Impacts of marine plastic pollution from continental coasts to subtropical gyres – Fish, seabirds and other vertebrates in the SE Pacific

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ELECTRONIC SUPPLEMENT

Supplement 1 - Description of methodology

Literature Review: We explored all the primary literature on marine vertebrates from the SE Pacific that reported incidents with marine plastic litter. Since the co-authors are experts on the different taxonomic groups studied herein (fishes, seabirds, sea turtles, marine mammals), we consider our team of collaborators to have a good overview of the existing studies that were published in the primary literature. In addition, we examined studies on the diet of these marine vertebrates from the SE Pacific for reports on plastic litter ingestion; in particular cases, we contacted the respective authors to inquire about records of plastic litter found in stomach contents. Furthermore, we scanned conference proceedings covering the past 10 years of national and regional marine science conferences, seabird symposia, sea turtle working groups, and marine mammal workshops.

Any species for which interactions with marine plastic litter had been recorded was integrated into our database, regardless of the frequency of occurrence. For example, a species in which 1% of all studied individuals had ingested microplastics was registered for "plastic ingestion" in the same way as a species in which 80% of the analysed individuals

were found with microplastics in their stomachs. Nevertheless, in the manuscript text we highlight such differences of ingestion frequency between the different marine vertebrate species.

Please, note that for the purpose of this review we consider plastics incorporated in seabird nests as another case of entanglement, because it represents a form of plastic entanglement interaction for these species. These cases are clearly marked in Table 1 and could be disentangled for future analyses if this is so desired.

Citizen Science Participation: In order to document species that had any interaction (entanglement, litter-contaminated nests) with marine plastic litter, we invited volunteer participants to share their photographs showing entanglements with marine vertebrates from the SE Pacific. Volunteers were invited via social media at the beginning of December 2017 and again in January 2018, the main vacation period in the southern hemisphere. All citizen scientists who sent photographic records were acknowledged and consulted on whether they would agree to include their observation into our database, which would eventually be published - we are very pleased to report that ALL volunteer contributors immediately agreed to these conditions.

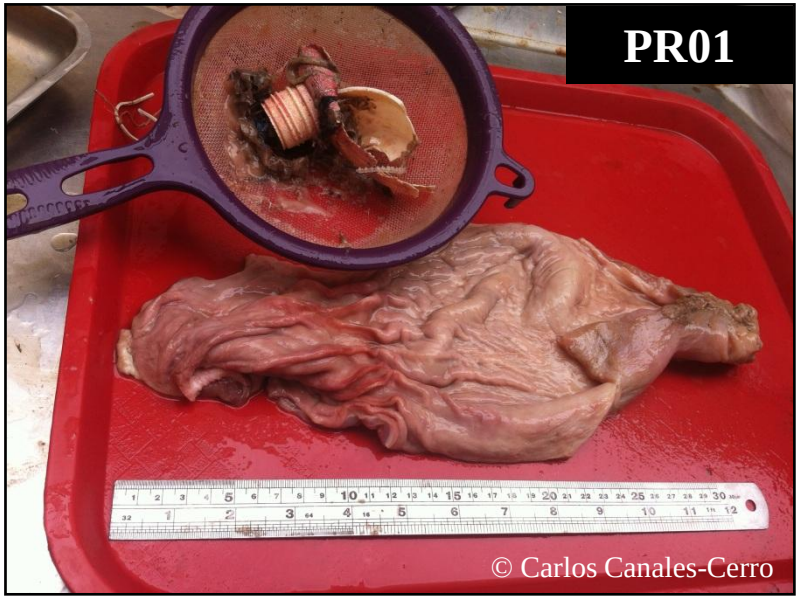
Supplement 2 – Detailed list of photographic records used in this article (including records contributed by citizen science volunteers and the authors)

