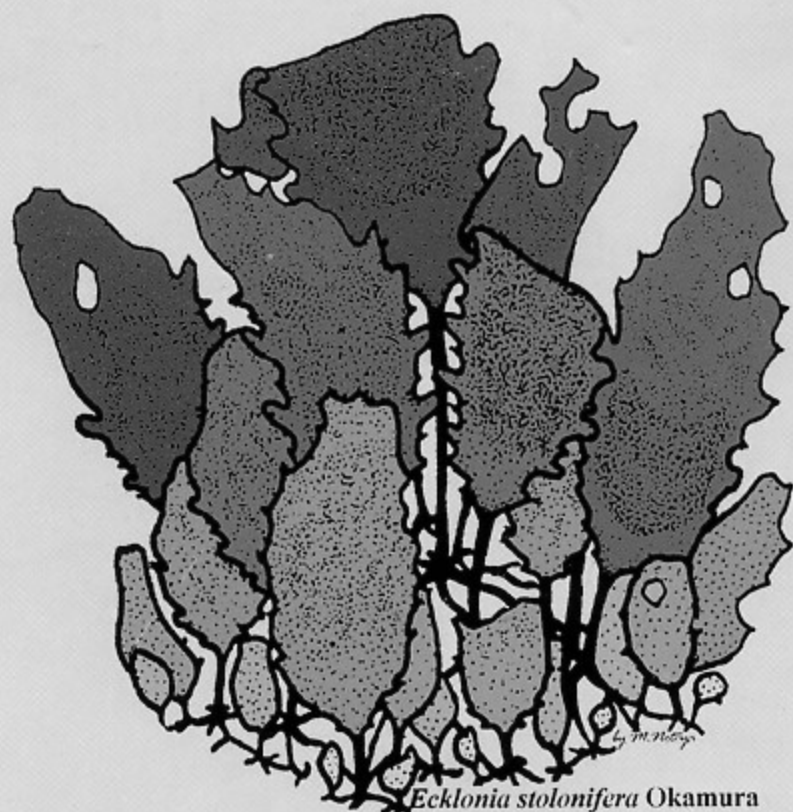


# XIXth International Seaweed Symposium

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## PROGRAM & ABSTRACTS



Organized by  
The Japan Seaweed Association (JSA)  
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id DNA. All the samples showed extremely high genetic variation as compared to currently cultivated strains in their PCR-RFLP analyses and nucleotide sequences of nuclear ITS-1 and plastid RuBisCo regions. Based on phylogenetic analyses of ITS-1 and *rbcL* sequences we confirmed that the present samples represented six distinct species, including two cultivated species (*P. yezoensis* and *P. tenera*) with intraspecific variation, respectively, *P. kinositae* and two unidentified species which were closely related to the two cultivated species. Furthermore, our PCR-RFLP and molecular phylogenetic analyses clearly demonstrated the entry of plastid introgression from *P. yezoensis* to *P. tenera*, and also suggested the possible plastid introgression from cultivated *P. yezoensis* to wild *P. yezoensis*. These results indicate further need to investigate more in detail the genetic relationship among wild and cultivated species of *Porphyra* and to collect more strains as breeding materials.

#### 163 ANALYSIS OF PORPHYRA SPECIES AND POPULATIONS IN ATLANTIC SOUTH AMERICA BASED ON MOLECULAR MARKERS

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New occurrence for *Porphyra* species in the American South Atlantic were verified based on the nuclear small subunit ribosomal RNA gene (SSU rDNA) sequences. The Brazilian species *Porphyra acanthophora* var. *acanthophora*, *Porphyra acanthophora* var. *brasiliensis*, *Porphyra drewiana*, *Porphyra spiralis* var. *spiralis*, *Porphyra spiralis* var. *amplifolia* and *Porphyra* sp. "Piauí" formed a monophyletic group. The cosmopolitan species *Porphyra suborbiculata* was collected from two localities in Brazil further extending its distribution to the South Atlantic. *Porphyra rakiura*, a species known for New Zealand, was collected from Uruguay. Populations of *Porphyra spiralis* var. *amplifolia* (PSA) in the coast of Brazil were analyzed based on the nuclear markers ITS and group ICI intron inserted in the SSU rDNA; in addition to other variable regions of the chloroplast (*rbcL*-S spacer) and mitochondrial (*cox2-3* spacer) genomes. Five introns length polymorphisms were identified, as well as five different *cox2-3* spacer haplotypes and a unique *rbcL*-S spacer haplotype for eight PSA populations. Variations in intron length were due to deletions in a homing endonuclease pseudogene located at the P1 stem region. The introns excised from the pre-RNA in *in vitro* assays, indicating that length variation do not affect intron catalytic activity.

