

## Two new records of *Dendronephthya* octocorals (Family: Nephtheidae) from Andaman and Nicobar Islands, India

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An extensive survey to explore the variety and distribution of octocorals and associated faunal community in and around the Andaman and Nicobar Islands yielded two species (*Dendronephthya mucronata* and *D. savignyi*), which is new zoogeographical record in India. The elaborate description, distribution and morphological characters are presented in this paper. The literature reveals that so far 55 species of *Dendronephthya* octocorals have been recorded from India.

[**Keywords:** Soft corals, Octocorals, *Dendronephthya*, Carnation corals, Andaman and Nicobar islands]

### Introduction

The genus *Dendronephthya* (Cnidaria: Octocorallia: Alcyonacea: Nephtheidae) is an azooxanthellate and colourful soft coral reported in the warm coastal waters of the Indo-Pacific region, supporting reef formation of coral reef ecosystems throughout the world. It is commonly called carnation coral in the aquarium trade. The colours are crazy bright red, purple, pink, green, white orange, yellow, and mixes of these as well. Kukenthal<sup>1</sup> described this genus, dividing it into three main divisions: Glomerate, Divaricate and Umbellate, based on the colonial growth forms and separated this genus from the genera of *Spongodes*<sup>2</sup>. Later, Tixier-Durivault and Prevorsek<sup>3</sup> divided the genus *Dendronephthya* into *Spongodes*, *Roxasia* and *Morchellana*, based on species in the Glomerate, Divaricate and Umbellate divisions and followed the classification of Kukenthal. Utinomi<sup>4</sup> created three subgenera: *Dendronephthya*, *Roxasia* and *Morchellana*. Thereafter, Verseveldt<sup>5-10</sup> and Imahara<sup>11-16</sup> used the subgenera of autonomy in some reports.

Taxonomic studies carried out by various researchers described 255 species till today<sup>17-28</sup>. In India, studies on the *Dendronephthya* octocoral taxonomy and distribution are very much

circumscribed to the works of Henderson<sup>17</sup>. The above studies reported 53 new species. Henderson's work was based on the material made available from the Royal Indian Marine Survey ship collections from several Indian Ocean locations, of which 34 species were reported from Andaman and Nicobar islands. These circumstances warrant a comprehensive study on the systematic and distribution of the Indian *Dendronephthya*. In the present study, two *Dendronephthya* species are described and an updated checklist is also provided for further studies in India.

### Materials and Methods

Andaman and Nicobar archipelago has 572 reef islands between Myanmar (North) to Sumatra (South) 6° to 14° North and 92° to 94° East with 2000 km<sup>2</sup> coral reef cover<sup>29</sup>. The *Dendronephthya* octocoral taxonomical study was conducted at Andaman and Nicobar islands during the period from June 2013 to August 2015. The samples were collected in the study area by SCUBA diving up to 40 m depth. The specimens were identified based on the morphological characterises, such as growth form, colour, size of each part of the colony, polyp, and sclerite. The glosses of each piece were taped and live colonies photo graphed using underwater digital camera (Sony

T900 and Canon G10). Sclerites were extracted using 5% sodium hypochlorite<sup>30</sup>.

## Results

A total of 55 species of *Dendronephthya* octocorals have been recorded from India (Table 1), of which two species are new to India. Till today, 40 species are reported from Andaman and Nicobar islands, seven species from the east coast (Ganjam coast, Orissa), four species from the Gulf of Kachchh, two species from the Gulf of Mannar, two species from Lakshadweep islands and three samples identified up to genus level from the west coast (Kerala coast). The species identification of the present study was made based on variations in morphological features of sclerites.

### Systematic accounts

Phylum : Cnidaria Hatschek<sup>31</sup>  
 Class : Anthozoa Ehrenberg<sup>32</sup>  
 Subclass : Octocorallia Haeckel<sup>33</sup>  
 Order : Alcyonacea Lamouroux<sup>34</sup>  
 Family : Nephtheidae Gray<sup>35</sup>  
 Genus : *Dendronephthya* Kukenthal<sup>1</sup>

#### 1. *Dendronephthya mucronata*<sup>36</sup> (Fig. 1)

Material Examined: ZSI/ANRC-7703 Sample, 13.5 cm long and 9.8 cm broad and 5-10 m deep; Pongibalu (Latitude 11°31.030 N; Longitude 092°39.159 E), South Andaman; shallow to reef edge with turbid water.

