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The genus *Lilliconus* G. RAYBAUDI MASSILIA (Gastropoda: Conidae) in the Western Pacific, with the description of *Lilliconus wallacei* sp. nov.

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Abstract: The findings of *Lilliconus* made during three trips aboard the MV Empress are discussed. A new species, *Lilliconus wallacei* now. sp., is described and compared with *L. traillii* ADAMS 1855.

Introduction: During four Indonesian Expeditions on board the MV Empress from 2001 to 2003, several new species of gastropods have been discovered, mainly by gathering shell grit from the floors of caves and ledges along submerged walls. Apart from *Conus empressae* LORENZ 2001 from the south of Sulawesi, several new species of Marginellidae (WAKEFIELD, in prep.) and Mitroidea (STOSSIER, pers. comm.) have been found. Several range extensions and re-discoveries were made, such as the discovery of *Lilliconus traillii* in the south of Sulawesi and Alor in 2001. This species, along with the allied *Lilliconus papalis* WEINKAUFF 1875, was known only from the type material and a few eroded samples from shell grit of Philippine origin (LORENZ 1997).

On our trip to the South China Sea in 2002, we collected empty shells of *L. traillii* at a single location in the Mangkai Island group (see below). In 2003, the route went from Makassar northward, through the Makassar Strait between eastern Kalimantan and western Sulawesi, to the north of Sulawesi including the Lembeh Strait. Just north of Makassar, we collected a new species of *Lilliconus* in four localities. After crossing the Wallace Line westward to Kalimantan, we encountered *L. traillii*, and for the first time, specimens of *L. papalis* in the beachgrit of offshore Atolls. This paper summarizes the known occurrences of *L. traillii*, *L. papalis* and the new species which is described in the following.

Lilliconus wallacei sp. nov.

Material: Seven fresh dead collected specimens, some of which retained parts of the periostracum. Several additional dead collected specimens.
Holotype: 6,6 x 3,7 mm, coll. Western Australian Museum.
Paratype 1: 7,4 x 4,0 mm, coll. Naturkundemuseum Stuttgart.
Paratype 2: 7,7 x 3,9 mm, coll. W. CARGILE.
Paratype 3: 7,1 x 3,8 mm, coll. F. LORENZ.
Paratype 4: 5,4 x 3,0 mm, coll. W. FENZAN.
Paratype 5: 6,0 x 3,2 mm, coll. Haus der Natur - Cismar, HNC 62714.
Paratype 6: 5,5 x 3,0 mm, coll. H. MORRISON.

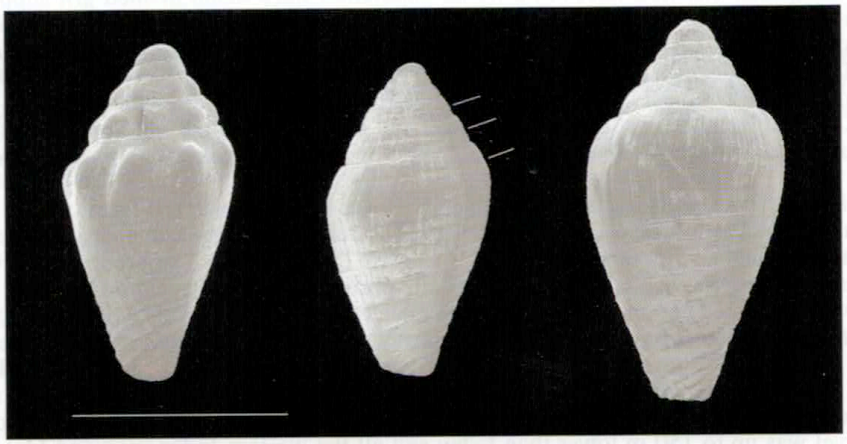


Fig. 1: SEM-photograph of *L. papalis* (left), *L. traillii* (middle) and *L. wallacei* (right). Scale= 3 mm. Note the ridge in the shoulder and sutural ramps (white markers) and the strong transverse ridges in *L. traillii*.