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#### 164 RE-EVALUATING ORDERS WITHIN THE PHAEOPHYCEAE: NEMODERMATALES ORD. NOV. PETRODERMATALES ORD. NOV. AND RALFSIALES ORD. NOV. THREE NEW ORDERS OF CRUSTOSE BROWN ALGAE

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In order to investigate the phylogenetic relationships of crustose brown within the order Ralfsiales non. mud. (Phaeophyceae), nucleotide gene sequences for the LSU (C1 D2 domains), and for both plastid-encoded *rbcL* and partial *psaA* genes were determined for a number of species. The species investigated included marine representatives of all the families included in the Ralfsiales (Lithodermataceae, Nemodermataceae, Ralfsiaceae

and Mesosporaceae), along with a freshwater species. Parsimony and Bayesian analyses were performed using unambiguously aligned *rbcL* and *psaA* and LSU combined sequences. The polyphyly of Ralfsiales non. mod was verified. Three new orders, Ralfsiales ord. nov., Petrodermatales ord. nov. and Nemodermatales ord. nov., a new family, Petrodermataceae fam. nov. and an amendment to the Ralfsiaceae, are proposed, based on their separate positions on the Phaeophyceae tree, and various distinguishing morphological and cytological characteristics. The Ralfsiales ord. nov. is validated to accommodate *Analipus*, *Hapalospongidion* and *Ralfsia* that are regrouped into a single family, the Ralfsiaceae. This monophyletic group is clearly separate from all the other brown algal orders. Petrodermatales nov. ord., along with Petrodermataceae fam. nov., and Nemodermatales nov. ord. are also clearly separate from the Ralfsiales; the former order and family based on *Petroderma maculans*'s basal position in the Phaeophyceae tree, close to the Ishigeales, and the latter order based on *Nemoderma tingitanum*'s position as a sister group of the Fucales. In addition, the validity of Feldsmann's Nemodermataceae was confirmed whilst it is proposed that the family Lithodermataceae should be removed from the Ralfsiales.

**165 EGG SENSORY CHARACTERISTICS PRODUCED BY MIXING OIL FISH AND MARINE ALGAE IN HEN RATIONS (MEXICO)**

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This study consisted in comparing yolk color and egg taste coming from hens fed in a conventional way against those hens fed with a mix of fish oil and marine algae, with the aim of getting eggs with a high EPA and DHA concentrations, and a low cholesterol level. It was used sardine oil with *Sargassum sinicola* (Ss), *Macrocystis pyrifera* (Mp) and *Enteromorpha spp* (E) in hen rations, besides a control group, being the treatments as follows: a control group (CG); fish oil 2% + Ss 10%; fish oil 2% + Mp 10%, and fish oil 2% + E 10%. 32 judges without training were used for evaluating eggs taste, and four scrambled eggs were given to the judges. They had to fill out a questionnaire divided in three parts: general data, test instructions, and five questions about tasty level. The statistical analysis employed was a variance analysis completely at random, and a Tukey test for mean comparison at 95% significance level. There were not significative differences ( $P > 0.05$ ) among treatments in regard to food taste. In regard to yolk color, E had the least acceptability. We can conclude that eggs with a high EPA and DHA concentrations in hens fed with Ss and Mp, gave the best health effects, without any changes in regard to eggs taste and color, having good acceptability by the judges.

**166 PATTERNS OF MARINE MACROALGAL BIODIVERSITY IN SUBTROPICAL EASTERN AUSTRALIA**

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Marine macroalgae of subtropical eastern Australia have been poorly documented and little studied. For this region, there is no published macroalgal flora and ecological surveys of macroalgal communities are few. The Moreton Bay region (approx 26-28 °S latitude), in the biogeographical overlap zone between tropical and temperate waters on the east Australian coast, records 275 macroalgal species, based on herbarium specimens haphazardly collected over the last 100 years. Currently, the first quantitative survey of macroalgal communities is documenting the rich flora of the region, undoubtedly enhanced by the range of habitat types provided by rocky wave-exposed headlands, semi-exposed bays, semi-sheltered and sheltered localities, seagrass and mangrove communities. Species richness at sites appears to be related to habitat heterogeneity, degree of water movement, substrate type and the degree of natural and anthropogenic-mediated disturbance. Species presence and