

Final project report

<i>Project ID</i>	2006/8.02
<i>Title</i>	The Terra Nova Bay coastal ecosystem in the frame work of Latitudinal Gradient Project (LGP)
<i>Principal investigator</i>	Mariachiara Chiantore
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<i>Duration</i>	2 years
<i>Assigned funding</i>	60 000,00 Euro

Activities and results

The Latitudinal Gradient Project is an International cooperation that aims at assessing the role of the latitudinal gradient of the Victoria Land Coast on the physical and biological variables affecting littoral marine communities.

In this perspective, the present project aims at increasing our understanding on the structure of communities in the Terra Nova Bay area, particularly focusing on:

- 1 – assessing local diversity
- 2 – analyzing main environmental variables that affect biodiversity
- 3 – comparing benthic community structure of Terra Nova Bay with other northern and southern areas, interpreting differences among them

The project took part to the XXV Italian Antarctic Research Expedition (Dr Stefano Schiaparelli and Dr Stefano Aliani, respectively operating in Terra Nova Bay and aboard of the R/V Itlica).

In Terra Nova Bay research was carried out mostly by SCUBA diving: a total of 23 dives were performed and 7 dredge samplings.

SCUBA activities were performed mostly in the Tethys Bay area from the pack-ice. Such samplings were mostly focused on assessing diversity of symbioses involving benthic invertebrates and relationships between microalgae and sponges. As far as dredge sampling, additional data were collected for the long term data set regarding population structure of the scallop *Adamussium colbecki*, a key species in the coastal communities of Terra Nova Bay. Such studies are particularly relevant in the framework of the establishment of Terra Nova Bay as an LTer site.

As far as the activities performed aboard of Itlica, dredge samples were collected in 2006 along the northern Victoria Land. Benthic biodiversity changes radically along the latitudinal gradient of the Victoria Land and the understanding of the changes in processes require a strong interaction between oceanography and benthic ecology.

As far as physical variables, temperature was particularly taken into account both from samplings performed in a set of fixed monitoring sites in the Terra Nova Bay area and from mooring data, and analyses have been performed on circulation patterns

Clear latitudinal trends in benthic diversity have been assessed along the Victoria Land Coast and a clear link with the water column features and water column related processes have been observed, both at the community level and at the level of population features of key species.

A wide range of symbiotic relationships have been observed and are presently under study in the framework of a PhD study.

Products

A – papers in scientific magazines

1. 2009- Cerrano C., M. Bertolino, L. Valisano, G. Bavestrello, B. Calcinai. Epibiotic demosponges on the Antarctic scallop *Adamussium colbecki* (Smith, 1902) and the cidaroid urchins *Ctenocidaris perrieri* Koehler, 1912 in the nearshore habitats of the Victoria Land, Ross Sea, Antarctica. *Polar Biology*, 32 (7): 1067-1076.
2. 2009- Licciano M., A. Giangrande, M.C. Gambi. A new genus of Sabellidae (Annelida, Polychaeta) from Antarctica, with discussion of relationships among plesiomorphic genera within Sabellinae. *Zootaxa*, 2247: 68.
3. 2010- Alvaro M.C, M. Blazewicz-Paszkowycz, N. Davey, S. Schiaparelli. Skin-digging tanaidaceans: the unusual parasitic behaviour of *Exspina typica* (Lang, 1968) in Antarctic waters and worldwide deep basins. *Antarctic Science*, ISSN: 0954-1020
4. 2010- Blight L.K., D.G. Ainley, S.F. Ackley, G. Ballard, T. Ballerini, R. L. Brownell Jr., C.-H. Christina Cheng, M. Chiantore, D. Costa, M.C. Coulter, P. Dayton, A.L. Devries, R. Dunbar, S. Earle, J.T. Eastman, S.D. Emslie, C.W. Evans, R.A. Garrott, S. Kim, G. Kooyman, A. Lescroël, M. Lizotte, M. Massaro, S. Olmastroni, P.J. Ponganis, J. Russell, D.B. Siniff, W.O. Smith Jr., B.S. Stewart, I. Stirling, J. Willis, P. Wilson, E.J. Woehler. Fishing for data in the Ross Sea. *Science*, 330: 1316
5. 2010- Bowden D, S. Schiaparelli, M.R. Clark, G.J. Rickard. A lost world? Archaic crinoids dominated assemblages on an Antarctic seamount. *Deep-Sea Research. Part 2. Topical Studies In Oceanography*, ISSN: 0967-0645, doi: 10.1016/j.dsr2.2010.09.006
6. 2010- Cummings V.J., S. Thrush, M. Chiantore, J.E. Hewitt, R. Cattaneo-Viatti. Macrobenthic communities of the north western Ross Sea shelf: links to depth, sediment characteristics and latitude. *Antarctic Science*, 22 (6): 793-804.
7. 2010- De Broyer C., B. Danis, S. Schiaparelli, et al (2010). How many species in the Southern Ocean? Towards a dynamic inventory of the Antarctic marine species. *Deep-Sea Research. Part 2. Topical Studies In Oceanography*, ISSN: 0967-0645, doi: 10.1016/j.dsr2.2010.10.007
8. 2010- Parapar J. Lopez E., Gambi M.C., Nunez J., Ramos A. Quantitative analysis of soft- bottom polychaetes of the Belligshausen Sea and Gerlache Strait (Antartica). *Polar Biology*. DOI: 10.1007/s00300-010-0927-4
9. 2010- Schiaparelli S., M.C. Alvaro, J. Bohn, G. Albertelli. "Hitchhiker" polynoid polychaetes in cold deep waters and their potential influence on benthic soft bottom food webs. *Antarctic Science*, vol. 22 (4); p. 399-407
10. 2010- Thrush S., J.E. Hewitt, V.J. Cummings, A. Norkko, M. Chiantore. □-diversity and species accumulation in Antarctic coastal benthic communities: the importance of habitat variability, spatial extent and productivity on ecological connectivity. *Plos ONE*, 5(7), e1 1899, doi:10.1371/journal.pone.0011899
11. In stampa- Kern S. and S. Aliani. A comparison between polynya area and associated ice production and mooring-based measurements of temperature, salinity, and currents in the southwestern Ross Sea, Antarctica. *Annals of Glaciology* ISSN 0260-3055.
12. In stampa – Parapar J., Gambi M.C., Rouse G.W. A revision of the deep-sea genus *Axiokebutia* Pocklington and Fournier, 1987 (Annelida, Scalibregmatidae). *Proceedings of the 10th International Polychaete Conference (20-26 June 2010, Lecce, Italy)*. *Italian Journal of Zoology*.
13. In stampa- Schiaparelli S., M.C. Alvaro, R. Barnich. Polynoid polychaetes living in the gut of irregular sea urchins: a first case of inquilinism in the southern ocean and an overview of polychaete-echinoderm associations. *Antarctic Science*, Issn: 0954-1020
14. In stampa- Schiaparelli S., R.R. Hopcroft R.R. The Census of Antarctic Marine Life: Diversity and change in Southern Ocean Ecosystems. *Deep-Sea Research. Part 2. Topical Studies In Oceanography*, ISSN: 0967-0645, doi: 10.1016/j.dsr2.2010.11.002

