Table I: Shape codes of phytoplankton genera found in EXPORTS 2018 N. Pacific gel traps according to the geometric models in Table III

Genera	Shape (and code)	Genera	Shape(and code)
1. **Bacillariophyceae**		**2. Dinophyceae**	
Chaetoceros	prism on elliptic base 8	Athecate	prolate spheroid 4
Corethron	cylinder 6	Gonyaulax	double cone 7
Coscinodiscus	cylinder 6	Thecate	double cone 7
Melosira	cylinder+2 half spheres 9	Tripos	cone 2
Fragilariopsis	prism on elliptic base 8	Scripsiella	cone 2
Oxyphysis	double cone 7	3. **Prymnesiophyceae**	
Planktoniella	cylinder 6	Emiliana	sphere 3
Pseudo-nitzschia	double cone 7	Helicosphaera	prolate spheroid 4
Rhizosolenia	cylinder 6	Rhabdosphaera	sphere 3
Thalassionema	rectangular prism 1		
Thalassiosira	cylinder 6		

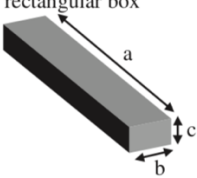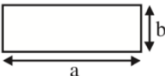**Table II: Shape codes of Radiolaria orders found in N. Pacific according to the geometric models in Table IV**
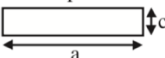
Order	Shape code	Order	Shape code
Nasselaria F	rectangular prism 1		
Nasselaria (genus: Litharachnium)	cone 2		
Nasselaria B,C,D,E	cone 2		
Spumellaria (genus: Cladococcus)	sphere 3		
Spumellaria (girded)	sphere 3		
Spumellaria(A)	sphere 3		
Spumellaria(C)	sphere 3		

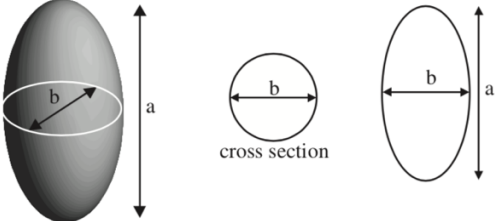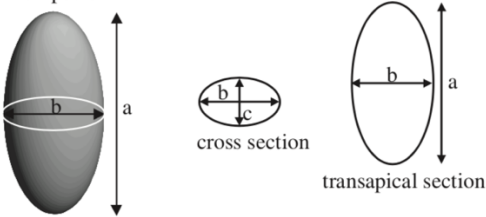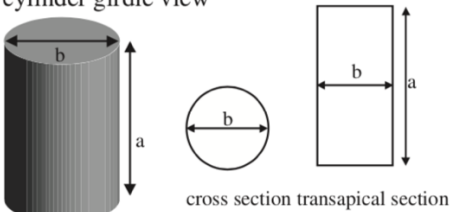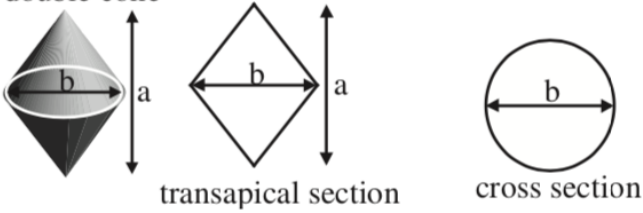|			
Spumellaria(D)	sphere 3		
Foraminifera	sphere 3		
Acantharia	sphere 3		
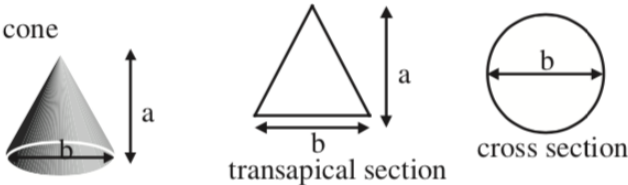
Table III: Shape codes of Cercozoa families found in N. Pacific according to the geometric models in Table IV

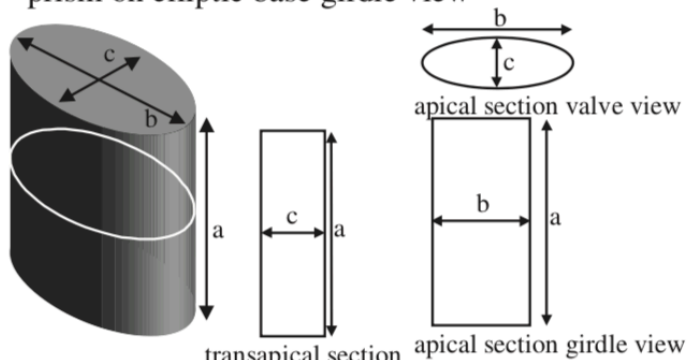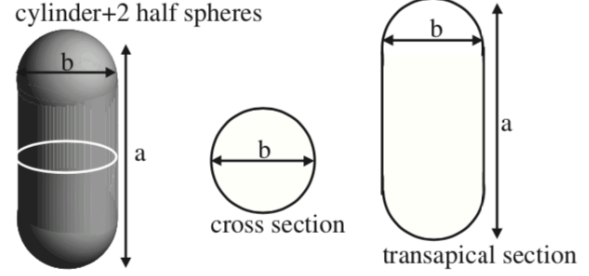| Family	Shape code
1.Phaeodaria	
Aulosphaeridae	sphere 3
Aulocanthidae(nebula)	sphere 3
Cannosphaeridae	sphere 3
Castanellidae	sphere 3
Coelodendridae	double cone 7
Tuscaroridae	ellipsoid 5
Unknown(webby)	sphere 3
beast	sphere 3

Table IV: Geometric shapes and equations for the calculation of biovolume[1]

Code	Simulated Shape	Volume(V)
1	rectangular box — apical section valve view, transapical section, apical section girdle view (with dimensions a, b, c)	$$V = a \cdot b \cdot c$$

2	**cone** transapical section — cross section	$$V = \frac{\pi}{12} \cdot a \cdot b^2$$
3	**sphere** cross section	$$V = \frac{\pi}{6} \cdot a^3$$
4	**prolate spheroid** cross section	$$V = \frac{\pi}{6} \cdot b^2 \cdot a$$
5	**ellipsoid** cross section — transapical section	$$V = \frac{\pi}{6} \cdot a \cdot b \cdot c$$
6	**cylinder girdle view** cross section transapical section	$$V = \frac{\pi}{4} \cdot b^2 \cdot a$$
7	**double cone** transapical section — cross section	$$V = \frac{\pi}{12} \cdot a \cdot b^2$$

8	prism on elliptic base girdle view apical section valve view / transapical section / apical section girdle view	$V = \dfrac{\pi}{4} \cdot a \cdot b \cdot c$
9	cylinder+2 half spheres cross section / transapical section	$V = \pi \cdot b^2 \cdot \left(\dfrac{a}{4} - \dfrac{b}{12} \right)$

References:

Hillebrand, H., Du ̈rselen, C. D., Kirschtel, D., Pollingher, D. and Zohary, T. (1999) Biovolume calculation for pelagic and benthic microalgae. J. Phycol., 35, 403–424.

Sun J, Liu D . (2003). Geometric models for calculating cell biovolume and surface area for phytoplankton. *J Plank Res* **25**: 1331–1346.