Species	Foto-Id	Locality	Lat. / Long.	Country	Date	Observer
FISHES						
Prionace glauca	PR01	No data	-	Chile	Apr 2016	Carlos Canales-Cerro
Acanthurus leucopareius	AL01	Easter Island	27° 7'43.01"S 109°22'46.14"W	Chile	Jun 2017	Nicolás Luna
Carcharhinus galapagensis	CG01	Easter Island	27° 7'43.01"S 109°22'46.14"W	Chile	Jun 2017	Naiti Morales
Kyphosus sandwicensis	KS01	Southeast Pacific	28° 23'40.85"S 105°42'09.06"W	Chile	No date	Tim Kiessling
SEA TURTLES						
Caretta caretta	CC01	Easter Island	27°04'54.07"S 109°14'00.88"W	Chile	Mar 2017	Camila González
Chelonia mydas	CM01	Antofagasta, Región de Antofagasta	23°38'31.58"S 70°23'53.81"W	Chile	Jun 2007	Carlos Guerrea-Correa
Eretmochelys imbricata	EI01	Easter Island	27°08'52.31"S 109°25'56.45"W	Chile	Jan 2014	Anita Espinoza
Lepidochelys olivacea	LO01	Laraquete, Región del Biobío	37°09'50.37"S 73°11'28.80"W	Chile	No date	Miguel Ángel Mansilla
Lepidochelys olivacea	LO02	Pacoche, Manabi, Ecuador	1°00'03.74"S 80°52'01.02"W	Ecuador	May 2017	Rubén Alemán
SEABIRDS						
Anas georgica	AG01	Elqui river, La Serena	29°53'38.47"S 71°16'23.17"W	Chile	No date	Pedro Valencia
Ardenna creatopus	AC01	Mocha Island, Región del Biobío	38°20'31.9"S 73°54'41.3"W	Chile	No date	Oikonos Chile
Cinclodes nigrofumosus	CN01	Punta de Choros, La Higuera	29°14'57.97"S 71°28'8.55"W	Chile	Feb 2016	Carolina Henríquez Leschot
Haematopus palliatus	HP01	Elqui river, La Serena	29°53'38.47"S 71°16'23.17"W	Chile	No date	Pedro Valencia
Haematopus ater	HA01	Changa beach, Coquimbo	29°57'33.33"S 71°19'52.07"W	Chile	Feb 2015	Matías Portflitt Toro
Larosterna inca	LI01	Montemar, Viña del Mar	32°57'24.87"S 71°33'0.07"W	Chile	Oct 2016	Fernanda Barilari
Larus belcheri	LB01	Mejillones bay, Antofagasta	23° 3'33.90"S 70°26'55.22"W	Chile	Nov 2017	Ana María García
Larus dominicanus	LD01	La Serena, Región de Coquimbo	29°53'26.0"S 71°16'29.8"W	Chile	No date	Pedro Valencia
Larus dominicanus	LD02	Maipo river, San Antonio	33°37'20.2"S 71°37'52"W	Chile	Aug 2014	Jorge Rivera Torres
Larus dominicanus	LD03	Changa beach, Coquimbo	29°57'33.33"S 71°19'52.07"W	Chile	Nov 2014	Matías Portflitt Toro
Larus dominicanus	LD04	Maipo river, San Antonio	33°37'20.2"S 71°37'52"W	Chile	Dec 2016	Angélica Contador
Larus dominicanus	LD05	Lomas Coloradas, San Pedro de la Paz	36°52'30.52"S 73° 9'26.24"W	Chile	Dec 2017	Katherine Muñoz
Larus dominicanus	LD06	Puluqui island, Calbuco	41°48'23.70"S 73° 2'4.46"W	Chile	Jan 2018	Javier Soto
Larus dominicanus	LD07	Maipo river, Chile	-	Chile	Jan 2018	Shanon Montecinos

