

THE ACROPORA HUMILIS GROUP (SCLERACTINIA) OF THE SNELLIUS EXPEDITION (1929–30)

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ABSTRACT. – During the Snellius expedition (1929–30) in eastern Indonesia and the Philippines, a large collection of *Acropora* corals was made. This collection is comprised of roughly 700 specimens, many of which remain unidentified. In this paper we discuss species of the *Acropora humilis* group collected during the expedition and compare the records with the known distribution ranges in Indonesia. New records are found, most notably for *Acropora multiacuta*, *A. retusa* and *A. fastigata*.

KEY WORDS. – Acroporidae; biogeography; Indonesia; new records; Philippines.

INTRODUCTION

The Dutch naval vessel H.M. Willebrord Snellius left for Indonesia and the Philippines in March 1929, on what would later become known as the Snellius expedition (Kuenen, 1941; Aken, 2005). The expedition lasted 18 months and the programme encompassed research in oceanography, geology, marine biology and meteorology. As part of the marine biology programme under supervision of Dr H. Boschma, hundreds of coral specimens were collected and eventually deposited in the collection of the former Rijksmuseum van Natuurlijke Historie in Leiden, the present Netherlands Centre for Biodiversity Naturalis. In 1984–85 a large Indonesian – Dutch marine expedition was organized, which was named Snellius II expedition (Best et al., 1989). Furthermore, a large coral collection in Leiden was produced through the fieldwork by Moll (1983) at southwest Sulawesi as a result of the Buginesia Programme. A smaller coral collection from Indonesia was obtained through the Siboga expedition (1899–1900) (Aken, 2005), as well as some small collections made by Dr H. Boschma, Dr D. Brongersma, and Dr J.H.F. Umbgrove. These Dutch collections of *Acropora* corals (approx. 2250 specimens) were not included in the taxonomic revision of *Acropora* by Wallace (1999). This paper takes a step toward redressing this issue.

The results of the first Snellius expedition appeared in numerous publications dealing with certain families, genera

or animal groups. The scleractinian coral family Faviidae was treated in a series of articles (Wijisman-Best, 1974, 1976, 1977, 1980), whilst the Fungiidae of the Snellius expedition were incorporated in a taxonomic revision (Hoeksema, 1989). Many specimens of the hydrocoral genus *Millepora* collected during the expedition were also studied (Razak & Hoeksema, 2003), as well as specimens of the scleractinian coral genera *Heterocyathus* and *Heteropsammia* (Hoeksema & Best, 1991). All these publications included new records for Indonesia.

The present paper deals with species of the genus *Acropora* (Scleractinia: Acroporidae) collected during the Snellius expedition, specifically those belonging to the *Acropora humilis* species group. The small Indonesian collections of Dr D. Brongersma and Dr J.H.F. Umbgrove are also included. After identification, the data was compared with the currently known distribution range of *Acropora*, resulting in one new species record for Indonesia.

MATERIALS AND METHODS

The *Acropora* collection of the Snellius expedition [unless otherwise specified, Snellius expedition is referring to the first expedition only] deposited at Naturalis (collection coded as RMNH.Coel), is comprised of roughly 700 specimens. Many of these corals remain unidentified. Due to the number of

Table 1. Species of the *Acropora humilis* group collected at Snellius stations. Locality numbers correspond with Fig. 1. Locality names according to recent spelling (with alternative spelling between in parentheses), numbers indicate the encountered number of specimens in the NCB Naturalis 'Snellius' collection.

No.	Locality	Date at locality	<i>A. humilis</i>	<i>A. gemmifera</i>	<i>A. monticulosa</i>	<i>A. samoensis</i>	<i>A. cf. samoensis</i>	<i>A. digitifera</i>	<i>A. multiacuta</i>	<i>A. retusa</i>	<i>A. fastigata</i>
1	Sipangkot (Sipankot) near Sibutu, Sulu Isl.	Sept 10-14, 1929	1			3				2	
2	Wotap, Tanimbar (Tenimber) Isl.	Oct 20-23, 1929	1	1							
3	Kera, north of Kupang, near Timor	Nov 11-23, 1929			2						
4	Sailus Besar (Sailoes Besar), Paternoster Islands	Feb 9-10, 1930									1
5	Tanahjampea (Tanah Djampea), N of Flores	Feb 21-23, 1930	10	3		1		4			
6	Bonetambung near Makassar	March 2, 1930			4	4				1	
7	Batuata (Batoe Ata)	March 6, 1930									2
8	Binongko, Tukangbesi (Toekang Besi) Isl.	March 7-10, 1930	1	2							
9	Tusa Isl. near Obilatu (Obi Latoe), N of Obi Major	April 23-27, 1930	1			1	1	2			
10	Karatung (Karaton), Nenusu (Nenoesa) Isl.	May 20-21, 1930	1	2							1
11	Akeselaka (Ake Selaka), Kau (Kaoe) Bay	May 28, 1930	1			6					
12	Beo, Karakelong, Taulaud Isl.	June 14-21, 1930	1	2		1					2
13	Reimis (Reinis), Karakelong, Talaud Isl.	June 14-21, 1930			1	1	1	1			

