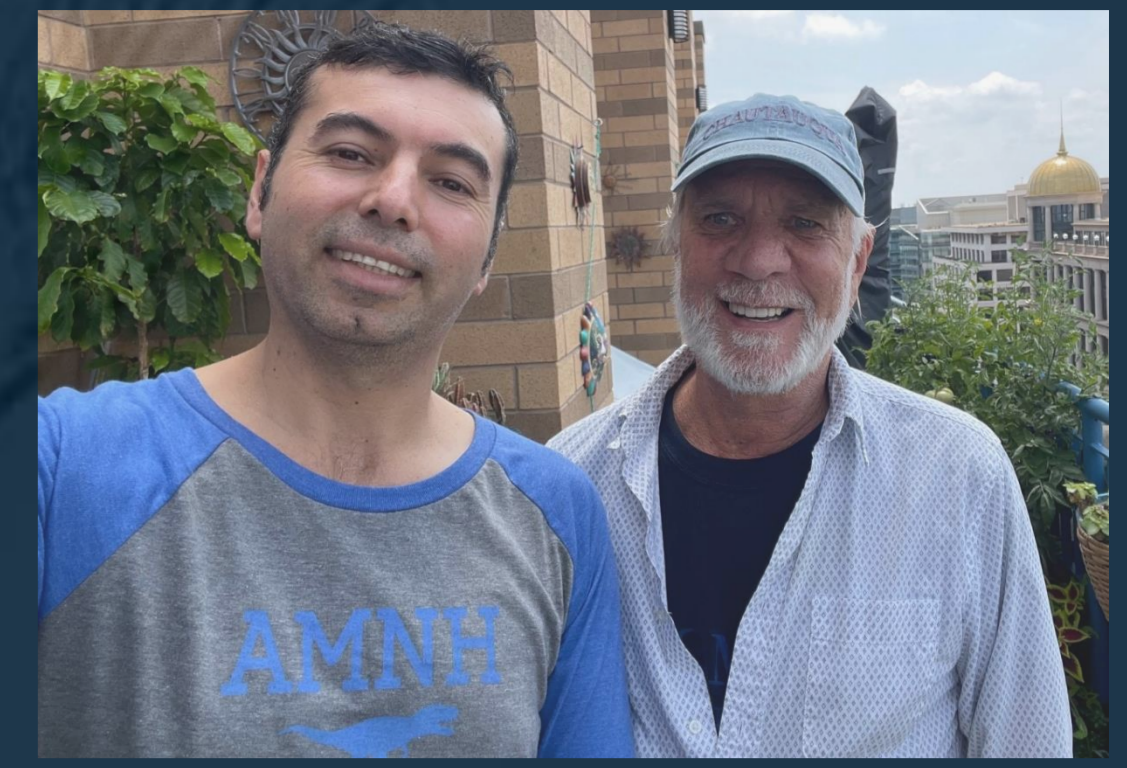




A new species of copepod of the Family *Pseudodiaptomidae* from the Great Barrier Reef and discussion of the species diversity and distribution of this family (New species still under description)



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Copepods are highly diverse **micro-crustaceans** and are some of the most abundant metazoans in aquatic systems. Some groups of free-living copepods have radiated into numerous species, as is the case of the genus *Pseudodiaptomus* (**83 valid species** in WoRMS, 2024), and it is believed their origins are the Eastern Pacific Ocean although, representatives of this genus are found in tropical and subtropical waters worldwide.

Species of *Pseudodiaptomus* are typically found in coastal estuarine-marine environments and from freshwater to hypersaline waters, inhabiting shallow waters near the bottom during the day and distributing throughout the water column from dusk to dawn (Walter, 1987), restricting their collection during the daytime.

