



Some ascidians from the southern coast of Madagascar collected during the “AtimoVatae” survey

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Abstract

Surveys of littoral invertebrates along the southern coast of Madagascar have produced the first study of ascidians in this part of the Indian Ocean. Collections were made by SCUBA divers in May and June 2010 down to 25m depth. This region is considered the southern limit for coral reefs but remains diverse biologically. Upwellings and an abundant plankton community particularly favour the abundance of ascidians in this area. Of the 39 species of non-didemnid species described here, eight are new. Ten species are common to South Africa. Other species were for the most part already known from the Mozambique Channel and a few have also been recorded in the western Pacific (either cosmopolitan or introduced).

Key words: Ascidians, Madagascar, systematics, new species

Introduction

Our knowledge of the marine biodiversity of Madagascar is to a very large extent based on research carried in the regions of Nossi-Bé and Tuléar [Toliara], both located in the "Western and Northern Madagascar" marine ecoregion (Spalding *et al.* 2007) and characterized by extensive coral reefs ecosystems. By contrast, the "Deep South" of Madagascar is an oceanic region of fierce promontories, open bays and extensive algal belts. The lack of infrastructures has arguably made it the least visited and least known coastline in the country. The marine hydroclimate is characterized by a coastal upwelling with cold surface water and high concentrations of chlorophyll-*a* (Lutjeharms & Machu 2000), with winter sea surface temperatures as low as 21.5°C, vs 24–25°C or more elsewhere around Madagascar (Piton & Laroche 1993). From the late 1990's, new species of molluscs started to be discovered on the coastline of the regions Anosy and Androy, first serendipitously as a by-product of the local lobster fishery (e.g. Bouchet 1999), and later specifically attracting shell collectors and amateur taxonomists (e.g. Bozzetti 2006, 2008). These scattered findings and the unique oceanographic background together suggested that the "Deep South" of Madagascar had a potential for more discoveries, and this was what motivated a large-scale exploring expedition that sampled the benthos of the region in April-June 2010. The name of the expedition, *Atimo Vatae*, means "Deep South" in the regional Antandroy language. For baseline information on the project, see <http://laplaneterevisitee.org/en/87/accueil>.

Concerning ascidians, none were recorded from the south of Madagascar. Only miscellaneous data are available from the western coast of Madagascar and the Mozambique Channel (Michaelsen 1918, 1919; Millar 1967, 1988; Monniot F. & C. 1999, 2006; Plante & Vasseur 1966; Vasseur 1970). Despite the fact that the survey was not focused specifically on the retrieval of tunicates, the team of divers, (all biologists, but with different areas of expertise) collected 39 ascidian species which are described below (as well as several others of the family Didemnidae, to be studied later). The station list is given in Table 2. Half of the species cited here were already known from the Mozambique Channel and farther north in the western Indian Ocean (table 1). Ten species are common to the South African fauna. Eight species are new to science. Among the 12 species also recorded in the Pacific Ocean, it is difficult to establish whether they belong to a common Indo-Pacific fauna or if they have been introduced via ship hulls. Additional uncertainty surrounds the identification of species when only a single specimen was available. No conclusions can be drawn about the ratio of the different ascidian orders and families present in the collected material. During the *Atimo Vatae* survey, the specimens collected were, for the most part, large and/or brightly coloured without epibionts and more discreet animals may have been missed. Nevertheless, the large ratio of new species indicates a high faunistic diversity in the south of Madagascar.

Material and methods

The specimens were fixed with 4% formaldehyde in sea water. To be studied the tunic is removed, the body is cut along the ventral line and pinned in a dish on a paraffin layer. The tissues are stained with hemalum. Some organs are mounted on slides in a plastic medium.

In the text the *Atimo Vatae* station numbers (detailed in table 2) are preceded by TA, TR for diversions, DW for dredgings. The specimens are registered in the Muséum National d'Histoire Naturelle with a MNHN number. The MEB photos have been made at the MNHN platform of electron microscopy.