corals to be identified, and the sheer richness of the genus, it was decided to start with one species group, the *Acropora humilis* group (sensu Wallace, 1999).

The *A. humilis* group is comprised of species with sturdy, digitate to corymbose colonies. Branches have a large, obvious axial corallite and short thickened tubular radial corallites. First, a pre-selection of specimens likely to belong to the *A. humilis* species group was made. These corals were then identified to species level with the help of various publications (Nemenzo, 1967, 1981, 1986; Veron and Wallace, 1984; Wallace & Wolstenholme, 1998; Wallace, 1999; Veron, 2000). In case of disagreement between the aforementioned authors, the revision by Wallace (1999) was followed. Furthermore, the 'registered' *Acropora* collection at Naturalis was used for comparison, especially those

specimens identified by Dr J. Verwey, Dr C.C. Wallace, and Dr H. Moll (Snellius-II expedition, Buginesia Programme). For ambiguous specimens a character matrix was designed, including characters such as shape and length of colonies, branches and branchlets, inner and outer diameter of axial corallite, shape and distribution of radial corallites, and characteristics of the coenosteum. The character states were studied with the help of a calliper and a stereo microscope.

Data collection during the Snellius expedition. – The corals were collected by Dr H. Boschma and Dr P.H. Kuenen, mainly during low tide on the reefs and sometimes through dredging and diving. Thus, the majority of the material comes from shallow water (0.5–5 m), while helmet divers of the Dutch Royal Navy collected material from depths down to 15 m. Occasionally corals were dredged from depths of more than 30 m (Wijsman-Best, 1974). For the majority of the *Acropora* specimens no depth was recorded. Descriptions of the Snellius localities are described in Boschma (1936) and Wijsman-Best (1974).

RESULTS

A total of 69 Snellius corals were identified as belonging to eight species of the *Acropora humilis* group: *A. humilis* (Dana, 1846), *A. gemmifera* (Brook, 1892), *A. monticulosa* (Brüggemann, 1879), *A. samoensis* (Brook, 1891), *A. digitifera* (Dana, 1846), *A. multiacuta* Nemenzo, 1967, *A. retusa* (Dana, 1846) and *A. fastigata* Nemenzo, 1967. These species were found at 13 Snellius stations (Table 1). In addition, seven specimens collected by Dr Brongersma and Dr Umbgrove in the Togian Islands and Sorido (Biak,

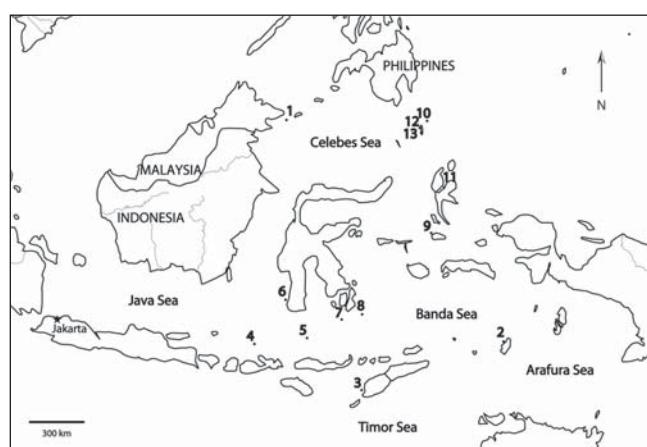


Fig. 1. Map showing the localities where *Acropora* corals were sampled during the first Snellius expedition, numbers correspond with Table 1.

Table 2. Distribution of the Snelliuss corals belonging to the *A. humilis* species group compared with the known distribution range in Indonesia, and new records resulting from the present comparison. Little is known about species' distribution ranges in the Philippines.