Description: Colonies under glomerate type; yellowish white stalk and branches, orange-red colour in stem and polyps, the stalk or trunk is thick measuring 3.0 cm, about one-third of the total height of the colony. The polyps are arranged in groups of four to eight. The sclerites are arranged in eight double rows of straight or curved spindles of 0.3–6.5 mm size; in stalk sclerites are short, thick spindles, clubs, three and four rayed and oval forms; in the stem spindles up to 4.0 mm in size.

Distribution: Indo Pacific; India: Andaman and Nicobar islands.

#### 2. *Dendronephthya savignyi*<sup>32</sup> (Fig. 2)

Material Examined: ZSI/ANRC-7702 Sample, 8.6 cm wide and 4.2 cm high and 10.0 m deep; South Button Island (Latitude 12°13.4 N; Longitude 092°01.334 E), South Andaman; shallow to reef edge with turbid water.

Description: Colonies under umbellate type with white colour in stalk, stem, and branches, whereas

polyp is greyish white. The stalks are very short and polyps are arranged in groups of three to eight and may occur in small groups on flattened branches. Sclerites are flattened curved spindles (0.24 mm); in stem spindles either curved or straight (1.28–2.4 mm); in stalk sclerites are spindles curved, rods, three rayed and four rays (0.25–1.5 mm).

Distribution: Indo-Pacific; India: Andaman and Nicobar islands.

## Discussion

Octocorals are distributed worldwide and are important component of coral reef ecosystems in the Indo-Pacific region<sup>37</sup>. Taxonomical studies were carried out by different researchers from different parts of the world, such as Southern Vietnam<sup>38</sup>, the Red Sea<sup>39, 40</sup>, the southern Red Sea<sup>41</sup>, eastern and southern Africa<sup>42-44</sup>, the Seychelles<sup>45</sup>, American Samoa<sup>46</sup>, Southwestern Australia<sup>47</sup>, Southern Taiwan<sup>40</sup>, the South China Sea, the Indo-Pacific Ocean<sup>48</sup>, and Indonesia<sup>49</sup>.

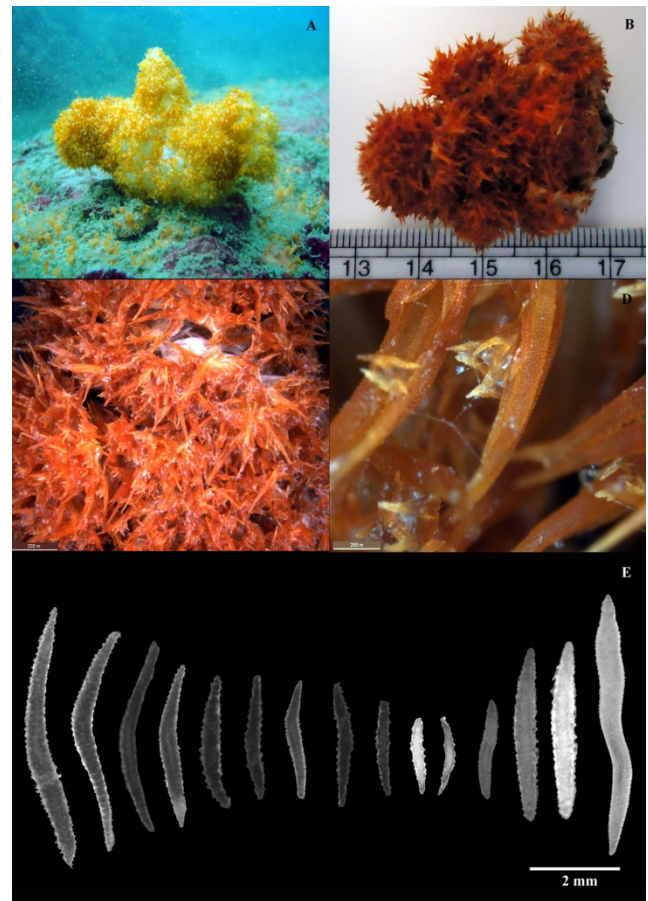


Fig. 1 — A: Live underwater picture of *Dendronephthya mucronata*, B: Deposit specimen ZSI/ANRC, C & D: Polyp arrangement, E: Spindle sclerites in different size

