



## Introduction

The genus *Diadesmis* was first erected in 1990 (Round et al. 1990) and comprised at the beginning only seven species, subdivided into two subgenera, *Diadesmis* and *Paradiadesmis* (Rumrich et al. 2000). Most of the species in this genus have small valve dimensions, uniseriate striae composed of one, usually elongated areola and a simple raphe structure.

Literature data from the Antarctic Region (Kellogg & Kellogg 2002) show that only cosmopolitan taxa prevail in this region (table 1). A first taxonomic revision (a.o. Le Cohu & Van de Vijver 2002) resulted in the description of a large number of new, and at present typical Antarctic taxa) contradicting the idea of the cosmopolitan nature of the Antarctic taxa. *Diadesmis* species often form large populations in the entire Antarctic Region.

Whereas the taxonomy of the genus *Diadesmis* in the southern Indian Ocean is rather well-defined (apart from the species on Ile Amsterdam), the status of most taxa on the southern Atlantic Ocean islands such as the South Shetland Islands and James Ross Island is much less clear indicating that a thorough study of these taxa was necessary to complete the biogeography of *Diadesmis* in the Antarctic Region.

This poster shows the most recent results on the taxonomy and the diversity of this typical aerophilic genus based on SEM observations. Several questionable taxa are discussed and a preliminary biogeography is suggested.

## Possible new taxa from the southern Atlantic Ocean



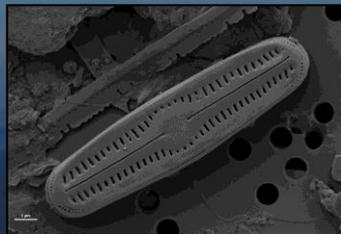
*Diadesmis* sp4

(compared to *D. arcuata*)

Different valve outline & dimensions

Different striation

Different raphe endings



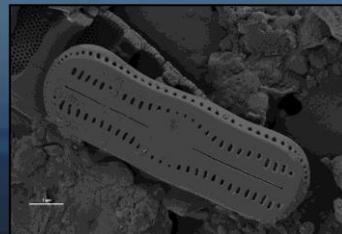
*Diadesmis* sp5

(compared to *D. comperei*)

Different valve outline & dimensions

Different striation

Different raphe endings



*Diadesmis* sp6

(compared to *D. ingeae*)

Smaller valve dimensions

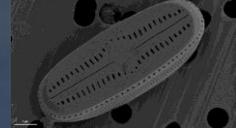
Different mantle striation

Different raphe endings

*D. tabellariaeformis*



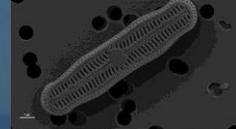
*D. inconspicua*



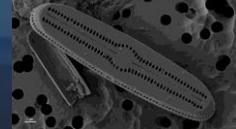
*D. vidalii*



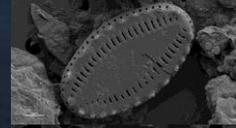
*D. langebertalotii*



*D. subantarctica*



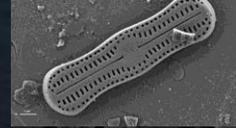
*D. gallica*



*D. australis*



*D. ingeae*



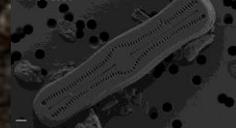
*D. arcuata*



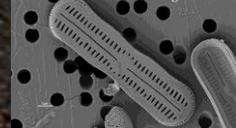
*D. comperei*



*D. costei*

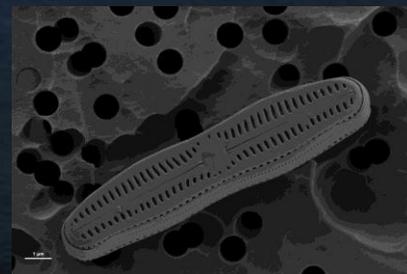
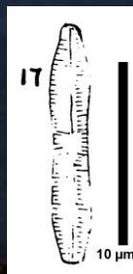


