

Supplementary Material

Hidden in plain sight: *Tripneustes kermadecensis* (Echinodermata: Echinoidea) is a junior synonym of the eastern Australian sea urchin *Evechinus australiae* described in 1878

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Table S1. List of species, GenBank accession numbers, sample names, locality, use (network or phylogeny) and source of sequences used in the current study.

Species	Accession number	Sample ID	Locality	Dataset (Py, Nt or MA)	Source
<i>T. kermadecensis</i>	OR038171	J. 30961	Port Jackson, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR038169	J. 1117	Port Jackson, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR038167	J. 23530	Port Stephens, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR205878	J. 24345	Cape Three Points, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR038168	J. 4250	Port Jackson, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR038170	J. 5003	Port Jackson, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR144098	J. 31050	Solitary Islands, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR144099	J. 31051	Solitary Islands, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	OR144100	J. 31052	Solitary Islands, NSW	Py + Nt	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 1	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 2	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 3	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 4	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 5	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 6	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 7	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	NA	SUSCG. 8	Port Jackson, NSW	MA	Current study
<i>T. kermadecensis</i>	KY314758	Ker901	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314765	Ker123	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314757	Ker001	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314767	Ker218	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314769	Ker243	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314759	Ker904	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314770	Ker378	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314766	Ker124	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314761	Ker906	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314768	Ker219	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314763	Ker910	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314764	Ker911	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	KY314762	Ker909	Kermadec Islands	Py + Nt	Bronstein <i>et al.</i> 2017
<i>T. kermadecensis</i>	MK084947	MB011	Norfolk Island	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. kermadecensis</i>	MK084946	MB010	Sydney, Australia, NSW	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. kermadecensis</i>	MK084945	MB009	Sydney, Australia, NSW	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. kermadecensis</i>	MK084948	MB012	Norfolk Island	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. g. gratilla</i>	KU314856	Pi7.0	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314860	Pi187157.1	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314830	RS8.1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314836	RSJo1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314838	RS4.2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314840	RS6.2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314842	RS10.1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314844	RSEQ1	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314845	RSEQ2	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314859	Pi187156K1	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314861	Pi187157.2	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314864	Pi187197	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314854	ZnTg104	Zanzibar	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314863	Pi187193	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314862	Pi187157.3	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314858	Pi187147	Luzon, Philippines	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314853	ZnTg103	Zanzibar	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314852	ZnTg102	Zanzibar	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314851	ZnTg101	Zanzibar	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314855	KenTrip1	Kenya	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. gratilla</i>	KU314850	ZnTg100	Zanzibar	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314841	RS6.3	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314847	RSEQ18	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314837	RS4.1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314849	RSEQ20	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016

Species	Accession number	Sample ID	Locality	Dataset (Py, Nt or MA)	Source
<i>T. g. elatensis</i>	KU314843	RS10.2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314834	RSJo2d	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314831	RS8.2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314828	RSEi2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314848	RSEQ19	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314827	RSEi1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314829	RS7	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314832	RS8.3	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314833	RSJo1d	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314835	RSJo2	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314839	RS6.1	Gulf of Aqaba, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. g. elatensis</i>	KU314846	RSEQ7	El Quseir, Red Sea	Py + Nt	Bronstein <i>et al.</i> 2016
<i>T. ventricosus</i>	MK084937	RT001	Roatan, Honduras	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. ventricosus</i>	MK084938	RT008	Roatan, Honduras	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. ventricosus</i>	MK084939	RT014	Roatan, Honduras	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. ventricosus</i>	MK084940	RT017	Roatan, Honduras	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084954	Dep006	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084951	Dep003	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084953	Dep005	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084950	Dep002	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084949	Dep001	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. depressus</i>	MK084952	Dep004	Baja California, Mexico	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. g. gratilla</i>	MK084943	MB006	Cairns, Qld, Australia	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. g. gratilla</i>	MK084941	MB001	Kurnell, NSW, Australia	Py + Nt	Bronstein <i>et al.</i> 2019
<i>T. g. gratilla</i>	MK084944	MB007	Cairns, Qld, Australia	Py + Nt	Bronstein <i>et al.</i> 2019
<i>Toxopneustes pileolus</i>	MK084955	Toxo004	Kunduchi, Tanzania	Py	Bronstein <i>et al.</i> 2019
<i>Toxopneustes pileolus</i>	MK084956	Toxo005	Kunduchi, Tanzania	Py	Bronstein <i>et al.</i> 2019
<i>Lytechinus variegatus</i>	MG676469	LVAR.00	NA	Py	Bronstein & Kroh 2019
<i>Lytechinus variegatus</i>	MG676468	Lv4	NA	Py	Bronstein & Kroh 2019

Py, phylogeny; Nt, network; MA, morphological analysis.

Table S2. Expected and observed number of tubercles on 100 plates in the *T. kermadecensis* growth series and Chi-Square goodness of fit values, degrees of freedom and *P*-values.

Individual	$\chi^2 H_0$	E_i number of tubercles	O_i number of tubercles	χ^2	d.f.	<i>P</i>
SUSCG. 1	$H_0: T. kermadecensis$	25/100	33/100	0.42	1	0.06
SUSCG. 2	$H_0: T. kermadecensis$	25/100	39/100	3.86	1	0.001*
SUSCG. 3	$H_0: T. kermadecensis$	25/100	37/100	2.3	1	0.005*
SUSCG. 4	$H_0: T. kermadecensis$	25/100	35/100	1.19	1	0.3
SUSCG. 5	$H_0: T. kermadecensis$	25/100	38/100	3.048	1	0.002*
SUSCG. 6	$H_0: T. kermadecensis$	25/100	31/100	0.0476	1	0.1
SUSCG. 7	$H_0: T. kermadecensis$	25/100	39/100	3.857	1	0.001*
SUSCG. 8	$H_0: T. kermadecensis$	25/100	36/100	1.71	1	0.01*
J. 31050	$H_0: T. kermadecensis$	25/100	33/100	0.423	1	0.06
J. 31051	$H_0: T. kermadecensis$	25/100	29/100	0.048	1	0.35
J. 31052	$H_0: T. kermadecensis$	25/100	36	1.71	1	0.01*

Table S3. Other *Tripneustes australiae* (formerly known as *T. kermadecensis*) material from the type locality Port Jackson in the Australian Museum collections.

Specimen	Number	Collected from	Longitude	Latitude	Collection date
J. 11125	3	Port Jackson, Sow and Pigs Reef	33°50'18"S	151°16'12"E	05 Apr. 1958
J. 5003	1	Port Jackson, Bottle and Glass Rocks	33°50'54"S	151°16'12"E	
J. 8825	3	Port Jackson, Bottle and Glass Rocks	33°50'54"S	151°16'12"E	Feb. 1961
J. 9892	1	Port Jackson, Bottle and Glass Rocks	33°50'54"S	151°16'12"E	23 Apr. 1976
J. 11843	1	Port Jackson, Bottle and Glass Rocks	33°50'54"S	151°16'12"E	1978
J. 11858	1	Port Jackson, Bottle and Glass Rocks	33°50'54"S	151°16'12"E	1978
J. 1116	1	Port Jackson	33°51'S	151°16'E	
J. 4250	1	Port Jackson	33°51'S	151°16'E	Jun. 1923
G. 1138	1	Port Jackson	33°51'S	151°16'E	
J. 2478	1	Port Jackson	33°51'S	151°16'E	
J. 2479	1	Port Jackson	33°51'S	151°16'E	

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