Acropora species	Specimens	Known distribution in Indonesia	New records
<i>A. humilis</i>	17	Indonesia: widely distributed	Indonesia: Wotap, Tanahjampea, Binongko, Akeselaka
<i>A. gemmifera</i>	17	Indonesia: widely distributed	Indonesia: Wotap, Kera, Tanahjampea Binongko
<i>A. monticulosa</i>	1	Indonesia: N Sulawesi, Molucca Sea	–
<i>A. samoensis</i>	16	Indonesia: widely distributed	Indonesia: Bonetambung, Akeselaka, Beo; Philippines: Sipangkot
<i>A. cf. samoensis</i>	2	–	Indonesia: Tusa Isl., Reimis
<i>A. digitifera</i>	3	Indonesia: widely distributed	Indonesia: Binongko, Reimis
<i>A. multiacuta</i>	4	Indonesia: Togian Isl, Flores	Indonesia: Tanahjampea
<i>A. retusa</i>	6	none	Indonesia: Batuata, Bonetambung, Karatung, Beo
<i>A. fastigata</i>	3	Indonesia: Flores; Philippines: Calamian Isl.	Indonesia: Sailus Besar; Philippines: Sipangkot

Papua) were identified. The newly obtained records were compared with the known distribution in Indonesia (Moll, 1983; Best et al., 1989; Wallace & Wolstenholme, 1998; Wallace, 1999, see Table 2).

SYSTEMATIC ACCOUNT

Most species have already been described extensively elsewhere, for references see the short-listed synonymies. Short species descriptions are provided.

Family Acroporidae Verrill, 1902 Genus *Acropora* Oken, 1815

The *Acropora humilis* group

Colony corymbose or digitate; diameter of branch dominated by axial corallite; radial corallites short thickened tubular with dimidiate openings, evenly sized or in two sizes; coenosteum reticulate to reticulo-costate; sometimes with small amount of secondary branching.

Acropora humilis (Dana, 1846) (Fig. 2a–b)

Madrepora humilis – Dana, 1846 p. 483, pl. 31 fig. 4; pl. 41 fig. 4.
Acropora humilis – Moll, 1983: 29; Veron and Wallace, 1984: 166; Veron, 1986: 136; Best et al., 1989: 109; Veron, 2000: 318–319.

Acropora (Acropora) humilis – Wallace and Dai, 1997: 292; Wallace and Wolstenholme, 1998: 210; Wallace, 1999: 116–118.

Material examined. – **Indonesia.** Tanimbar Isl., Wotap (RMNH Coel.39598); Tanahjampea, N of Flores (10 specimens, RMNH Coel.39588–39597); Tukangbesi Isl., Binongko (RMNH Coel.39585); Tusa Isl. near Obilatu, N of Obi Major (RMNH Coel.39892); Nenusia Isl., Karatung (RMNH Coel.39586); Kau Bay, Akeselaka (RMNH Coel.39893); Talaud Isl., Beo, Karakelong (RMNH Coel.39584); Papua, Biak, Sorido, W of Kampung, reef at ‘marine kazerne’ [marine barracks], Feb. 1955, coll. D. Brongersma (RMNH Coel.39901).

‘marine kazerne’ [marine barracks], Feb. 1955, coll. D. Brongersma (RMNH Coel.39900); **Philippines**, Sulu Isl., Sipangkot near Sibutu (RMNH Coel.39587).

Short description. – Colony digitate to corymbose; branches tapering or slightly terete, 8–24 mm in diameter and up to 95 mm long; growth determinate. Axial corallite outer diameter 3.0–7.0 mm; radial corallites evenly distributed, with some rows visible, tubular with round to dimidiate openings and thickened walls.

Biogeography. – This common species is found throughout the Indo-West Pacific (Wallace, 1999). Wallace & Wolstenholme (1998) show an overall distribution in Indonesia, with most records east of Sulawesi. The Snelliuss I expedition collected specimens of *A. humilis* at eight sites. The NCB Naturalis coral collection also contains a specimen of *A. humilis*, collected by Dr Brongersma, from Sorido (Biak, Papua).

Acropora gemmifera (Brook, 1892) (Fig. 2c–d)

Madrepora gemmifera – Brook, 1892 p. 457; 1893 p. 142 pl. 21.
Acropora gemmifera – Veron and Wallace, 1984: 170; Veron, 1986: 137; Veron, 2000: 324–325.
Acropora (Acropora) gemmifera – Wallace and Dai, 1997: 292; Wallace and Wolstenholme, 1998: 212; Wallace, 1999: 120–121.

