	Milligram
mg/L	-	Milligram per Liter
mL	-	Milliliter
mm	-	Millimeter
Sp.	-	Species

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## ABSTRACT

Five species within order Gelidiales were recorded in the study area covering the coasts of Terengganu and Mersing, Johor. These included *Gelidiella acerosa* (Forsskål) Feldmann *et* Hamel, *Gelidiella pannosa* (Feldmann) Feldmann *et* Hamel, *Gelidium pusillum* (Stackhouse) Le Jolis, *Gelidium pusillum* var. *pacificum* Taylor and *Pterocladia nana* (Okamura) Shimada, Horiguchi *et* Masuda. Two taxa within order Rhodymeniales, *Gelidiopsis intricata* (C. Agardh) Vickers and *Gelidiopsis repens* (Kuetzing) Schmitz were also identified. In addition, from specimens in a previous collection *Pterocladia capillacea* (S. Gmelin) Santelices *et* Hommersand and *Gelidiopsis hachijoensis* Yamada and Segawa were identified. *Pterocladia capillacea*, *Gelidium pusillum* var. *pacificum* and *Gelidiopsis repens* were a new reports for Malaysia in this study. Overall, *Gelidiella acerosa* was the most abundant among other species in this order followed by *Pterocladia nana*. Separation within genus in order Gelidiales was based on secondary rhizoidal attachment where unicellular independent type occurred in the genus *Gelidiella*, brush type was found in genus *Gelidium* and peg type was found in the genus *Pterocladia* (Perrone, 1994). For specific taxonomic identification in every genus, internal and external characteristics were observed such as thallus size, habit, axis symmetry and their reproductive structures.

## ABSTRAK

Lima spesies dalam order Gelidiales telah direkod di kawasan kajian yang meliputi kawasan pantai di Terengganu dan Mersing, Johor. Ini merangkumi *Gelidiella acerosa* (Forsskål) Feldmann *et* Hamel, *Gelidiella pannosa* (Feldmann) Feldmann *et* Hamel, *Gelidium pusillum* (Stackhouse) Le Jolis, *Gelidium pusillum* var. *pacificum* Taylor dan *Pterocladella nana* (Okamura) Shimada, Horiguchi *et* Masuda. Dua taksa dalam order Rhodymeniales *Gelidiopsis intricata* (C. Agardh) Vickers dan *Gelidiopsis repens* (Kuetzing) Schmitz juga diidentifikasi. Tambahan pula, spesimen daripada koleksi terdahulu iaitu *Pterocladella capillacea* (S. Gmelin) Santelices *et* Hommersand and *Gelidiopsis hachijoensis* Yamada and Segawa turut diidentifikasi. *Pterocladella capillacea*, *Gelidium pusillum* var. *pacificum* dan *Gelidiopsis repens* merupakan rekod baru penemuannya di Malaysia. Keseluruhannya, *Gelidiella acerosa* mempunyai kelimpahan relatif yang paling tinggi berbanding spesies lain dalam order tersebut diikuti oleh *Pterocladella nana*. Pengasingan ke peringkat genus dalam order Gelidiales boleh merujuk kepada akar pelekatan kedua dimana ‘unicellular independent type’ berlaku dalam genus *Gelidiella*, ‘brush type’ dijumpai pada genus *Gelidium* dan ‘peg type’ dijumpai pada genus *Pterocladella* (Perrone, 1994). Untuk identifikasi taksonomi lebih spesifik untuk setiap genus, karakter-karakter luar dan dalam akan diperhatikan seperti saiz talus, ‘habit’, simetri batang dan juga struktur reproduktif.