COMMON ASCIDIANS OF THE SYDNEY REGION

Invertebrates account for 99% of the animals on the planet, yet public perception of their significance, even their existence, is limited. Ascidians are common and biologically significant members of marine assemblages and in an evolutionary sense they provide fascinating insights into vertebrate origins. Nevertheless, it is difficult to appreciate anything unless you are aware of if existence and can identify it. Ascidians, or tunicates as they are sometimes referred to, are exclusively marine and with few exceptions occur below the lowest tides. To appreciate them you'll need to get wet! This photographic guide is designed for students, divers and keen amateurs to identify and appreciate the more common ascidians of the Sydney Region (Port Stephens to Ulladulla). It is not exhaustive, nor is it a taxonomic key. My aim was not to replace the monograph series developed by Patricia Kott (1985, 1990a&b, 1992a&b, 2001), but to make her work more accessible. You will encounter species that are not mentioned here and when you do I recommend her monographs to you.

Kott (1997) quite correctly observes that examining the external morphology of species is unlikely to allow the unambiguous identification of ascidians and notes that “specimens must be dissected for identification”. Although this statement is difficult to refute there are a number of common species in the Sydney region with characteristic external morphology, or restricted to certain habitats, which allow identification with a high degree of certainty. Wherever possible I support statements in this key with reference to the scientific literature, although I also use it as an opportunity to record some of my own observations or refer to my own unpublished data. I assume that the specimens being examined by the reader are in situ, beach cast or freshly collected (Note though the need and importance of scientific collecting permits). Wherever possible I focus on features that aid identification without the need for dissection, but on occasions the reader will have no choice. I have elected to ignore representatives of the diverse Didemnidae in this key. Although members of this family are common and readily identified to the family level, their small zooids render them difficult to ascribe to species. The fourth part of Kott’s monograph series (Kott, 2001) is devoted to this troublesome family. For those wishing to familiarise themselves with members of this group I recommend the detailed but readable work by Day (1974) on Pyura stolonifera, which is almost indistinguishable from the ‘cunjevoi’, Pyura praeputialis; probably our most accessible ascidian. A good recent general account of the group is given by Stocker (2001), while the excellent diagrams and beautiful photographs in Monniot et al. (1991) are well worth examining, even though their focus is on tropical species of New Caledonia. Considerable work remains to be done with this group (Davis et al., 1999) but if these pages stimulate students or others to work with these fascinating organisms, then I will have achieved my aim. Finally, I dedicate these pages to the life work of Dr Pat Kott following her recent passing.

References


**LIST OF TAXA TO BE INCLUDED IN THESE PAGES, WITH AN OUTLINE OF CLASSIFICATION**

Phylum Chordata
Class Ascidiacea
Order Enterogona
Suborder Phlebobranchia
  Family Ascidiidae
    *Phallusia obesa*

Suborder Aplousobranchia
  Family Cionidae
    *Ciona intestinalis*
  Family Clavelinidae
    *Clavelina australis*
    *Clavelina meridionalis*
    *Clavelina moluccensis*
    *Clavelina pseudobaudinensis*
  Family Pycnoclavellidae
    *Euclavella claviformis*
  Family Holozoidae
    *Hypsistozoa distomoides*
    *Sycozoa cerebriformis*
Sycozoa pulchra
Family Polycitoridae
   Polycitor giganteus
   Eudistoma elongatum
   Eudistoma laysani
   Eudistoma maculosum
Family Pseudodistomidae
   Pseudodistoma gracilum
Family Polyclinidae
   Sidneioides tamaramae

