

MACOPSproject: from PhD project to networking opportunity and development of new guidelines for a better sanitary monitoring program in Peru

Loaiza I.^{1,2,3},

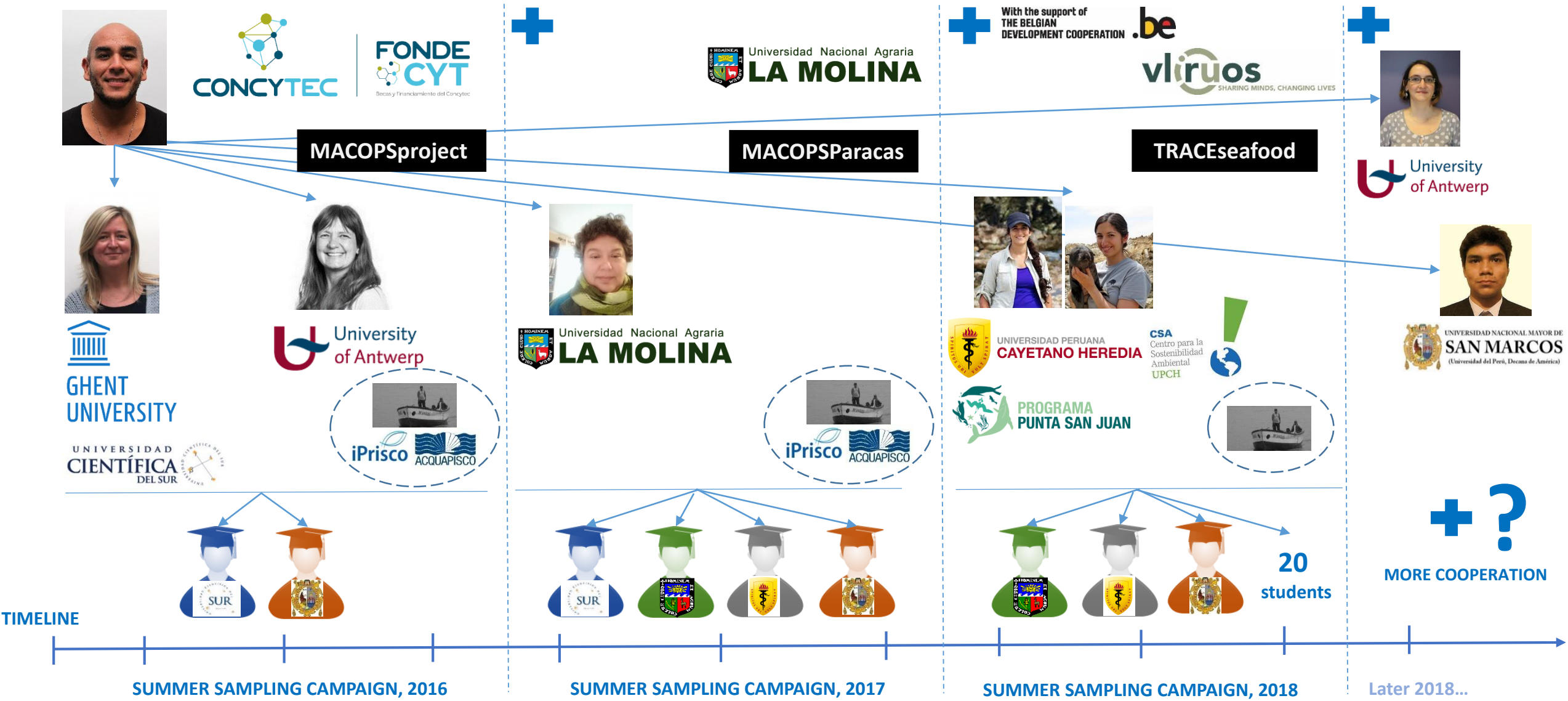
Cárdenas-Alayza S.⁴, Miglio M.⁵, Ganoza M.⁴, Campos D.⁶, Millet M.², De Boeck G.² and De Troch M.¹