Material examined. – **Indonesia**, Tanimbar Isl., Wotap (RMNH Coel.39583); Kera, near Timor (RMNH Coel.39577–39578) Tanahjampea, N of Flores (RMNH Coel.39580–39582); Bonetambung near Makassar (RMNH Coel.39571–39574); Tukangbesi Isl., Binongko (RMNH Coel.39569–39570); Nenusia Isl., Karatung (RMNH Coel.39575–39576); Talaud Isl., Beo, Karakelong (RMNH Coel.39568, 39894); Talaud Isl., Reimis, Karakelong (RMNH Coel.39579); Papua, Biak, Sorido, W of Kampung, reef at ‘marine kazerne’ [marine barracks], Feb. 1955, coll. D. Brongersma (RMNH Coel.39901).

Short description. – Colony digitate to corymbose; branches tapering, 10–25 mm in diameter and up to 80 mm long; growth

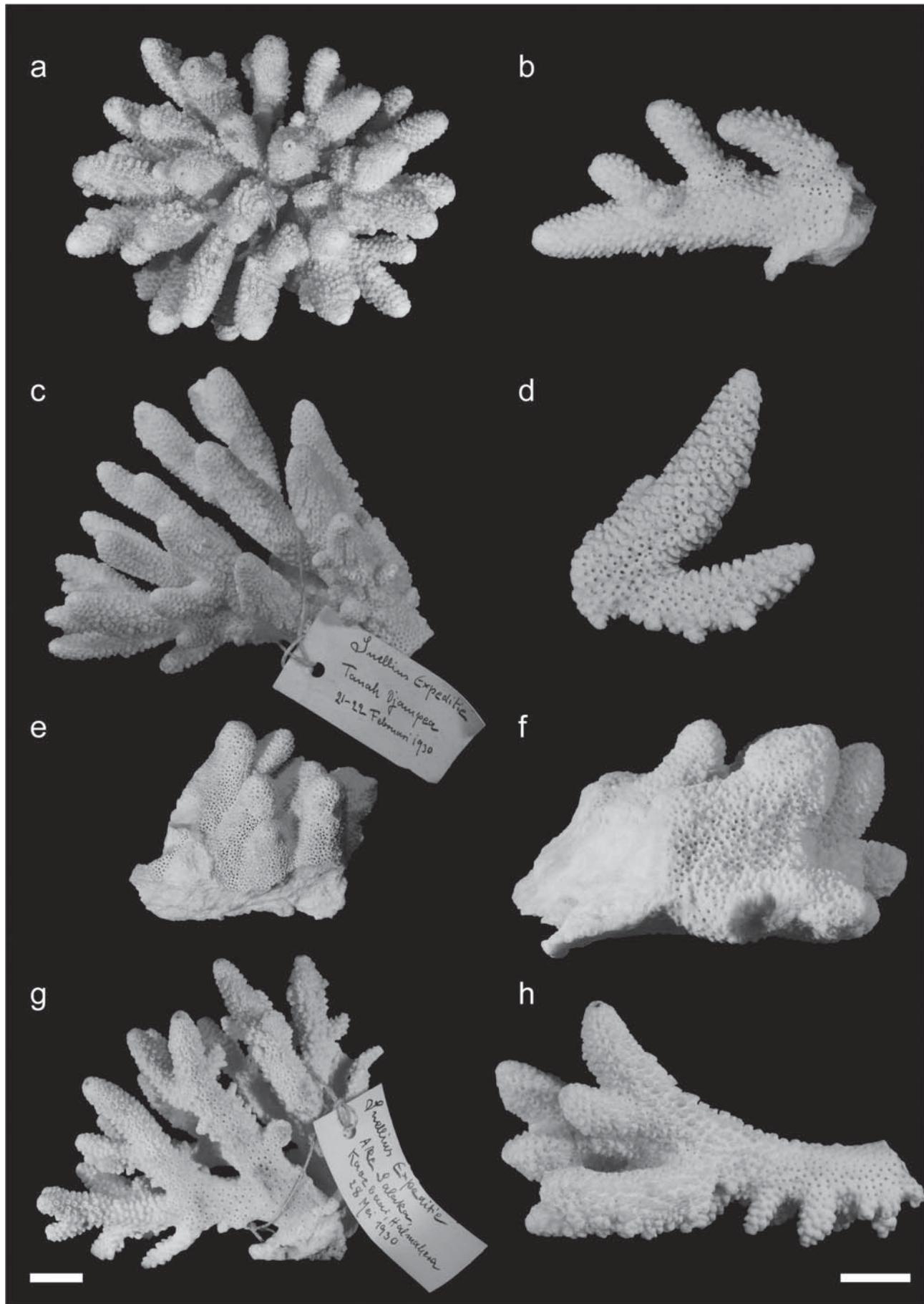


Fig. 2a-h. *A. humilis*: a, complete coral (RMNH Coel.39585), b, branch (RMNH Coel.39591); *A. gemmifera*: c, complete coral (RMNH Coel.39581), d, branch (RMNH Coel.39578); *A. monticulosa*: e, complete coral, f, close-up (both RMNH Coel.39599); *A. samoensis*: g, complete coral (RMNH Coel.39612), h, close-up (RMNH Coel.39622). Scale bars 2 cm (a-c, e, g-h), 1.5 cm for d, f.

determinate. Axial corallite outer diameter 2.0–4.5 mm; radial corallites in two sizes, often in longitudinal rows, immersed corallites present, tubular with round to dimidiate openings and thickened walls.

Biogeography. – The distribution is very similar to that of *A. humilis*, with a wide Indo-West Pacific range. The Snellius expedition collected specimens at eight sites. The coral collection also contains a specimen of *A. gemmifera*, collected by Dr Brongersma, from Sorido (Biak, Papua).

***Acropora monticulosa* (Brüggemann, 1879)**
(Fig. 2e–f)

Madrepora monticulosa – Brüggemann, 1879 p. 576.
Acropora monticulosa – Veron and Wallace, 1985: 174; Veron, 1986: 138; Veron, 2000: 320–321.
Acropora (Acropora) monticulosa – Wallace and Wolstenholme, 1998: 214; Wallace, 1999: 122–123.

Material examined. – **Indonesia**, Talaud Isl., Reimis, Karakelong (RMNH Coel.39599).