Leucophaeus modestus	LM01	Changa beach, Coquimbo	29°57'33.33"S 71°19'52.07"W	Chile	Nov 2014	Matías Portflitt Toro
Leucophaeus modestus	LM02	Lluta wetland, Arica	18°24'50.51"S 70°19'27.79"W	Chile	Oct 2014	Andrés Puiggros
Leucophaeus scoresbii	LS01	Puerto Natales, Chile	51°44'08.8"S 72°30'23.1"W	Chile	Jun 2011	Cristián Larrere
Macronectes sp	MS01	Quintero, Valparaíso	32°45'26.37"S 71°32'37.11"W	Chile	Jan 2018	Paulo Dávalos - Revista Trile
Phalacrocorax atriceps	PA01	Quetalco, Chiloé	42°20'13.09"S 73°33'1.14"W	Chile	Jan 2014	Jorge Navarro Azocar
Phalacrocorax bougainvillii	PB01	Punta Teatinos wetland, La Serena	29°49'24.22"S 71°17'21.44"W	Chile	Jan 2015	Carlos Vallejos
Phalacrocorax brasilianus	PS01	Pichicuy, La Ligua	32°20'33.61"S 71°27'28.43"W	Chile	Jan 2018	Víctor Ríos
Phalacrocorax gaimardi	PG01	Raúl Marín Balmaceda, Cisnes	43°46'21.80"S 72°57'13.96"W	Chile	No date	Natalie Pozo
Phalacrocorax gaimardi	PG02	Punta de Choros, La Higuera	29°14'57.97"S 71°28'8.55"W	Chile	May 2011	Manuel Segovia
Phalacrocorax gaimardi	PG03	Taltal, Región de Antofagasta	25°24'13.14"S 70°29'0.26"W	Chile	2012	Iván Torres
Phalacrocorax gaimardi	PG04	Punta Patache, Iquique	20°48'31.74"S 70°12'6.64"W	Chile	Oct 2012	Paola Araneda
Phalacrocorax gaimardi	PG05	Coliumo, Región del Biobío	36°33'12.48"S 72°57'24.40"W	Chile	2016	Iván Torres
Podilymbus podiceps	PP01	Elqui river, La Serena	29°53'38.47"S 71°16'23.17"W	Chile	2011	Pedro Valencia
Rinchops niger	RN01	La Serena, Región de Coquimbo	29°53'26.0"S 71°16'29.8"W	Chile	No date	Pedro Valencia
Spheniscus humboldti	SH01	Changa beach, Coquimbo	29°57'33.33"S 71°19'52.07"W	Chile	Jan 2015	Matías Portflitt Toro
Sula variegata	SV01	La Serena, Región de Coquimbo	29°53'26.0"S 71°16'29.8"W	Chile	2017	Issa Ramos
Thalassarche melanophrys	TM01	Diego Ramírez Island	56°29'55.73"S 68°43'36.97"W	Chile	No date	Cristián Suazo
MARINE MAMMALS						
Arctocephalus philippi	AP01	No data	-	Chile	May 2014	Lukas Mekis
Grampus griseus	GG01	La Herradura, Coquimbo	29°58'34.80"S 71°21'21.11"w	Chile	No date	Macarena Bravo
Lontra felina	LF01	Morro de Sama, Tacna	18° 0'40.35"S 70°52'56.86"W	Perú	2002	Juan Valqui
Lontra felina	LF02	No data	-	Chile	No date	Fernando Olivares
Megaptera novaeangliae	MN01	Los Órganos, Piura	4°10'26.95"S 81° 7'43.69"W	Perú	Sep 2013	Aldo S. Pacheco
Otaria flavescens	OF01	Raúl Marín Balmaceda, Cisnes	43°46'21.80"S 72°57'13.96"W	Chile	No date	Natalie Pozo
Otaria flavescens	OF02	Talcahuano, Región del Biobío	36°43'02.3"S 73°06'40.1"W	Chile	Aug 2009	Mauricio Ulloa
Otaria flavescens	OF03	Región de Antofagasta	23°38'37.2"S 70°23'54.9"W	Chile	Sep 2012	Aldo S. Pacheco
Otaria flavescens	OF04	Región de Aysén	45°23'22.1"S 72°49'34.6"W	Chile	Sept 2015	Mauricio Ulloa
Otaria flavescens	OF05	Con Con, Viña del Mar	33°0'17.67"S 71°33'3.27"W	Chile	Jan 2018	Claudio Godoy
Otaria flavescens	OF06	Morro Gonzalo, Corral	39°51'21.6"S 73°28'05.1"W	Chile	Feb 2018	ONG Vuelve al Océano