MACOPSproject





<https://macopsproject.wordpress.com/>

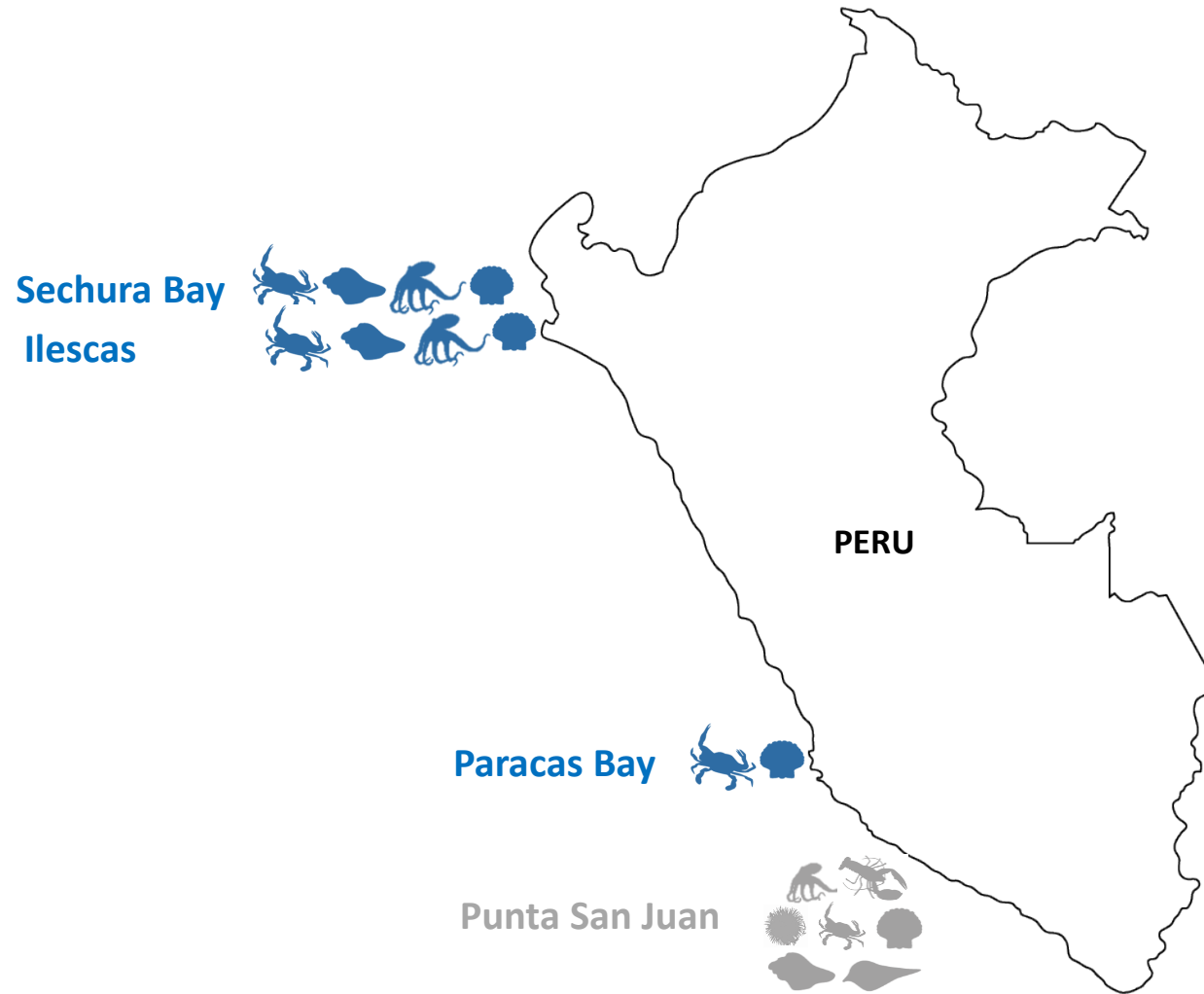


MACOPSproject: Origin and evolution



MACOPSproject: research and monitoring

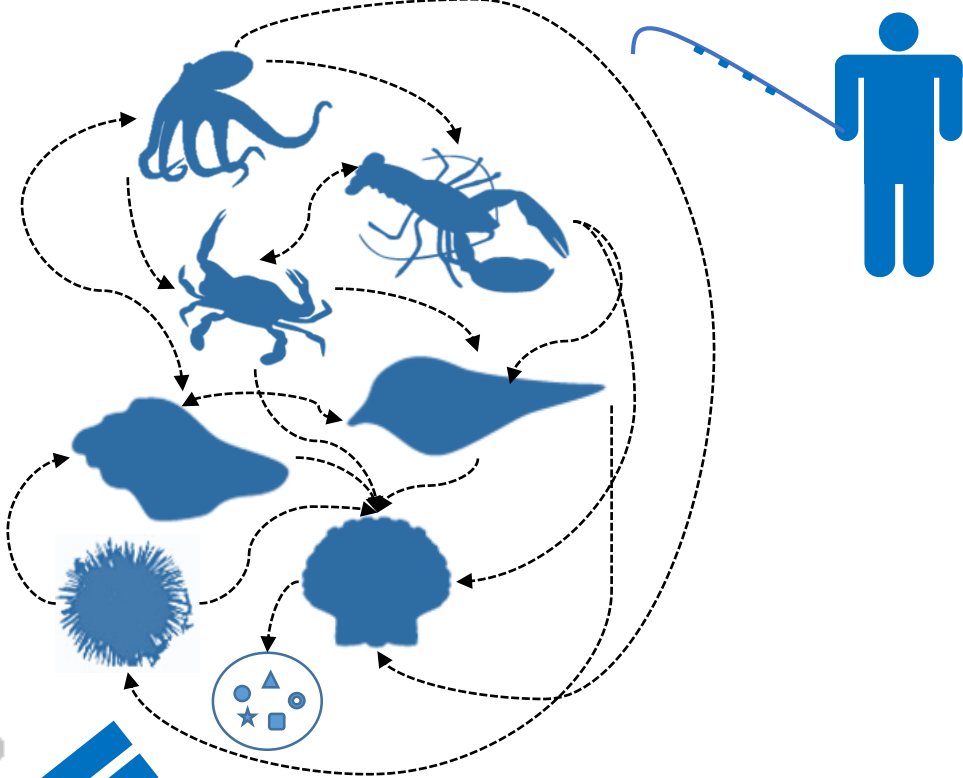