Short description. – Colony digitate; branches tapering, conical, and up to 25 mm long. Axial corallite outer diameter 2.7–3.0 mm; radial corallites evenly distributed, tubular with round openings.

Biogeography. – The species has an Indo-West Pacific range. A single Snellius specimen was collected at Reimis, Karakelong, near the Talaud Islands, north of Sulawesi.

***Acropora samoensis* (Brook, 1891)**
(Fig. 2g–h)

Madrepora samoensis – Brook, 1891 p. 468; 1893 p. 143 pl. 31 fig. A pl. 6 fig. C.
Acropora samoensis – Moll, 1983: 29; Veron & Wallace, 1985: 178; Veron, 1986: 139; Best et al., 1989: 109; Veron, 2000: 323.
Acropora (Acropora) samoensis – Wallace and Dai, 1997: 293; Wallace and Wolstenholme, 1998: 216; Wallace, 1999: 124–125.

Material examined. – **Indonesia**, Tanahjampea, N of Flores (RMNH Coel.39622); Bonetambung near Makassar (RMNH Coel.39615–39618); Tusa Isl. near Obilatu, N of Obi Major (RMNH Coel.39895); Kau Bay, Akeselaka (RMNH Coel.39608–39613); Talaud Isl., Beo, Karakelong (RMNH Coel.39614); **Philippines**, Sulu Isl., Sipangkot near Sibutu (RMNH Coel.39619–39621).

Short description. – Colony caespitose-corymbose; branches terete or slightly tapering, 7–16 mm in diameter and up to 80 mm long. Axial corallite outer diameter 2.8–5.5 mm; radial corallites not touching, sometimes in rows, tubular with round to oblique openings.

Biogeography. – This species shows an Indo-West Pacific range. The Snellius expedition collected specimens at six sites from within the aforementioned range. Sipangkot (Philippines) yields a new species record for *A. samoensis*, whereas Bonetambung (southwest Sulawesi) was previously

also sampled by Moll (1983). Two specimens are provisionally identified as *A. cf. samoensis* (RMNH Coel.39562–39563), since they show characteristics of both *A. humilis* and *A. samoensis*. If these specimens indeed prove to be *A. samoensis*, one more locality for this species can be noted (Reimis, Karakelong, Talaud Isl.). The species was already known from a large number of reefs in the south Banda Sea (Wallace & Wolstenholme, 1998).