Order Pleurogona
Suborder Stolidobranchia
   Family Styelidae
      Subfamily Styelinae
         Styela plicata
         Cnemidocarpa pedata
         Cnemidocarpa radicosa
      Subfamily Polyzoainae
         Polyandrocarpa lapidosa
         Oculinaria australis
         Stolonica australis
         Symplegma oceania
      Subfamily Botryllinae
         Botrylloides leachi
         Botrylloides magnicoecum
         Botrylloides perspicuum
   Family Pyuridae
      Pyura australis
      Pyura gibbosa gibbosa
      Pyura spinifera
      Pyura stolonifera
      Herdmania grandis
      Halocynthia dumosa
**Eudistoma maculosum** Kott, 1990 (Polycitoridae)

**Taxonomy**
Order: Enterogona Suborder: Aplousobranchia. Family: Polycitoridae
Family: Polycitoridae Michaelsen, 1904
Genus: Eudistoma Caullery, 1909

A large, predominantly tropical genus with 28 species (17 endemic) known from Australia. Five species recorded from the Sydney Region, four are endemic.

Original binomial: *Eudistoma maculosum* Kott, 1990
Species: *maculosum* = Lat. spotted (referring to the surface pigmentation)

**Notes**
This species forms large fleshy colonies between 0.5 and 2 cm thick with rounded borders. Colonies form large adherent sheets that may exceed 50 cm in diameter. Zooids are arranged in simple systems and the two-tone colouration is characteristic. The test is generally white, while pigmentation around the zooid systems is green through to brown. Individuals from South Australia have darker pigmentation around the zooid systems. This species appears to prefer sites with only moderate wave exposure and is frequently encountered at the entrance to caves. Colonies located in the shade of cave entrances tend to be lighter in colour, probably reflecting the effect of shading photosynthetic symbionts. Other members of the genus are known to form such associations (Kott, 1990) and the presence of photosynthetic symbionts is more common than anticipated in temperate regions (Roberts *et al.*, 1999). In relatively calm locations in can be found in as little as 3m of water. It occurs down to at least 25m. *Eudistoma maculosum*, along with other members of this genus (e.g. *E. olivaceum*, Davis & Wright, 1990; Davis, 1991), produce alkaloids which are likely to play defensive roles (Berry *et al.*, 1999; Davis & Bremner, 1999). Davis (1998) observed significant antifouling activity with crude solvent extracts of *E. maculosum* at 5% of natural concentration, although whether alkaloids conferred this activity is not yet clear. Kott (1990) reports that a single large embryo is brooded with the larval trunk measuring 0.9 mm and records a reproductive specimen in August in Jervis Bay. Endemic species, distributed from Port Peron (WA) around the southern Australian coast to at least Wollongong (NSW). This species cannot be confused with any other in the Sydney region. The closely related *E. tigrum* is restricted to the tropics and possesses smaller larvae (trunk length 0.75mm). Kott (1990) suggests that where larvae are not available the tropical temperate distribution allows these two species to be distinguished.

**References**


*Eudistoma maculosum*
(Southern NSW)

*Eudistoma maculosum* - close up of colony
(Southern NSW)
Euclavella claviformis (Herdman, 1899) (Pycnoclavellidae)

**Taxonomy**
Order: Enterogona Suborder: Aplousobranchia. Family: Pycnoclavellidae
Family: Pycnoclavellidae Kott, 1990
Genus: Euclavella Kott, 1990
   A monotypic genus known only from NSW and northern New Zealand.
Original binomial: Colella claviformis Herdman, 1899
Species: claviformis = Lat. Club shaped

**Notes**
This handsome stalked colonial species cannot be confused with any other in this region. The club-like head is borne on a short fleshy stalk and houses completely embedded zooids, which open all around the head of the animal. The glassy semi-transparent test contrasts with the orange pigmentation of the zooids. This species appears to be restricted to deep reefs (15-60m, Kott, 1990) in areas experiencing strong tidal flow (Davis, pers. obs.). This monotypic genus has been recorded from Jervis Bay to Ballina (NSW) and the North Island of New Zealand (Kott, 1990). Kott (1990) notes that up to 8 embryos are brooded within a pouch and are present in May and June. Larvae are large with a trunk length of 1.2 mm (Kott, 1990).

**References**