Description: Very small and solid, convex and inflated. The shoulder is rounded. The teleoconch spire is high, with a convex outline and a rather deep suture, the sutural ramps being distinctly convex and smooth. The aperture is widening anteriorly. The body whorl shows distinct, equally spaced spiral grooves which gradually become deeper and more distinct anteriorly. The ground color of the shell is a saturate pinkish-blue. The shoulder and the seven teleoconch whorls are tinted with white, forming fingerlike processes into the blue tinting of the body whorl which is richest at the shell's widest part. In this area there are numerous fine brown transverse lines with white intermittent specks. In the anterior third, the blue coloring is interrupted with white dashes which follow the flat ribbons between the transverse grooves. The protoconch consists of two smooth whorls which may be faintly purple. The suture shows slightly darker dashes. The paratypes vary slightly in the amount of white dashes in the blue anterior tinting and the amount of brownish lines.

Habitat and Distribution: *Lilliconus wallacei* sp. nov. was collected among coral rubble at 6-8 m near Pulau Kapoposang, 60 km North-West of Ujung Pandang 04° 41' S 118° 55' E (type locality, holotype and paratypes 2-3) and on two sites near Taka Bulango 04° 23' S 119° 10' E (Paratypes 1, 4-6) on sand among fine coral rubble and shell-grit at 5 m, southwestern Sulawesi, Indonesia. The species was not found in shallower deposits or beach grit, and no specimens were found in the deeper areas where the bottom forms slopes and drop-offs with soft corals and coral debris.

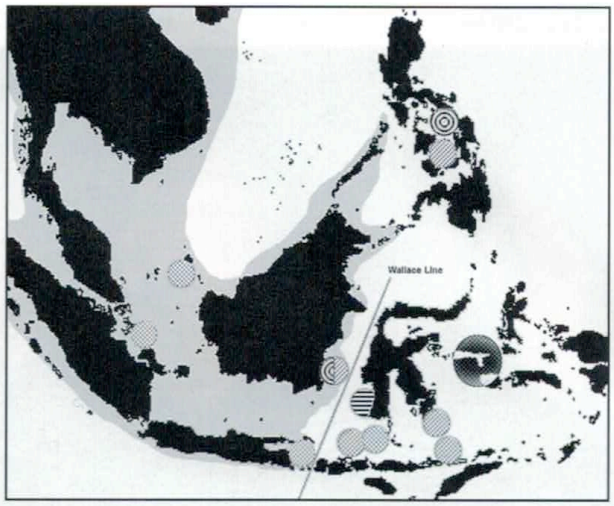
Etymology: The phenomenon of a faunistic split between Bali and Lombok (only 30 km apart, referred to as the ìWallace Lineî) was discovered by Alfred Russel Wallace (1823-1913), who was a British amateur zoologist and founder of a research field which is known today as zoogeography. Wallace travelled through Indonesia as a professional bird and insect specimen collector. He had a subtle spirit of observation and talent for careful scientific research under difficult tropical island conditions. While laid up with severe tropical fevers, he was still able to finalise his own theory of the principles of evolution, which he subsequently reported to Charles Darwin in a concise personal letter. The clarity of Wallace's observations and reasoning were such that they spurred Darwin to immediately publish his own theory. Although his own writings were all but complete, Darwin still had felt unsure in regard to presenting his theory until he received Wallace's letter. We are naming the new species in reference to the "Wallace Line" and in Alfred Russel Wallace's honour.

Discussion: The closest conchological relatives of *L. wallacei* sp. nov. are *L. traillii* and *L. papalis*. *L. wallacei* differs from *L. traillii* by being very slightly larger on average, and more inflated. The smooth teleoconch sutural ramps are convex and the suture is deep in *L. wallacei*, whereas in *L. traillii* the rather flat teleoconch sutural ramps show a distinct furrow (see white markers in fig. 1) and the suture is shallower. There are transverse grooves only in the anterior half of the body whorl in *L. wallacei*, in which the shoulder is smooth. In *L. traillii* there are distinct transverse striae and ridges on the entire body whorl. In *L. traillii* the ground color is brownish to yellowish, an interrupted band of brown stripes separates the whitish color of the spire from the brownish color of the body whorl along the widest part of the shell. This band is missing in the blue colored *L. wallacei*. In that species, there are numerous fine brown lines with white intermittent specks, which are rare to absent in *L. traillii*. *L. papalis* differs from *L. traillii* and *L. wallacei* by being more slender, with a taller spire and distinct nodules on the teleoconch whorls and the shoulder of the body whorl. The coloration of *L. papalis* is similar to that of *L. traillii*. All three species have a similar pattern composition which is uncommon among the Conidae.