***Acropora digitifera* (Dana, 1846)**
(Fig. 3a–b)

Madrepora digitifera – Dana, 1846 p. 454.
Acropora digitifera – Moll, 1983: 29; Veron and Wallace, 1985: 180; Veron, 1986: 140; Best et al., 1989: 109; Veron, 2000: 328–329.
Acropora (Acropora) digitifera – Wallace and Dai, 1997: 293; Wallace and Wolstenholme, 1998: 218; Wallace, 1999: 126–128.

Material examined. – **Indonesia**, Tusa Isl. near Obilatu, N of Obi Major (RMNH Coel.39564–39565); Talaud Isl., Reimis, Karakelong (RMNH Coel.39896); Sebesi (RMNH Coel.39902).

Short description. – Colony corymbose; branches terete, 12–16 mm in diameter and up to 30 mm long. Axial corallite outer diameter 3.2–3.5 mm; radial corallites dimidiate with the appearance of a flaring lip.

Biogeography. – This species shows a typical Indo-West Pacific range. Three specimens from Obilatu and Reimis were identified as *A. digitifera*, previously known records for this species. The NCB Naturalis collection also contains a specimen of *A. digitifera* from Sebesi.

***Acropora multiacuta* Nemenzo, 1967**
(Fig. 3c–e)

Acropora multi-acuta Nemenzo, 1967: 133–134, pl. 39 figs 1–3.
Acropora multiacuta – Nemenzo, 1981: 156, fig. 166; Nemenzo, 1986: 116, fig. 117; Veron and Wallace, 1985: 184; Veron, 1986: 141; Best et al., 1989: 109; Veron, 2000: 332.
Acropora (Acropora) multiacuta – Wallace and Wolstenholme, 1998: 220; Wallace, 1999: 128–129.

Material examined. – **Indonesia**, Tanahjampea, N of Flores (RMNH Coel.39600–39603); Togian Islands, N Sulawesi, coll. J. H. F. Umbgrove (RMNH Coel.39903–39906).

Short description. – Colony caespitose-corymbose to digitate; branches slightly tapering, 7–14 mm in diameter and up to 65 mm long, incipient branchlets at base of branches. Axial corallite very prominent, outer diameter 3.0–7.0 mm; radial corallites at base of branch, immersed corallites visible, tubular to downwards nariform with round openings.

Biogeography. – Only a few records are known from the central Indo-Pacific (Veron and Wallace, 1984; Wallace and Wolstenholme, 1998; Wallace, 1999; Fenner, 2002, 2003). Mactan Isl. (Cebu, Philippines) is the type locality from where the species was recorded as rare (Nemenzo, 1986). It

