



Notes on fishes of the mesophotic reefs of Réunion Island

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Abstract

Ichthyofaunal assemblages of mesophotic coral ecosystems (MCEs) remain largely uncharacterized in the Western Indian Ocean. Recent underwater exploration of MCEs on the island of Réunion in the Mascarene Archipelago, Western Indian Ocean, resulted in several high-quality photographs of the island's deep reef ichthyofauna. We report new distributional records for *Plectranthias inermis* Randall, 1980 and *Pseudanthias bimarginatus* Randall, 2011 at Réunion Island based on field observations and underwater photographs. Additionally, we provide new live photographs of the little-known Réunion Angelfish, *Apolemichthys guezei* (Randall & Maugé, 1978), representing only the second photographic documentation of this elusive and apparently endemic species.

Key words: ichthyology, coral-reef fishes, Réunion Angelfish, *Apolemichthys guezei*, Indian Ocean.

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Mesophotic coral ecosystems (MCEs) occupy the deeper portions of coral reefs, between 30 and 150 m (Rocha et al. 2018). While studies investigating faunal assemblages of MCEs have increased in recent years (Loya et al. 2016), comparatively little research has been conducted in the western Indian Ocean, particularly in the Mascarenes and surrounding islands. Using closed-circuit rebreathers, the second author surveyed MCEs between 80 and 90 m at two locations on the island of Réunion, at Saint-Leu on the western coast and Sainte-Rose