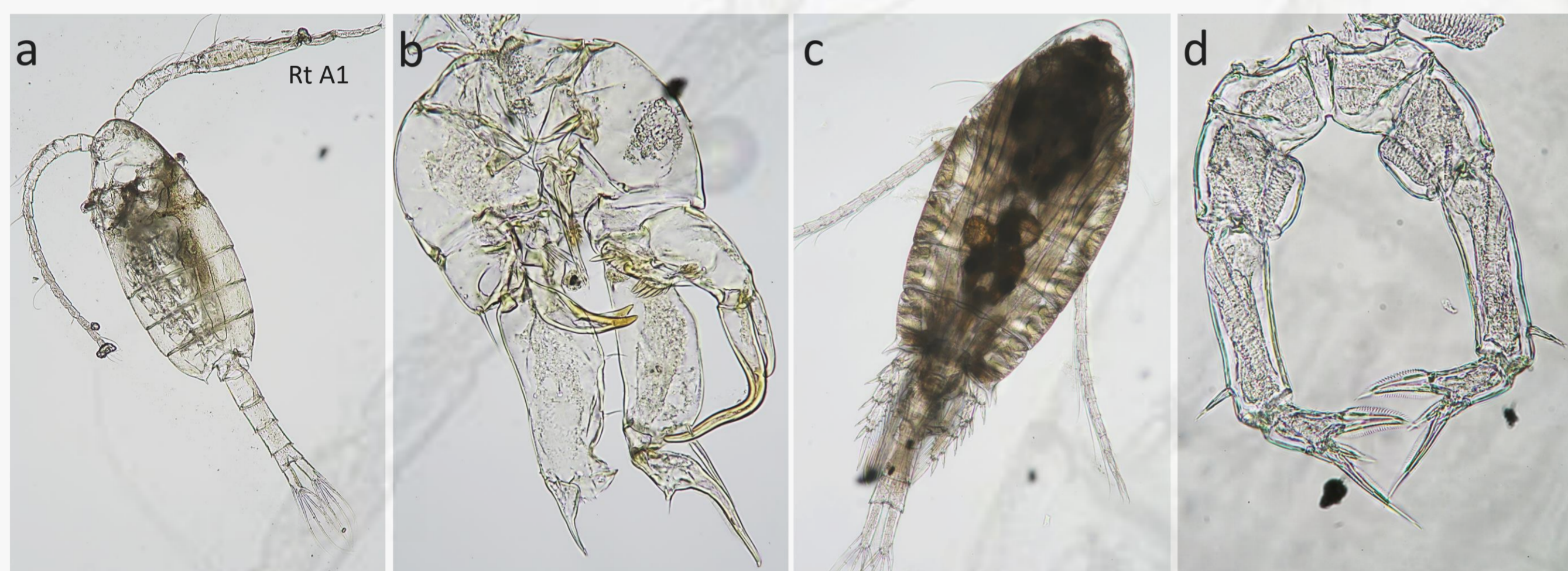


Figure 1: *Pseudodiaptomus inflexus* Walter, 1987. Notice the sexual dimorphism. Male: (a) Dorsal view and right antennule (A1), (b) male P5. Female: (c) Dorsal view and (d) corresponding P5. Images by: Uribe-Palomino

Marine and more pelagic species of *Pseudodiaptomus* have been recorded by two of the longest plankton assessments of the southern hemisphere: The Australian Continuous Plankton Recorder (AusCPR) and the Australian National Reference Stations (AusNRS). Details of the spatial distribution of the **14 species** of *Pseudodiaptomus* in Australian waters is presented in **Figure 3**.

The mouth parts and armature of swimming legs are very similar among the *Pseudodiaptomus* species, making these features of little use for species determination (Mulyadi, 2022). However, the fifth pair of legs (**P5**) are highly dimorphic between males and females and have **high taxonomic value**. Males are smaller than females and are easy identifiable by the presence of a geniculate in the right first antenna (**A1**). Some of these features are shown in *P. inflexus* a species found off the Eastern Coast of Australia in **Figure 1**.

The identification of an already described species or a new one, is facilitated by using Walter groups and subgroups (Walter, 1986) shown in **Figure 2**. They were built considering morphological features of males and females (P5 in particular) and geographical distribution. Matching males and females from the same species is difficult because of the low variability exhibited by the female **P5**.

Groups	Subgroups	No. Species	Male P5 (post. View) example
Nudus (Left Ri absent) Estuarine-Marine		3	<i>P. gracilis</i>
Americanus (Left Ri small & digitiform) Estuarine-Marine	<i>acutus</i> (Left Re2 rounded)	5	<i>P. acutus</i>
	<i>pelagicus</i> (Left Re2 spatulate)	7	<i>P. longispinosus</i>
Burckhardt (Left Ri rudimentary) Marine		1	<i>P. burckhardti</i>
Improcerus (Left Ri simple, large, variably spatulate) Marine		9	<i>P. ornatus</i>
Lobus (Left Ri large process fused to Ba) Freshwater-Marine	<i>forbesi</i> (large single process)	21	<i>P. forbesi</i>
	<i>poppei</i> (large bifid process)	4	<i>P. smithi</i>
Hyalinus (Left Ri absent) Marine	<i>aurivilli</i> (Left Re2 Convex)	4	<i>P. aurivilli</i>
	<i>trihamatus</i> (Left Re2 incised)	9	<i>P. trihamatus</i>
Ramosus (Left Ri Present) Marine	<i>hickmani</i> (Right Re1 bifid spine)	10	<i>P. marinus</i>
	<i>serricaudatus</i> (Right Re1 simple spine)	11	<i>P. inflexus</i>
unassigned		3	

Figure 2: This groups and subgroups established by Walter (1986, 2006) facilitate the identification of species within the genus by checking a few characters of the male P5, reducing the possible number of species that need to be checked in detail to get to the right one or to find a new species. Based on taxonomy key by Walter et al (2006) and graphically modified by Uribe-Palomino. Species assigned to each subgroup can be found in Walter et al (2006) NOTE: Number of species has been updated till 2022 (Walter, 2022 notes. Rt: Right, Lt: Left, Cx: Coxa, Ba: Base, Re: Exopodite, Ri: Endopodite

