

**B537** Morphological Variation of Toxic Dinoflagellate *Prorocentrum lima*  
(Ehrenberg) Dodge

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*Prorocentrum lima* (Ehrenberg) Dodge is one of the cosmopolitan harmful dinoflagellates. This species is basically benthic and found on the surface of macroalgae and detritus. Identification of this species requires detailed morphological observation because of its similarity to other *Prorocentrum* species and polymorphism itself. In this study clonal cultures of *P. lima* collected in Saipan, Bermudas and Japan were used. The thecal plate and periflagellar area of this species were studied by means of light (DIC) and scanning electron microscopy. The shape and size of clones of *P. lima* are variable. Cell length varies between 36 and 50  $\mu\text{m}$  and cell width between 24 and 44  $\mu\text{m}$ . The apical area on the left valve is flat and the right one has a V-shaped depression. The valves have a smooth surface and have many trichocyst pores, but the center of the valves is devoid of pores. Evenly spaced marginal pores are located at the edge of the valves. *P. lima* studied herein exhibits 3 morphotypes (ovoid, elongate and roundish forms) with regard to shape and the number of valve and marginal pores. Especially the roundish form requires another careful research for taxonomical re-evaluation because of shape and number of valve pores different from other forms.

**B538** Variation in volatile leaf oils during leaf development in  
*Ambrosia artemisiifolia* using the Plastochron index

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The plastochron index (PI) according to leaf development of *Ambrosia artemisiifolia* were estimated. The concentration and composition of monoterpenes in the leaves of *A. artemisiifolia* were determined, and the seasonal monoterpene variations in representative of plastochron index were investigated. The total amount of monoterpenes in *A. artemisiifolia* was increased continuously from PI 2.0, the highest amount was in PI 12.0. The major monoterpenes in *A. artemisiifolia* consisted of 30 compounds, monoterpene composition was lower in PI 8~9. The leaf monoterpene fraction of *A. artemisiifolia* was dominated by *dl*-limonene, borneol, octene,  $\alpha$ -pinene,  $\beta$ -myrcene, camphene, 1,8-cineole, 1,3,6-octatriene, endo-borneol.