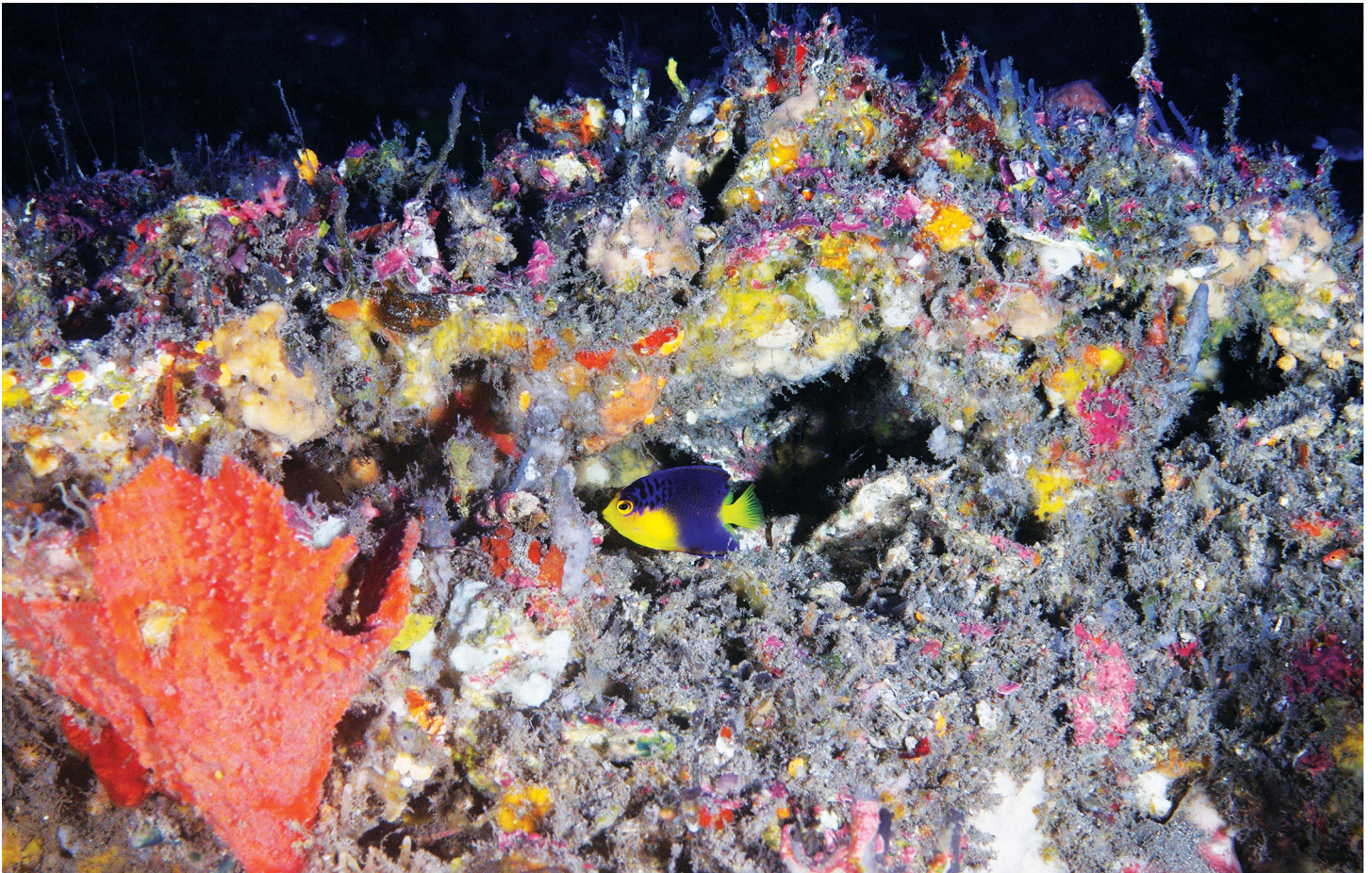


Figure 1. A mesophotic reef of Réunion, with heavy sponge and encrusting coralline algae cover; at center is a juvenile *Centropyge debelius* (Patrick Plantard).

on the eastern coast. As with most oceanic islands with steep reefs exposed to high surf, the mesophotic reefs of Réunion are rich in encrusting coralline algae, sponges, and gorgonians, with high visibility, up to 30 m (Fig. 1).

Checklists of the fish fauna of the Mascarenes have been published by Fricke (1999), Heemstra et al. (2004), Letourneur et al. (2004), and Fricke et al. (2009). A total of 965 marine fish species in 164 families were recorded for Réunion, yet only 5 species are apparently endemic to the island: *Apolemichthys guezei* (Randall & Maugué, 1978); *Mimoblennius lineathorax* Fricke, 1999; *Parupeneus posteli* Fourmanoir & Guézé, 1967; *Oxyurichthys guibei* Smith, 1959; and *Channomuraena bauchotae* Saldanha & Quéro, 1994. Of these, the two latter species may prove to be synonyms of other more widespread species (Fricke, Eschmeyer & Van der Laan 2020). The low number of endemic species may be attributed to the close proximity of Réunion to the other Mascarene islands and the extensive seamounts and ridges connecting them in the southwestern Indian Ocean (Obura 2015).

The photographic surveys reported herein (Fig. 2) add two species not previously reported for Réunion: *Plectranthias inermis* Randall, 1980 and *Pseudanthias bimarginatus* Randall, 2011. Both species have been reported from elsewhere in the region, the former from Mauritius (Heemstra et al. 2004), and the latter from the Maldives (Randall 2011) and South Africa (Luiz Rocha, pers. comm.). A closely allied species to *P. bimarginatus*, *Pseudanthias unimarginatus* Randall, 2011, is known only from the holotype from Mauritius. The species is, however, separated from *P. bimarginatus* by one fewer gill raker, one more pectoral-fin ray and slight live-color differences, thus the distinction is not well established. Nevertheless, we identify the fish from Réunion as *P. bimarginatus* based on the agreement with the color description in Randall (2011). A complete list of fishes observed and photographed in the surveys are presented in Table 1.

One of the apparently endemic species, the Réunion Angelfish, *Apolemichthys guezei*, was photographed at 90 m at Saint Leu. The specimen was not collected, but its identification was confirmed based on the color photographs in Kuitert et al. (2003) and of the holotype in Randall & Maugué (1978). The prior underwater photograph by Hugues Vitry in Kuitert et al. (2003) was of a small individual, about 10 cm SL, taken at a depth

