

Table S1. Confirmed observations of *Pelagothuria* outside of our study. Asterisk denotes that the position was estimated based on geographic description.

Expedition/Vessel	Ocean	Date	Latitude	Longitude	Depth (m)	#	Source
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	3/8/1891	7° 31' 30" N	79° 13' 59" W	838	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	3/28/1891	0° 58' 30" S	89° 16' 60" W	702	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	4/3/1891	0° 19' 00" N	90° 34' 00" W	605	2	Ornell 2019
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	4/4/1891	0° 54' 00" N	91° 09' 00" W	2174	2	Ornell 2019
U.S. Fish Commission/ RV Albatross	Pacific Ocean	1891	3° 12' 00" N *	85° 24' 00" W *	605-3350	>28	Miller & Pawson 1990
U.S. Fish Commission/ RV Albatross	Indian Ocean	1898-1899	4° 36' 00" S *	55° 30' 00" E *	Unknown	1	Miller & Pawson 1990
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	Sept. 1899	6° 42' 00" S	137° 36' 00" W	Surface	3	Ornell 2019
U.S. Fish Commission/ RV Albatross	Eastern Tropical Pacific	1899-1905	2° 38' 00" N	137° 22' 00" W	4462	1	Clark 1920
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	9/7/1899	6° 40' 48" N	137° 34' 48" W	Surface	6	Ornell 2019
U.S. Fish Commission/ RV Albatross	North Pacific Ocean	9/10/ 1899	0° 49' 60" N	137° 54' 00" W	4504	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	11/7/1904	1° 34' 60" S	89° 30' 00" W	2633	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	11/8/1904	4° 01' 60" N	89° 16' 00" W	0-300	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	11/8/1904	3° 37' 30" S	89° 43' 00" W	3392	1	Moris 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	11/8/1904	3° 37' 30" S	89° 43' 00" W	3575	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	1/2/1905	2° 18' 30" S	90° 02' 30" W	0-500	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	1/2/1905	2° 40' 30" S	90° 19' 00" W	0-800, 800, 0-300, 1743	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	1/13/1905	5° 10' 60" S	98° 55' 60" W	0-800, 800, 0-300, 2153	1	Ornell 2019
U.S. Fish Commission/ RV Albatross	Southeast Pacific Ocean	1/15/1905	8° 07' 30" S	104° 10' 00" W	3811	1	Moris 2019
U.S. Fish Commission/ RV Albatross	South Pacific Ocean	2/15/1905	0° 04' 00" S	117° 07' 00" W	0-300, 2320, 0-800, 800	1	Ornell 2019
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Feb. 1899	4° 05' 08" S	72° 24' 08" E	Unknown	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	3° 26' 02" S	58° 34' 02" E	Unknown	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	4° 38' 06" S	51° 16' 06" E	Unknown	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	4° 45' 00" S	48° 58' 06" E	Unknown	3	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	5° 12' 05" S	46° 32' 03" E	Unknown	2	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	2° 58' 08" N	47° 06' 01" E	Unknown	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Mar. 1899	4° 36' 01" N	48° 37' 06" E	Unknown	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	North Atlantic Ocean	1898-1899	1° 51' 00" N	0° 31' 02" E	200	1	Heding 1940
German Deep Sea Expedition/ SS Valdivia	Atlantic Ocean	1898-1899	28° 28' 08" S	6° 13' 00" E	2000	1	Heding 1950
German Deep Sea Expedition/ SS Valdivia	Indian Ocean	Nov. 1898	34° 31' 02" S	26° 00' 02" E	Unknown	1	Heding 1950
Hancock Pacific Expeditions/ RV Veleo III	South Pacific Ocean	1/27/1938	1° 01' 00" S	89° 30' 00" W	731	1	Morris 2019
USSR Academy of Sciences/ RV Vityaz	Indian Ocean	1959	10° 17' 00" S	110° 20' 04" E	6935-7060	2	Gebruk 1989
USSR Academy of Sciences/ RV Vityaz	Indian Ocean	1959	10° 08' 00" S	107° 55' 00" E	6840	1	Gebruk 1989
USSR Academy of Sciences/ RV Vityaz	Indian Ocean	1959	3° 10' 00" N	67° 00' 00" E	3500	3	Gebruk 1989
USSR Academy of Sciences/ RV Vityaz	Indian Ocean	1959	1° 13' 00" S	66° 46' 00" E	3040	1	Gebruk 1989
USSR Academy of Sciences/ RV Vityaz	Indian Ocean	1959	6° 54' 00" N	83° 00' 00" E	3980	1	Gebruk 1989
U. of Southern California/ RV Eltanin	South Atlantic	5/28/1963	57° 53' 31" S	27° 36' 29" W	1812	1	Gebruk 1989
USSR Academy of Sciences/ RV Mendeleev	Indian Ocean	1987	4° 05' 00" S	93° 25' 00" W	1600	48	Gebruk 1989
Galapagos Rift/ NOAA Ship Okeanos	Pacific Ocean	7/20/2011	3° 20' 49" N	90° 45' 57" W	Unknown	1	NOAA
Discovering the Deep/ NOAA Ship Okeanos	Pacific Ocean	3/7/17 to 3/9/17	0° 12' 43" N	176° 29' 05" W	Unknown	1	NOAA
SERPENT/ Deepsea Metro I	Indian Ocean	9/30/2013	9° 45' 00" S *	40° 30' 00" E *	1048	1	Jones 2009
Marine Food Webs/ RV Kilo Moana	Pacific Ocean	August 2015	7° 57' 21" N	154° 51' 11" W	100 -1500	151	J. Drazen, pers. comm
Galapagos Rift Exploration/ EV Nautilus	Pacific Ocean	6/27/2015	1° 12' 00" N	91° 05' 60" W	363, 1033	2	Buglass et al. 2019
Galapagos Rift Exploration/ EV Nautilus	Pacific Ocean	7/6/2015	0° 24' 00" S	91° 05' 60" W	387	1	Buglass et al. 2019
Costa Rican Deep Sea Connections/ RV Falkor	Pacific Ocean	1/8/2019	8° 54' 00" N	84° 18' 00" W	982	1	Seid 2019
Costa Rican Deep Sea Connections/ RV Falkor	Pacific Ocean	1/10/2019	9° 00' 00" N	84° 24' 00" W	1066	1	Seid 2019
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	6° 07' 48" N	162° 45' 36" W	191-2593	22	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	5° 36' 36" N	161° 44' 24" W	475 - 1671	6	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	5° 09' 00" N	162° 01' 48" W	435- 3019	24	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	0° 50' 24" N	160° 39' 00" W	303-1398	42	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	0° 19' 12" S	159° 54' 00" W	455- 1288	8	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	0° 26' 24" S	159° 57' 00" W	393- 1482	25	N. Raineault, pers. comm
Kingman, Palmyra, and Jarvis/ EV Nautilus	North Pacific Ocean	Jul. 2019	0° 22' 12" S	160° 01' 12" W	385-684	16	N. Raineault, pers. comm