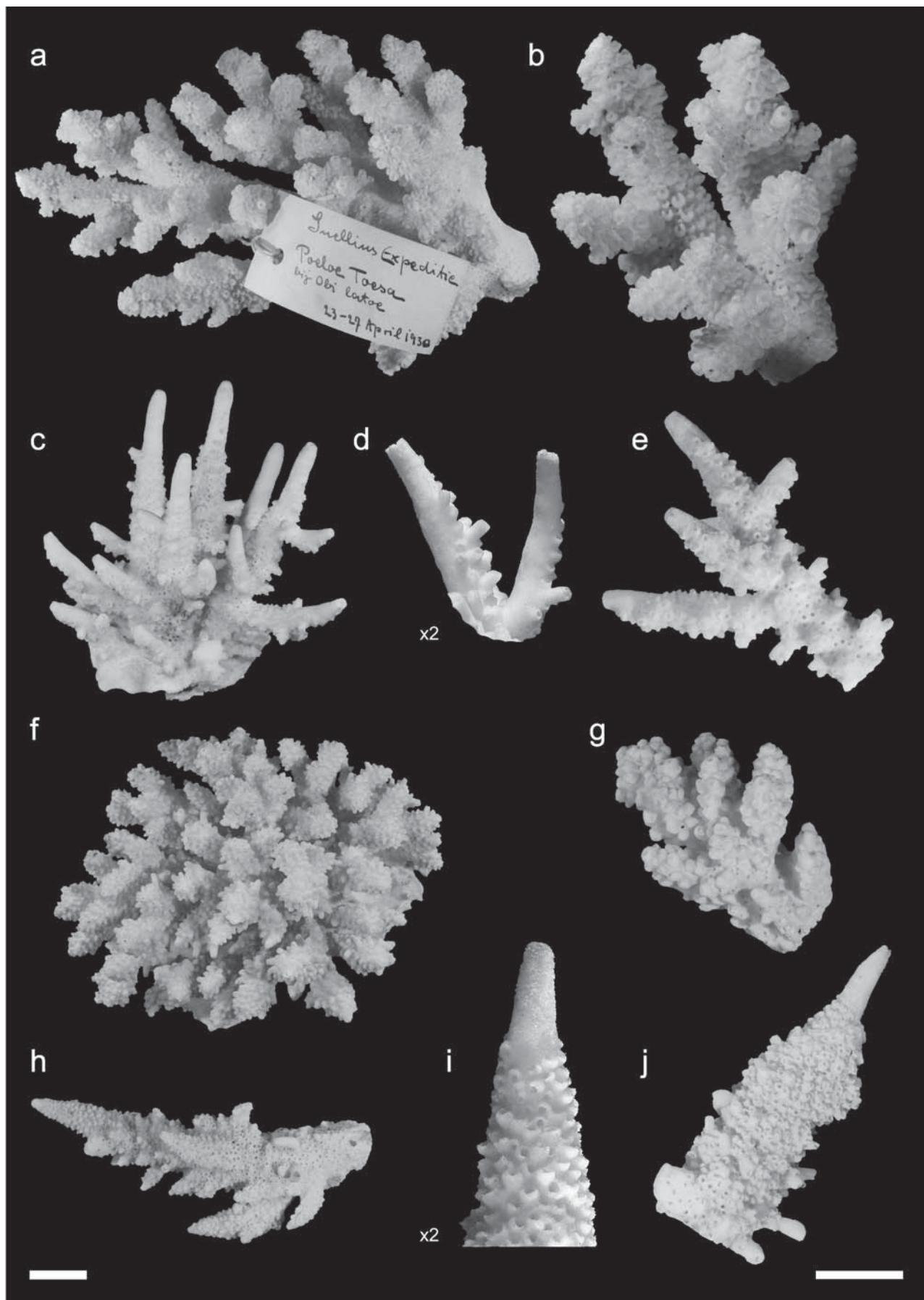


Fig. 3a-j. *A. digitifera*: a, complete specimen, b, branch (both RMNH Coel.39564); *A. multiacuta*: c, complete specimen (RMNH Coel.39601), d, close-up (RMNH Coel.39904), e, branch (RMNH Coel.39603); *A. retusa*: f, complete specimen (RMNH Coel.39607), g, branch (RMNH Coel.39604); *A. fastigata*: h, branch (RMNH Coel.39566), i-j, close-ups (both RMNH Coel.39567). Scale bars 2 cm: left scale bar for a, c-d, f, h; right scale bar for b, e, g, i-j.

is recorded as extremely rare by Wallace and Wolstenholme (1998). In the present study, four specimens were identified as *A. multiacuta*. All specimens are very similar in appearance, but represent separate colonies collected at Tanahjampea. This new locality for *A. multiacuta* is in accordance with the previously known distribution in Indonesia (Wallace, 1999; Table 2). The coral collections furthermore contain four specimens of *A. multiacuta*, collected by Dr Umbgrove, from the Togian Islands.

***Acropora retusa* (Dana, 1846)**

(Fig. 3f–g)

Madrepora retusa – Dana, 1846 p. 462.

Acropora (Acropora) retusa – Wallace, 1999: 130–131.

Acropora retusa – Veron, 2000: 322.

Material examined. – **Indonesia.** Bonetambung near Makassar (RMNH Coel.39606); Batuata (RMNH Coel.39604–39605); Nenusu Isl., Karatung (RMNH Coel.39607); Talaud Isl., Beo, Karakelong (RMNH Coel.39897–39898).

Short description. – Colony corymbose; branches terete, appearing broader at tip, 7–13 mm in diameter and up to 30 mm long, growth determinate. Axial corallite outer diameter 2.4–3.5 mm; radial corallites unevenly distributed and in different sizes, tubular with dimidiate openings, sometimes appearing nariform.

Biogeography. – The species is represented in the Snellius collection, despite the disjunctive range presented by Wallace (1999): western Indian Ocean and central Pacific Ocean but not in between. *Acropora retusa* is found to occur on four sites in Indonesia, ranging from Nenusu Isl. and Talaud Isl., north of Sulawesi, to Bonetambung and Batuata in south Sulawesi. It has also been reported from the Solomon Islands (Veron and Turak, 2006).

***Acropora fastigata* Nemenzo, 1967**

(Fig. 3h–j)

Acropora fastigata Nemenzo, 1967: 134–135, pl. 37 fig. 3, pl. 38 fig. 1.