Supplement 3 – Photographic records used in this article

FISHES


PR01
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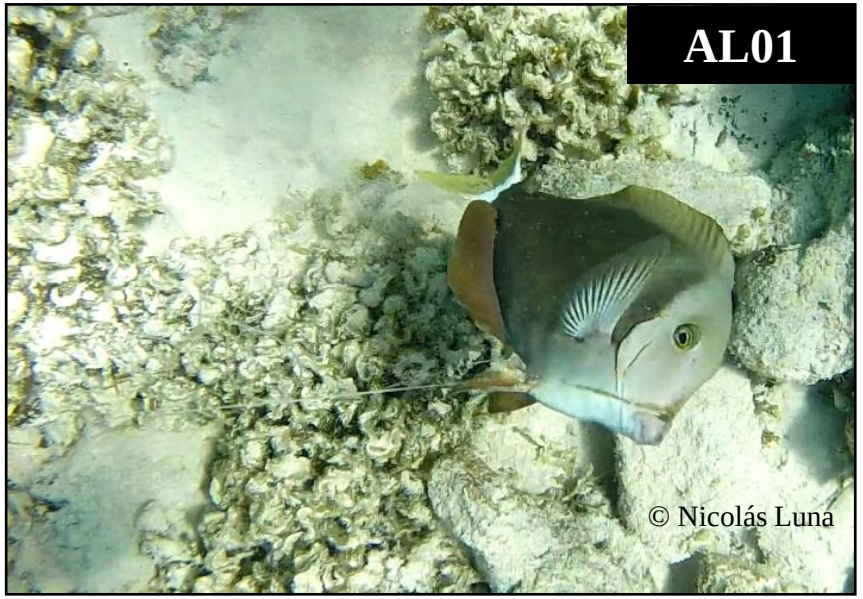
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KS01
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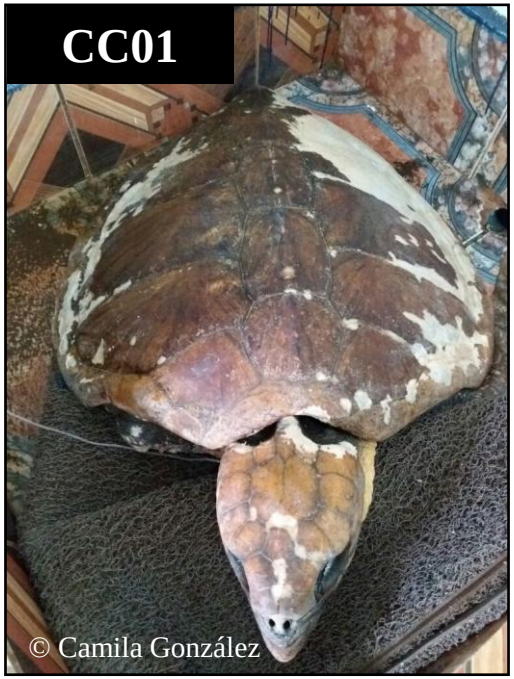
SEA TURTLES

CC01



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EI01

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LO01

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LM01
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PB01
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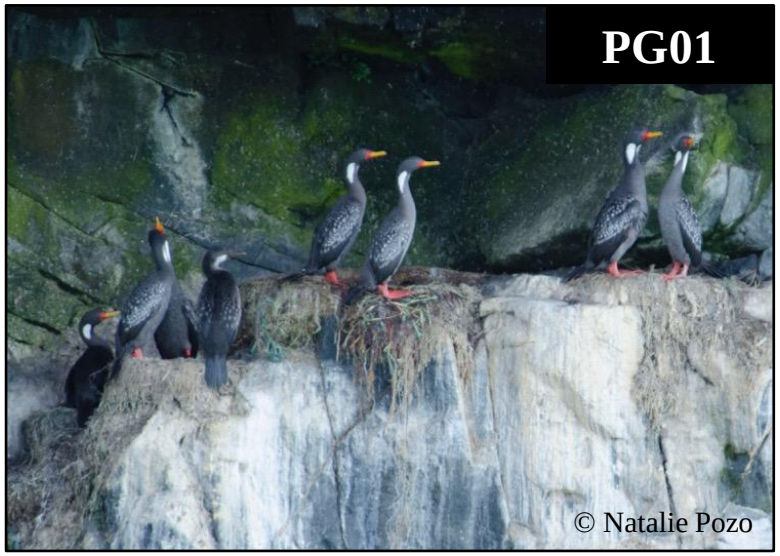
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Mano Goya


PG03
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SEABIRDS


PG04
© Paola Araneda


PG05
© Iván Torres


PP01
© Pedro Valencia


RN01
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SEABIRDS


SH01
1 cm
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SV01
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TM01
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MARINE MAMMALS

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