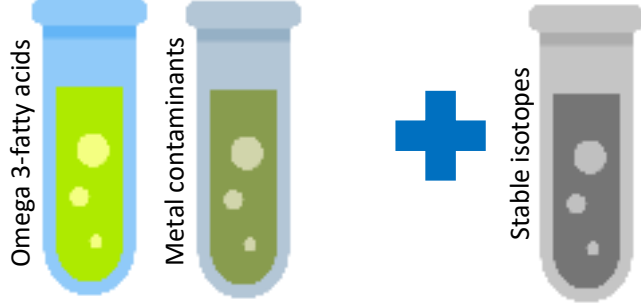
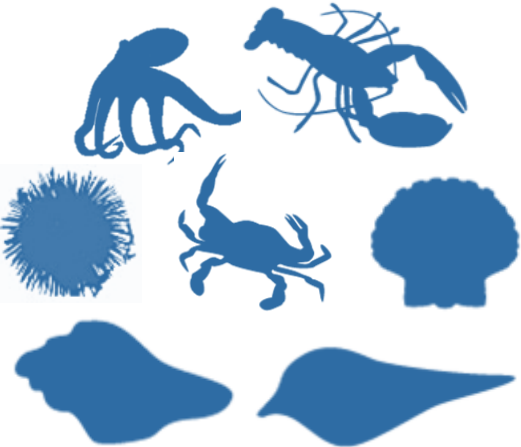
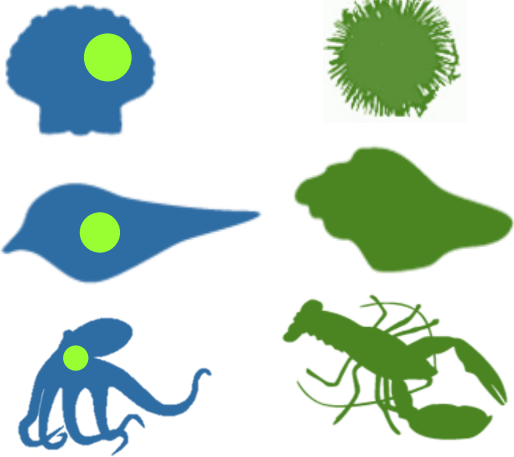
-  (n=180)
-  (n=58)
-  (n=120)
-  (n=60)
- and more species...



MACOPSproject: research and monitoring

BENEFITS?

RISKS?