TABLE 1

Fishes observed on the mesophotic reefs of Réunion between depths of 80 and 90 m

Family	Species	Author(s)	Figure
Chaetodontidae	<i>Forcipiger flavissimus</i>	Jordan & McGregor, 1898	Fig. 3
Chaetodontidae	<i>Chaetodon dolosus</i>	Ahl, 1923	Fig. 2E
Chaetodontidae	<i>Chaetodon mitratus</i>	Günther, 1860	Fig. 2D
Gobiidae	<i>Nemateleotris exquisita</i>	Randall & Connell, 2013	Fig. 2O
Labridae	<i>Anampses lineatus</i>	Randall, 1972	Fig. 3
Labridae	<i>Bodianus opercularis</i>	Guichenot, 1847	Fig. 2N
Pomacanthidae	<i>Apolemichthys guezei</i>	Randall & Maugé, 1978	Figs. 3 & 4
Pomacanthidae	<i>Centropyge acanthops</i>	Norman, 1922	Not shown
Pomacanthidae	<i>Centropyge bispinosa</i>	Günther, 1860	Fig. 2A
Pomacanthidae	<i>Centropyge debelius</i>	Pyle, 1990	Fig. 2B
Pomacanthidae	<i>Genicanthus caudovittatus</i>	Günther, 1860	Fig. 2C
Pomacentridae	<i>Chromis axillaris</i>	Bennett, 1831	Fig. 2F
Pomacentridae	<i>Chromis leucura</i>	Gilbert, 1905	Figs. 3 & 4
Serranidae	<i>Cephalopholis aurantia</i>	Valenciennes, 1828	Fig. 2J
Serranidae	<i>Cephalopholis polleni</i>	Bleeker, 1868	Fig. 2K
Serranidae	<i>Plectranthias inermis</i>	Randall, 1980	Fig. 2G
Serranidae	<i>Pseudanthias bimarginatus</i>	Randall, 2011	Fig. 2I
Serranidae	<i>Pseudanthias cooperi</i>	Regan, 1902	Not shown
Serranidae	<i>Pseudanthias pulcherrimus</i>	Heemstra & Randall, 1986	Fig. 2H
Syngnathidae	<i>Dunckerocampus multiannulatus</i>	Regan, 1903	Fig. 2M
Tetraodontidae	<i>Canthigaster smithae</i>	Allen & Randall, 1977	Fig. 2L



Figure 2. Reef fishes photographed on mesophotic reefs of Réunion, at depths between 80 and 90 m (+ denotes species not previously reported from Réunion); from Saint-Leu, western coast of Réunion: *Centropyge bispinosa* (A), *Centropyge debelius* (B), *Genicanthus caudovittatus* (C), *Chaetodon mitratus* (D), *Chaetodon dolosus* (E), *Chromis axillaris* (F), *Plectranthias inermis* (G; +), *Pseudanthias pulcherrimus* (H), *Pseudanthias bimarginatus* (I; +), *Cephalopholis aurantia* (J), *Cephalopholis polleni* (K), *Canthigaster smithae* (L), and *Dunckerocampus multiannulatus* (M); from Sainte-Rose, eastern coast of Réunion: *Bodianus opercularis* (N) and *Nemateleotris exquisita* (O; as *N. decora* in Fricke et al. [2009] but see Randall & Connell [2013]) (Patrick Plantard).

of 65 m. Our photographs are of an adult, approximately 15 cm SL (see Figs. 3 & 4). The species description was originally based on 6 specimens gillnetted in about 60–80 m, with the authors noting that the species was not observed in 6 weeks of intensive surveys; although the dives were no deeper than 60 m. Its apparent rarity is likely a result of its preference for deep mesophotic reefs, which are inaccessible by conventional methods of

