New Aleutian Kelp May Hold Key to Laminarialean Evolution

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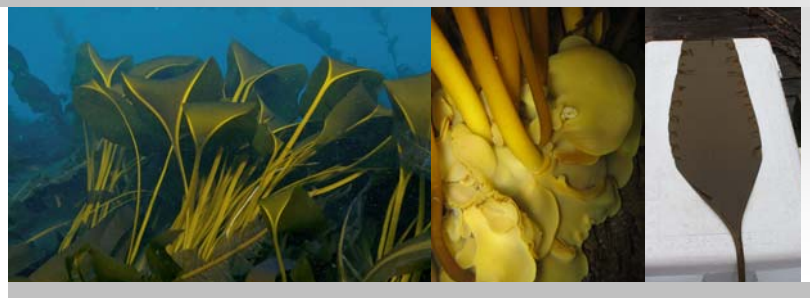
Habit and Gross Morphology



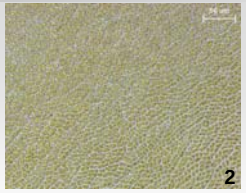
- The brilliant golden-yellow edges of this kelp were observed in the shallow subtidal attached to large boulders surrounded by sand.
- The shoreline is classified as semi-exposed with a significant fetch and ocean ground swell.
- Blade: lanceolate, smooth and up to 1m long x 0.5m wide. Base of blade forms a distinctive raised V-shape.
- Stipe: rectangular, solid, somewhat translucent, and up to 1 m long.
- Holdfast: discoidal, semi-cushion-shaped.

Aureophycus aleuticus
gen. et sp. nov.

Distribution

- To date, this kelp has only been found on the southern shores of Kagamil Is.
- This island is part of a volcanic island group known as the Islands of Four Mountains in the central Aleutians.

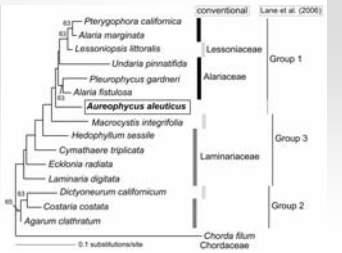
Anatomy



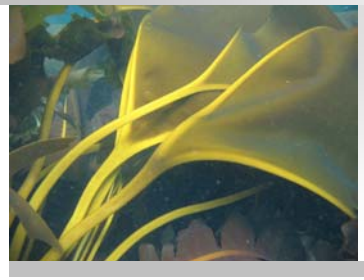
- Anatomical sections of holotype specimen.
- The blade is composed of a small, densely pigmented peripheral layer, less pigmented cortical cells, and loose medullary filaments including trumpet-shaped hyphae (typical foliose laminarialean).
- No hairs or mucilaginous structures (ducts or gland cells).
- No fertile sporophytes have been collected or observed thus far.

Molecular Phylogeny

- We sequenced chloroplast (*rbc*L), nuclear (ITS+5.8S) and mitochondrial (*nad6)* DNA.
- The new kelp shows a closer relationship with Alariaceae of conventional taxonomy, or the 'Group 1' clade of Lane et al. (2006). Interestingly, the species is not clearly included in the *Alaria* group.



A Key Species



Because of the unique position between phylogenic groups, *Aureophycus* is now considered a possible key to understanding the evolution of Alariaceae within the Laminariales.