Table 1 — Checklist of Genus *Dendronephthya* sp. (Octocorallia) from India

S. No.	List of Species from India	AN	LAK	GOM	GOK	EC	WC	Remarks
1.	<i>Dendronephthya albegilva</i>	*	-	-	-	-	-	-
2.	<i>Dendronephthya andamanensis</i>	*	-	-	-	-	-	-
3.	<i>Dendronephthya arbuscula</i>	*	-	-	-	-	-	-
4.	<i>Dendronephthya aurora</i>	-	-	*	-	-	-	-
5.	<i>Dendronephthya biformata</i>	-	-	-	-	*	-	-
6.	<i>Dendronephthya booleyi</i>	*	-	-	-	-	-	-
7.	<i>Dendronephthya brachycaulos</i>	*	-	-	-	-	-	-
8.	<i>Dendronephthya brevirama</i>	*	*	-	*	-	-	-
9.	<i>Dendronephthya cervicornus</i>	*	-	-	-	-	-	-
10.	<i>Dendronephthya cocosiensis</i>	*	-	-	-	-	-	-
11.	<i>Dendronephthya conica</i>	*	-	-	-	-	-	-
12.	<i>Dendronephthya costatorubra</i>	*	-	-	-	-	-	-
13.	<i>Dendronephthya delicatissima</i>	*	-	-	-	-	-	-
14.	<i>Dendronephthya dendrophyta</i>	-	-	-	*	-	-	-
15.	<i>Dendronephthya dichotoma</i>	-	-	-	-	*	-	-
16.	<i>Dendronephthya divaricata</i>	*	-	-	-	-	-	-
17.	<i>Dendronephthya elegans</i>	*	-	-	-	-	-	-
18.	<i>Dendronephthya elongate</i>	*	-	-	--	-	-	-
19.	<i>Dendronephthya foliata</i>	*	-	-	-	-	-	-
20.	<i>Dendronephthya ganjamensis</i>	-	-	-	-	*	-	-
21.	<i>Dendronephthya gilva</i>	*	-	-	-	-	-	-
22.	<i>Dendronephthya harrisoni</i>	*	-	-	-	--	-	-
23.	<i>Dendronephthya hemprichi</i>	-	-	*	-	-	-	-
24.	<i>Dendronephthya irregularis</i>	-	-	-	*	-	-	-
25.	<i>Dendronephthya koellikeri</i>	*	-	-	-	-	-	-
26.	<i>Dendronephthya lanxifera</i>	*	-	-	-	-	-	-
27.	<i>Dendronephthya longispina</i>	*	-	-	-	-	-	-
28.	<i>Dendronephthya macrocaulis</i>	*	-	-	-	-	-	-
29.	<i>Dendronephthya masoni</i>	*	-	-	-	-	-	-
30.	<i>Dendronephthya micracanthus</i>	-	*	-	*	-	-	-
31.	<i>Dendronephthya microspiculata</i>	*	-	-	-	-	-	-
32.	<i>Dendronephthya mirabilis</i>	*	-	-	-	-	-	-
33.	<i>Dendronephthya mucronata</i>	*	-	-	-	-	-	New to India
34.	<i>Dendronephthya multispinosa</i>	*	-	-	-	-	-	-
35.	<i>Dendronephthya nicobarensis</i>	*	-	-	-	-	-	-
36.	<i>Dendronephthya obtuse</i>	*	-	-	-	-	-	-
37.	<i>Dendronephthya ochracea</i>	*	-	-	-	-	-	-
38.	<i>Dendronephthya orientalis</i>	*	-	-	-	-	-	-
39.	<i>Dendronephthya ovate</i>	-	-	-	-	*	-	-
40.	<i>Dendronephthya pallid</i>	*	-	-	-	-	-	-
41.	<i>Dendronephthya ellucid</i>	*	-	-	-	-	-	-
42.	<i>Dendronephthya pentagona</i>	*	-	-	-	-	-	-
43.	<i>Dendronephthya purpurea</i>	*	-	-	-	-	-	-
44.	<i>Dendronephthya quadrata</i>	*	-	-	-	-	-	-
45.	<i>Dendronephthya rubeola</i>	*	-	-	-	-	-	-
46.	<i>Dendronephthya rubescens</i>	-	-	-	-	*	-	-
47.	<i>Dendronephthya savignyi</i>	*	-	-	-	-	-	New to India
48.	<i>Dendronephthya thuja</i>	-	-	-	-	*	-	-
49.	<i>Dendronephthya thompsoni</i>	-	-	-	-	*	-	-
50.	<i>Dendronephthya uliginosa</i>	*	-	-	-	-	-	-
51.	<i>Dendronephthya variata</i>	*	-	-	-	-	-	-
52.	<i>Dendronephthya varicolor</i>	*	-	-	-	-	-	-
53.	<i>Dendronephthya sp.1</i>	-	-	-	-	-	*	-
54.	<i>Dendronephthya sp.2</i>	-	-	-	-	-	*	-
55.	<i>Dendronephthya sp.3</i>	-	-	-	-	-	*	-
	<b>Total</b>	<b>40</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>1</b>	<b>2</b>