L. traillii is a locally common species. The locus typicus is given as "Malacca", the sea to the northeast of Sulawesi. The first traces of a living population were found in shell grit supposedly from Cebu (LORENZ 1997). Numerous fresh dead shells were collected on the beach at the Pondok Sari Hotel, Pemuteran, N. W. Bali by the first author in 2004. Further specimens were collected in the Mangkai Island group, South China Sea (3°7' N 105°40' E), north of Bangka Island (0°54' S 105°45' E), Kabaladua Reef (2°29' S 117°54' E) and nearby offshore reefs, eastern Kalimantan, at Pulau Pulau Sabalana, Koka Atoll, Binogko, south of Sulawesi, and Kalabahi Harbour entrance, Alor (one slightly aberrant specimen). The habitat is shallow water, from 3 - 15 m in areas with silty sand and dead coral rubble.

L. papalis was found at Ticao Island, north of Masbate, Philippines (type locality) and from a sand sample of uncertain Philippine origin (LORENZ 1997). Our findings at Kabaladua Reef alongside *L. traillii* and an unnamed nearby sandbank (2°20' S 117°16' E) extend its known range to the western part of the Makassar Strait. The habitat is unknown as all specimens were collected on beaches. None of the three *Lilliconus* discussed herein have so far been collected alive.

L. traillii and *L. papalis* have overlapping ranges but the conchological differences described above are constant. Both species have been collected approximately 100 km west of the restricted range of *L. wallacei*. A line drawn between Bali and Lombok in the south and the Makassar Strait in the north separates the Asian Fauna from a distinctive Australian-Melanesian fauna since the pleistocene, when the ocean level was up to 150 m lower than today and all the western Indonesian and Malayan islands formed a solid land mass (see map 1, grey areas).



Map 1: The known distributions of *Lilliconus* in the South China Sea and Indonesia.
dots: *L. traillii.* circles: *L. papalis,* lines: *L. wallacei* sp. nov.

Like the Makassar Strait, the narrow (30 km) channel between Bali and Lombok was always deep enough to be filled with water, hence defining the limit for all larger terrestrial animals, plants and consequently also specialized insects and most species of birds. The malacofauna we encountered in the shallow water habitats across this line between Sulawesi and Kalimantan displayed a number of differences, one being the presence of *L. traillii* and *L. papalis* in the west and *L. wallacei* on its eastern side of the Makassar Strait. The findings of several new and probably endemic, very small gastropod species of several families that are geographically separated in the same way, suggests that the effects described above have led to independent speciation processes left and right of the Wallace line in the Makassar Strait.

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Explanations of Plates 4 and 5:

Plate 4:
Lilliconus papalis and *Lilliconus traillii*

First row (from left to right): *Lilliconus papalis* 9 mm, holotype from Ticao, Philippines, coll. BMNH, after RÖCKEL et al. 1995. Middle and right: *L. papalis* 9 mm and 6 mm, both from sand sample of Philippine origin.

Second row: *L. papalis* 7 mm, middle: 5 mm, right: 6 mm, all Kabaladua Reef, eastern Kalimantan.

Third row: *L. traillii* 7 mm, holotype from "Malacca", coll. BMNH, after RÖCKEL et al. 1995
middle and right: *L. traillii* 5 mm from Koka Atoll, S. Sulawesi

Fourth row: left and middle: *L. traillii* 5 mm and 4 mm from Kabaladua Reef, eastern Kalimantan
right: *L.* cf. *traillii* 5 mm from Alor

Plate 5:
Lilliconus wallacei n. sp.

First row (from left to right): *Lilliconus wallacei* sp. nov.
left: holotype 7 mm. right: paratype 4

Second row: Left: paratype 3. right: paratype 1

Third row: paratype 6. right: paratype 5