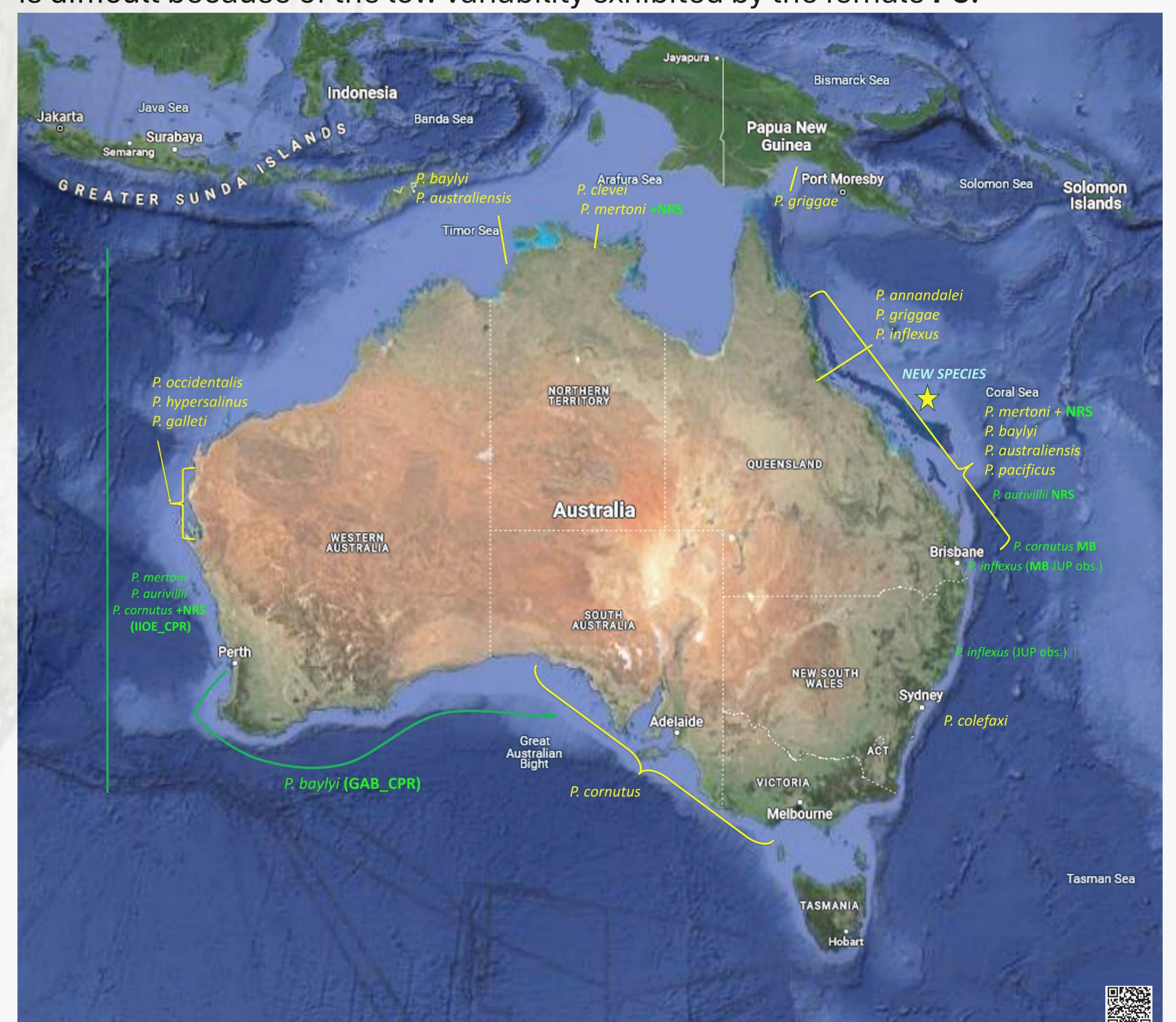


Figure 3: *Pseudodiaptomus* species found in Australian waters based on the review by Walter (1987) (yellow). New records provided by: the Aus-NRS, Aus-CPR from the Great Australian Bight (GAB), the International Indian Ocean Expedition (IIOE), Moreton Bay studies and Uribe-Palomino personal observations are shown in green. Base map from Google Earth.

Our new species is still in the process of description limiting the detail that can be shared now. This species was found in the Great Barrier Reef by late Dr David McKinnon and it has been waiting in the Smithsonian Natural History Museum for its formal description for the last 20 years. The male P5 assigns this species to the **Improcerus** subgroup and, to and along with the asymmetric urosome observed in the females these are the most conspicuous features of this new species

P. marinus has expanded rapidly its distribution in coastal European waters since its introduction by ballast waters. Find out more



Are you interested to know more of calanoid taxonomy? Check this link to the Interactive Lucid Key



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