*D. crozetkerguelensis*



## *Diadesmis langebertalotii* or *Navicula nienta* ?

John Carter described in 1962 *Navicula nienta* from Tristan da Cunha. Unfortunately, apart from a line drawing and a short description, nothing is known about this taxon. In the typeslide, the species could not be found. In 2002, Le Cohu & Van de Vijver described *Diadesmis langebertalotii* from Kerguelen and Crozet. Detailed SEM analysis of material from Gough Island (part of the Tristan da Cunha archipelago) showed a taxon with affinities to the original drawing of *N. nienta* but also to *D. langebertalotii* making it highly likely that both are conspecific and hence *Navicula nienta* will have priority although it will have to be recombined to *Diadesmis* (Bot. Code, Art. 11)(McNeill et al. 2006).



## Preliminary Biogeography

Based on these (incomplete) data, it is already clear that apart from a few species such as *D. contenta* or *D. arcuata*, the genus *Diadesmis* shows a clear biogeographical pattern in the Antarctic Region. The highest diversity is reached in the southern Indian Ocean, probably related to a larger diversity in aerophilic microhabitats. The Antarctic Continent has a very low diversity. The low diversity on South Georgia is probably the result of undersampling.

	Indian Ocean					Atlantic Ocean			Antarctic Continent
	Ile Amsterdam	Iles Crozet	Prince Edwards Islands	Iles Kerguelen	Heard Island	South Georgia	South Shetlands Islands	James Ross Island	
<i>D. sp1 (non-subantarctica)</i>	X								
<i>D. sp2 (non-contenta)</i>	X	X							
<i>D. crozetkerguelensis</i>	X	X	X	X	X				
<i>D. ingeae</i>	X	X	X	X	X	X?			
<i>D. vidalii</i>	X	X	X	X	X				
<i>D. arcuata</i>	X	X	X	X	X		X	X	
<i>D. subantarctica</i>		X	X	X	X				
<i>D. comperei</i>		X	X	X	X				
<i>D. costei</i>		X	X	X	X				
<i>D. laurei</i>		X	X	X	X				
<i>D. latestrata</i>		X	X	X	X				
<i>D. langebertalotii</i>		X	X	X	X		X		
<i>D. contenta</i>		X	X	X	X	X		X	
<i>D. sp3</i>						X			
<i>D. tabellariaeformis</i>							X		
<i>D. sp4 (non-arcuata)</i>							X		
<i>D. inconspicua</i>							X	X	
<i>D. sp5 (non-comperei)</i>							X	X	
<i>D. sp6 (non-ingeae)</i>							X	X	
<i>D. australis</i>							X	X	X
<i>D. gallica</i>	X						X		X

## References

- Carter, J.R. (1962) Some freshwater diatoms of Tristan da Cunha and Gough Island. *Nova Hedwigia* 9: 443-483.
- Kellogg, T.B. & Kellogg, D.E. (2002) Non-marine and littoral diatoms from Antarctic and sub-Antarctic Regions. *Diatom Monographs* 1: 1-795.
- Le Cohu, R. & Van de Vijver, B. (2002) Le genre *Diadesmis* (Baelliarophyta) dans les archipels de Crozet et Kerguelen avec la description de 5 espces nouvelles. *Annales de Limnologie* 38: 119-132.
- McNeill et al. (2006) International Code of Botanical Nomenclature (VIENNA CODE). Online version: <http://ibot.sci.skicbn/main.htm>
- Round, F.E., Crawford, R.M. & Mann, D.G. (1990) The diatoms. Biology & Morphology of the genera. Cambridge University Press, Cambridge, 747 pp.
- Rumrich, U., Lange-Bertalot, H. & Rumrich, M. (2000) Diatomeen der Anden. *Iconographia diatomologica* 9: 1-649.
- Acknowledgements:** Part of this research was made possible by the logistic support of the French and Spanish Polar Institutes (IPEV-terrestrial program 136 (Marc Lebouvier & Yves Frenot) and the Limnopolar-project (Antonio Quesada)). Funding was provided within the FWO project G.0533.07. The SEM -pictures were taken during a Synthesys-grant accorded to BVDV. Mrs. K. Kopalov benefited from an Erasmus grant during her stay in Belgium.