MACOPSproject: research and monitoring

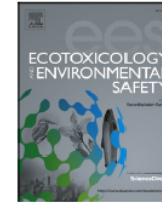
Ecotoxicology and Environmental Safety 159 (2018) 249–260



Contents lists available at ScienceDirect

Ecotoxicology and Environmental Safety

journal homepage: www.elsevier.com/locate/ecoenv



Potential health risks via consumption of six edible shellfish species collected from Piura – Peru

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ARTICLE INFO

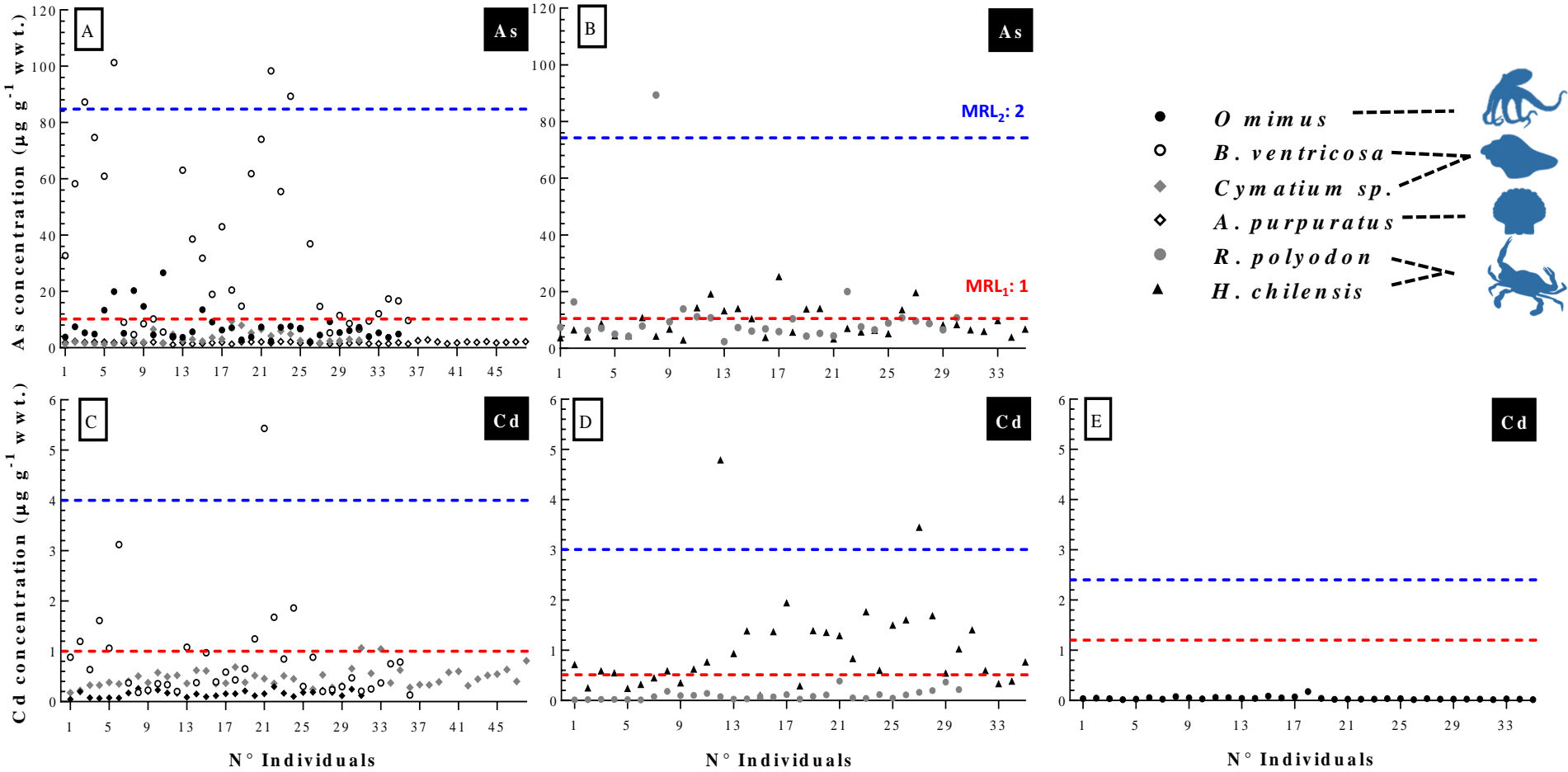
Keywords:

Argopecten purpuratus
Trace metal
Predator
Health risk
Piura

ABSTRACT

Scallops and their potential predators were collected in Sechura Bay and in front of the Illescas Reserved Zone (north Peru), during El Niño-Southern Oscillation (ENSO) 2016, and analyzed for the metals chromium (Cr), manganese (Mn), iron (Fe), nickel (Ni), copper (Cu), zinc (Zn), arsenic (As), cadmium (Cd) and lead (Pb). This study showed that ~20% of the molluscs exceeded the maximum residual levels (MRLs) for human consumption in inorganic As, while ~30% of the crustaceans did. For Cd, around 10% and 40% of the molluscs and the crustaceans were above the MRLs, respectively. The cephalopod *Octopus mimus* exhibited As concentrations, but not Cd concentrations, that exceeded the MRLs. Cr, Ni, Cu, Zn and Pb in muscle exhibited generally concentrations below the MRLs. Integrated risk indices were estimated to determine if there is a health risk for consumption. Target hazard quotients (THQs) and total hazard indices (HIs) were mostly < 1, implying no human health risk. Provisional tolerable weekly intake (PTWI) for Cd was exceeded in *Bursa ventricosa* at Illescas Reserved Zone. Target cancer risks (TRs) for inorganic As were always higher than the threshold (1×10^{-6}), therefore an actual cancer risk is present.

MACOPSproject: research and monitoring



Loaiza et al. 2018

MACOPSproject: as project “influencer”

BEFORE...

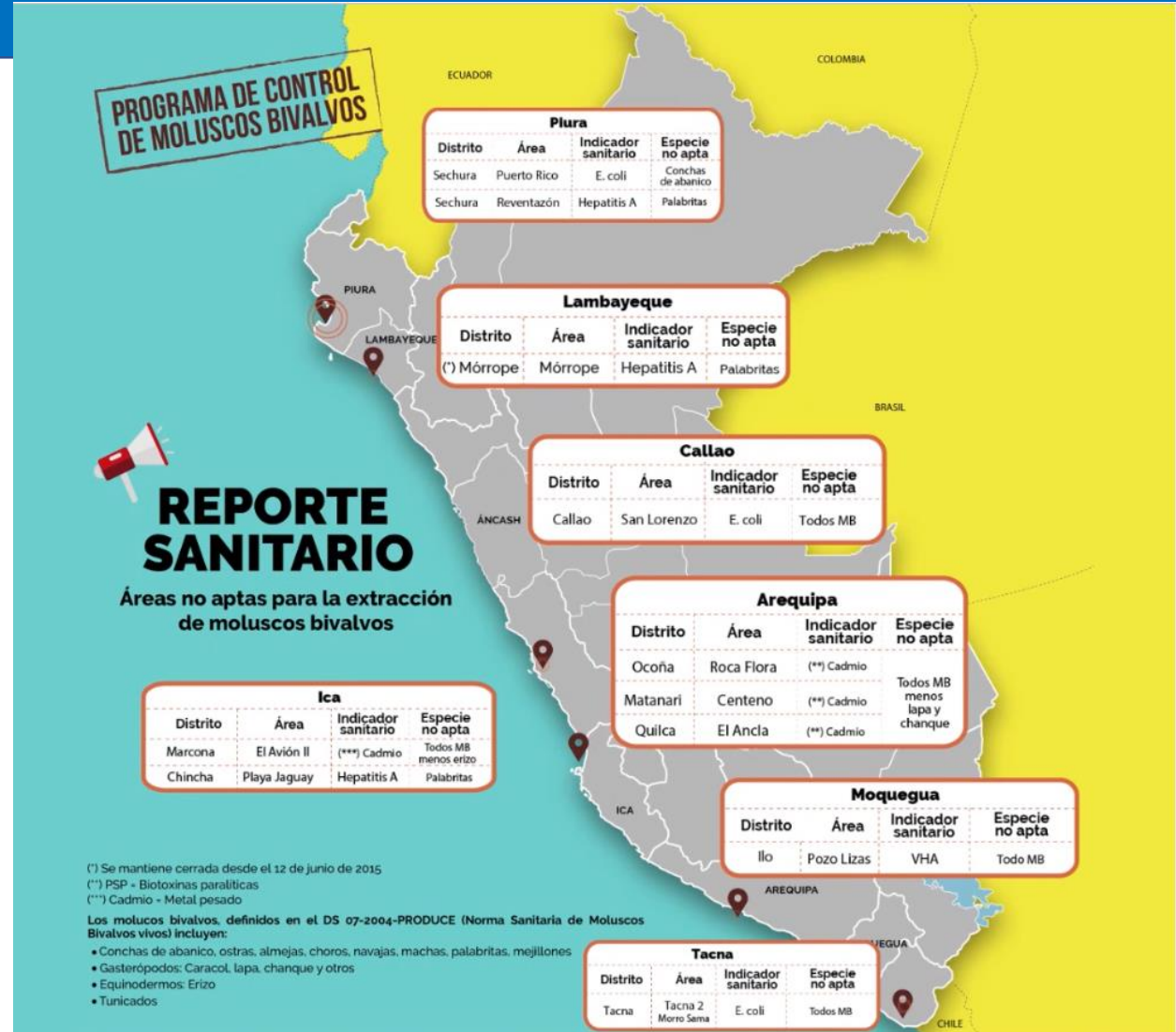
PROTOCOLO TÉCNICO SANITARIO DE CLASIFICACIÓN SANITARIA TEMPORAL Y CONDICIÓN OPERATIVA (ABIERTA-CERRADA) DE LAS ÁREAS DE PRODUCCIÓN DE MOLUSCOS BIVALVOS