\* Present; AN - Andaman and Nicobar; LAK – Lakshadweep; GOM – Gulf of Mannar; GOK – Gulf of Kachchh; EC – East Coast; WC – West Coast

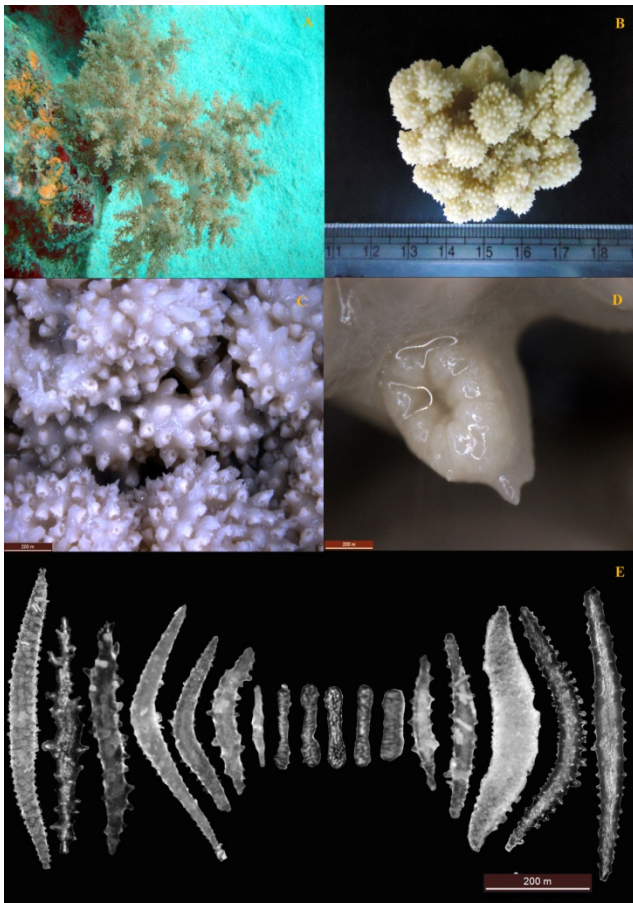


Fig. 2 — A: Live underwater picture of *Dendronephthya savignyi*, B: Deposited specimen ZSI/ANRC, C&D: Polyp arrangement, E: Spindle sclerites in different size

The genus *Dendronephthya* is divided into three groups (Glomeratae, Divaricatae and Umbellatae) based on their morphology<sup>1</sup>. Henderson reported 67 species of *Dendronephthya* from The Indian Ocean, among which 58 species were newly described under this genus<sup>17</sup>. After 1909, the present study yielded two species, *Dendronephthya mucronata* and *D. savignyi* from Andaman Sea. Also, these two species were reported from German Museum collection by Jurgens and Reinicke<sup>50</sup> and many other species under this genus were reported from India<sup>17, 18, 23, 3, 51-57</sup>.

Octocorals diversity is reported to be rich in India; however, efforts to study the distribution, abundance, species richness, species diversity and ecology of octocorals are very limited. The genus *Dendronephthya* mostly tends to occur in deeper region and strong water current. This may be one of the reasons for the study and collection of samples. Andaman and Nicobar islands are very rich in

biodiversity and more investigation of the population and taxonomy is needed.

### Conclusion

The present updated list provides 55 species of *Dendronephthya* from Indian waters based on literature compilation. In addition to this, *Dendronephthya mucronata* and *Dendronephthya savignyi* were reported in the present study. It is recommended that extensive studies are needed in the future.

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