B – book chapters

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C - proceedings of international conferences

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D – proceedings of national meetings and conferences

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E – thematic maps

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Programma Nazionale di Ricerche in Antartide (PNRA)

F – patents, prototypes and data bases

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G – exhibits, organization of conferences, editing and similar

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H - formation (PhD thesis, research fellowships, etc.)

PhD Theses

1. Maria Chiara Alvaro has finished her second year of the Polar Sciences PhD about "Study on ecology, evolution and phlogeography of the antarctic marine symbioses, through molecular analysis techniques". Tutor: Mariachiara Chiantore
2. 2006- Francesca De Domenico, got the PhD in Polar Sciences after defending her tesi, titled "Biodiversity and ecology of echinoderms along the Victoria Land coast (Ross Sea). Tutor: Mariachiara Chiantore

Research units

UO-1- Chiantore

Mariachiara Chiantore	Researcher	Dipteris - Uni GE
Riccardo Cattaneo-Vietti	Full Professor	Dipteris - Uni GE
Giancarlo Albertelli	Full Professor	Dipteris - Uni GE
Stefano Schiaparelli	Researcher	Dipteris - Uni GE
Francesca De Domenico	PhD student	Dipteris - Uni GE
Davide Privitera	PhD student	Dipteris - Uni GE
Simone Bava	External Collaborator	Dipteris - Uni GE
Luisa Mangialajo	Post Doc	Dipteris - Uni GE
Ilenia Vilemini	PhD student	Dipteris - Uni GE

UO-2- Povero

Paolo Povero	Associate Professor	Dipteris - Uni GE
Nicoletta Ruggieri	External Collaborator	Dipteris - Uni GE
Michela Castellano	Post Doc	Dipteris - Uni GE
Carlo Ossola	External Collaborator	Dipteris - Uni GE
Enrico Olivari	External Collaborator	Dipteris - Uni GE

UO-3- Bavestrello

Giorgio Bavestrello	Full Professor	Dip. Sci. Mare - Univ. Politecnica delle Marche
Carlo Cerrano	Researcher	Dipteris - Uni GE
Barbara Calcinai	Researcher	Dip. Sci. Mare - Univ. Politecnica delle Marche
Stefania Puce	Researcher	Dip. Sci. Mare - Univ. Politecnica delle Marche
Cristina Gioia di Camillo	Post Doc	Dip. Sci. Mare - Univ. Politecnica delle Marche
Silvia Tazioli	Post Doc	Dip. di Scienze del mare, Università Polit. Marche
Marzia Bo	PhD student	Dip. Sci. Mare - Univ. Politecnica delle Marche

UO-4- Gambi

Maria Cristina Gambi	First Researcher	Stazione Zoologica di Napoli
Maria Cristina Buia	First Researcher	Stazione Zoologica di Napoli
Francesco Paolo Patti	Technician	Stazione Zoologica di Napoli
Maurizio Lorenti	Technician	Stazione Zoologica di Napoli
Maria Alessandra Iannotta	Post Doc	Stazione Zoologica di Napoli
Gabriele Procaccini	Researcher	Stazione Zoologica di Napoli
Stefano Piraino	Associate Professor	Disteba, Università' di Lecce
Adriana Giangrande	Associate Professor	Disteba, Università' di Lecce
Grazia Cantone	Full Professor	Dip. Biol. Animale - Uni CT

UO-5- Aliani

Stefano Aliani	Researcher	CNR ISMAR SP
Anna Vetrano	Researcher	CNR ISMAR SP
Mireno Borghini	Technician	CNR ISMAR SP

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UO-6- Totti		
Cecilia Totti	Researcher	Dip. Sci. Mare - Univ. Politecnica delle Marche
Mario De Stefano	Post Doc	Stazione Zoologica di Napoli
Tiziana Romagnoli	PhD student	Dip. Sci. Mare - Univ. Politecnica delle Marche
Emellina Cucchiari	grant	Dip. Sci. Mare - Univ. Politecnica delle Marche

Date: 02 February 2012

Notes