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Program & Abstracts

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USA. It is distinguished by a larger, more irregular thallus frequently having a deeply infolded surface, extensive irregular sori that lack cuticles, and 3-4 layers of colorless medullary cells. This species usually occurs on rock in tidepools and in the lower intertidal and subtidal zones. The cox1 and cox3 trees reveal its sister relationship to *C. expansa*.

119
PHYLOGEOGRAPHY OF THE GENUS *Ishige* (ISHIGEALES, PHAEOPHYCEAE), WITH A SPECIAL REFERENCE TO *I. okamurae* IN THE NORTH PACIFIC OCEAN REGION

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A brown algal genus Ishige has a basal position in the phylogeny of the Phaeophyceae and includes three species (*I. foliacea, I. okamurae* and *I. sinicola*) that occur in China, Japan and Korea, and Baja California. We examined cox3 and rbcL and cox3 sequences from 265 specimens of the genus collected over its distribution range and studied population structure and migration pattern. Both cox3 and rbcL sequence data strongly support the sister-area relationship between the northeast Asian region and the Gulf of California. A likely explanation for this pattern would be the presence of a species ancestral to contemporary species of Ishige in both regions during the paleogeological period, with descendants later isolated by distance. As for *I. okamurae*, 17 haplotypes from 221 specimens collected in Korea, Japan, Taiwan, Hong Kong, and Southern China were identified. The network and neutrality tests for cox3 support five geologically structured clusters; Korea, Western Japan, Eastern Japan, Taiwan, and Hong Kong, and provide evidence for stability of each population except Taiwans. The level of gene flow was high in Korea Taiwan (392.5), Korea Western Japan (975.5), and Hong Kong Taiwan (697.5) direction. The results hypothesize that local populations of the species were influenced by climatic oscillations and current flow in the northeast Asian waters. The divergence time of *Ishige* is estimated using molecular clock method.

28
LIFE-CYCLE OF *Scinaia interrupta* (NEMALIALES; RHODOPHYTA)

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In the present study the life-cycle of *Scinaia interrupta* (A.P. de Candolle) M. J. Wynne was investigated *in vitro*. A triphasic heteromorphic life-cycle was observed. Carpospores released by cystocarps of gametophytes collected in the field developed into filamentous tetrasporophytes, which produced tetrahedral tetrasporangia. Tetraspores germinated into filamentous protonemal gametophytes, initially identical to the tetrasporophyte. Filamentous gametophytes developed apical utricles and gave rise directly to the fleshy gametophyte. A new phase of the gametophyte development, in which the filamentous gametophytes develop apical utricles, is firstly described for the genus. The present study also reports for the first time for *Scinaia* the influence of the irradiance regime on the initial tetrasporangia development.

LIFE-CYCLE OF *Scinaia interrupta* (NEMALIALES; RHODOPHYTA)

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