Acropora fastigata Nemenzo, 1981: 156–157, fig. 167; Nemenzo, 1986: 116–117, fig. 133; Veron, 2000: 331.

Material examined. – **Indonesia.** Paternoster Islands, Sailus Besar (RMNH Coel.39899); **Philippines**, Sulu Isl., Sipangkot near Sibutu (RMNH Coel.39566–39567).

Short description. – Colony corymbose to digitate; branches markedly tapering to narrow, conical apex, 15–25 mm in diameter and up to 110 mm long, often with incipient branchlets at base of branches, appearing like a tall axial corallite with few tubular radial corallites. Axial corallite very prominent, outer diameter 2.1–4.0 mm; radial corallites unevenly distributed and in different sizes, incipient radial corallites at base of branch, immersed corallites visible, tubular to downwards nariform with round openings.

Biogeography. – Wallace (1999) considered the validity of this species insufficiently known, but provisionally included it in the *A. humilis* group. This species was originally described by Nemenzo from Malotamban Isl., Palawan, where it was seen as rare (Nemenzo, 1967, 1986). On the recent Red List coral assessment of the IUCN the species was listed as data deficient (Carpenter et al., 2008). The Snellius specimens are strikingly similar to the *A. fastigata* pictured and described by Nemenzo (1986), and therefore identified as *A. fastigata*. The species was listed by Fenner (2001a) from Banggi Isl., Kudat (northern tip of Borneo), but no picture is available to confirm this record. Similarly the species was reported from the Togian Islands (Fenner, 2001b). Veron (2000) shows pictures of *A. fastigata* from the Calamian Isl. (just north of Palawan, north-western Philippines), and Flores (Indonesia). The new records for *A. fastigata* at Sipangkot and the Paternoster Islands are in line with these records.

DISCUSSION

Ambiguous specimens. – Species within the *A. humilis* group show a high level of intraspecific morphological variability, with boundaries between species appearing indistinct (Wallace 1999; Wolstenholme, 2003). Two specimens were identified as *A. cf. samoensis*, since they show characteristics of both *A. humilis* and *A. samoensis*. These species differ in the habitat they occupy, with *A. humilis* occurring intertidally or subtidally on reef tops and upper slopes, and *A. samoensis* occurring in slope and lagoonal habitats (Wallace, 1999; Wolstenholme, 2004). For the Snellius material this information is not available. According to Wolstenholme (2004) there are intermediate morphs between *A. humilis*, *A. gemmifera* and *A. samoensis*, suggesting a close relationship between these species. One of the common morphs is the *samoensis-humilis* morph ('sam-hum'), which appears to share closest morphological affinity with *A. samoensis*. For this reason it seems justified to leave the two ambiguous specimens identified as *A. cf. samoensis*.

Value of historical material. – The Snellius expedition collected amongst others some presumably rare species, present only known to occur at very few sites, such as *A. multiacuta*, *A. retusa* and *A. fastigata*. The data presented here is in accordance with the major revision of the genus *Acropora* (Wallace, 1999), and the new records are additions to the currently known distributions. This study yields no new records for *A. globiceps* for Indonesia, in accordance with the known species distribution, which is limited to the West Pacific, east of Australia, including Guam, Micronesia, Cook Isl., and the Pitcairn Isl. (Wallace 1999). An important new record for Indonesia is *A. retusa*. As discussed before, Wallace (1999) comments on the unusual distribution of this species. The new record fills in the gap between the western Indian Ocean and central Pacific Ocean. Possibly more species records will be added in the future. Veron (2000) refers to the species' occurrence of *A. retusa* in Indonesia and South Africa, but does not present exact localities or information on collected specimens.

Presumably rare species, or species with a disjunct distribution, might be represented in scientific collections without being noticed. This confirms the value of historical collection material for biogeographical research, since museum specimens may show that species display a greater distribution range than previously assumed. Additionally, such records provide a baseline, although patchy, for examining possible loss and change in species composition due to environmental degradation (see also Hoeksema & Koh, 2009; Meij et al., 2009, 2010; Thacker et al., 2010; Hoeksema et al., in press). In particular, specimens collected during large expeditions in the late 1800s or early 1900s, such as the US Challenger expedition (1872-77), the Dutch Siboga expedition (1899-1900) or the Swedish Albatross expedition (1947-48), may prove to be important for comparisons between previous and currently known species distributions. Hence, scientific collections from such expeditions undertaken long ago can provide important information about distribution ranges of species and changes therein, possibly offering new insights into global environmental change.

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