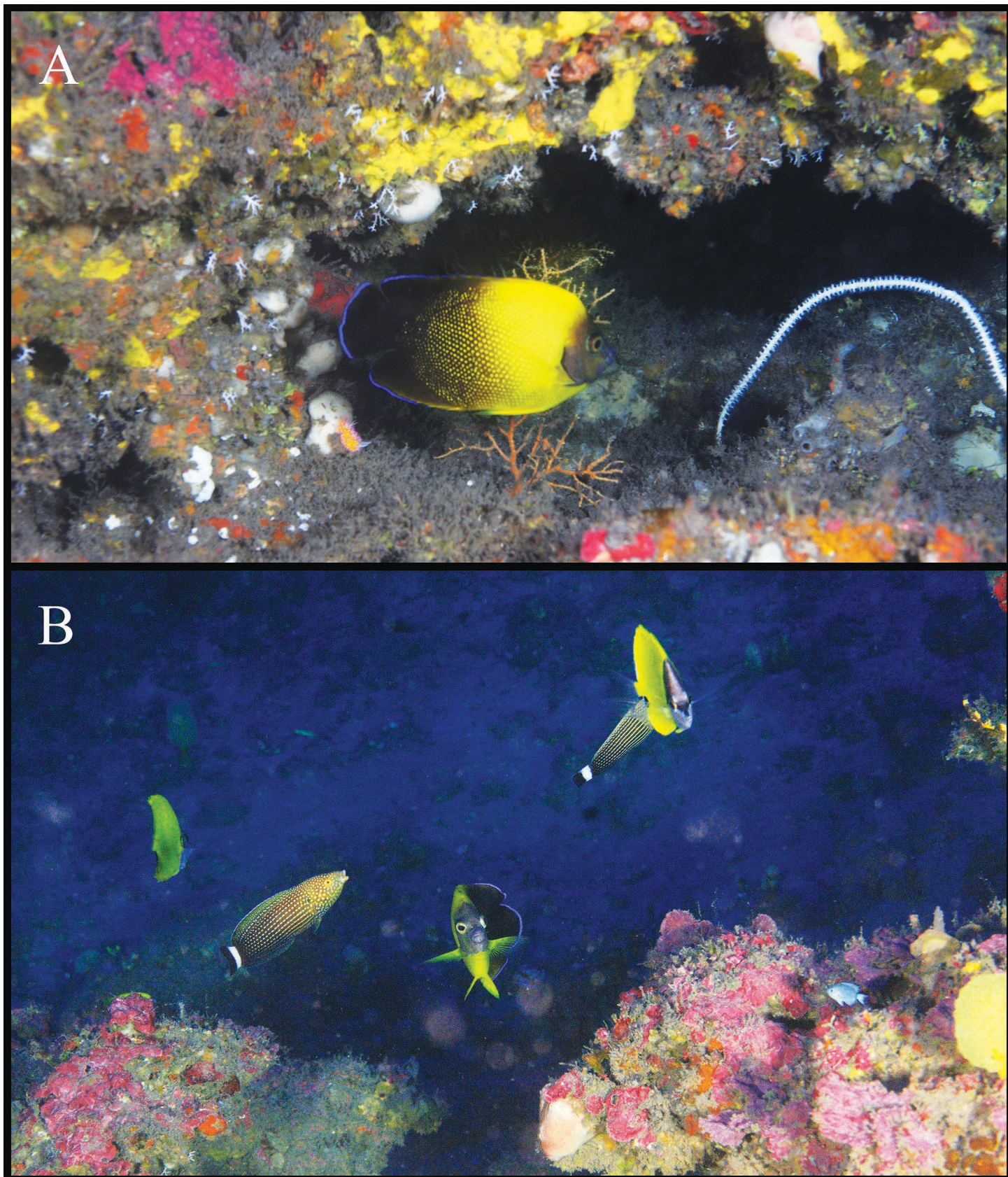


Figure 3. *Apolemichthys guezei* individual in Saint-Leu, Réunion at 90 m; note the heavy sponge and gorgonian cover (A) and the associated fishes *Anampses lineatus*, *Forcipiger flavissimus*, and *Chromis leucura* (B) (Patrick Plantard).



Figure 4. *Apolemichthys guezei* individual in Saint-Leu, Réunion at 90 m; note small *Chromis leucura* in foreground (Patrick Plantard).

diving. Fricke et al. (2009) proposed a red-list category of “endangered” for *A. guezei*, in part due to its narrow distribution and scarce records. Whether this status is warranted requires additional surveys. While *A. guezei* has yet to be documented outside of Réunion, its presence at the surrounding islands remains to be assessed, particularly on deep reefs below 60 m.

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