Decreto Supremo N° 07-2004-PRODUCE

N° CSMAA-M- 014-PIU-SANIPES

1. N° MONITOREO: 14	
2. FECHA DE MONITOREO: 6 Y 7 DEL 2010	
3. SEMANA: DEL 04 AL 10 DE ABRIL DEL 2010	
4. QUINCENA: -----	
5. ZONA: BAHÍA SECHURA	CODIGO: 012
6. DISTRITO/PROVINCIA/DPTO: SECHURA/SECHURA/PIURA	

ZONA		ÁREA DE PRODUCCIÓN					
CODIGO	DENOMINACION	CODIGO	DENOMINACIÓN	CLASIFICACION TEMPORAL	ESTACION DE MUESTREO	CONDICION OPERATIVA	ESPECIE
	Bahía de Sechura	012-SECH-01	San Pablo	Condicionalmente Aprobada o Tipo B	01-A-SECH	Abierta(*)	Donax sp. "Palabritas"
					01-B-SECH		
		012-SECH-02	San Pedro	Condicionalmente Aprobada o Tipo B	02-A-SECH	Abierta(*)	Donax sp. "Palabritas"
					02-B-SECH		
		012-SECH-03	Playa Chulliyachi	Condicionalmente Aprobada o Tipo B	03-A-SECH	Abierta (*)	Donax sp. "Palabritas"
012-SECH-04	Chulliyachi	Aprobada o Tipo A	04-A-SECH	Abierta	Argopecten purpuratus "Concha de Abanico"		
			05-A-SECH				
012-SECH-05	Matacaballo	Aprobada o Tipo A	05-A-SECH	Abierta	Argopecten purpuratus "Concha de Abanico"		
			05-B-SECH				



Source: <http://www.sanipes.gob.pe/web/index.php/es/reporte-sanitario>

AFTER...

MACOPSproject

MACOPSproject: take message to home!

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About

The overall aim of Marine MacroBenthic Communities associated to Peruvian Scallop *Argopecten purpuratus* culture (MACOPS): structural and functional diversity, feeding ecology and contaminant exposure or MACOPSproject is to evaluate the different responses of macrobenthic communities from the Sechura Bay (SB) – Piura Region (Peru) to anthropogenic activities and/or natural phenomenon (i.e. El Niño Southern Oscillation – ENSO). SB has been impacted for industrial and economical activities in the recent years, activities such the intensive Peruvian scallop *Argopecten purpuratus* culture (exportations of about 150 US\$ per year) and mining has been increased in this Region. This scenario contributes that SB is currently with the “Health Risk Assessment in Production Areas of Bivalve Mollusks” from the Regional Government, this because high concentrations of pollutants have been found in some locations of SB. Metals are pollutants that are only semi-annually evaluated in SB, and from those few measurements, some have been exceed the limits, standards and reference values, either for water, sediment and organisms. Therefore, this research will apply an integrated approach based on field data collected in SB, specifically macrobenthic communities, seston and sediments using stable isotopes ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$), fatty acids and metals in two locations along the SB, and one in the Illescas Reserved Zone during the years 2016 (ENSO) – 2017 (post ENSO). As a result, this project will provide first insights into the integration of

MARINE MACROBENTHIC COMMUNITIES ASSOCIATED TO PERUVIAN SCALLOP *ARGOPECTEN PURPURATUS* CULTURE (MACOPS): STRUCTURAL AND FUNCTIONAL DIVERSITY, FEEDING ECOLOGY AND CONTAMINANT EXPOSURE



- Make **project visible**: use events & platforms to reach academia/industry/government/...
- Build **multidisciplinary-team**: all involved actors and Δ expertises
- More **cooperation** -> More knowledge + funding or funding opportunities
- Reach **policy agents** and/or makers (e.g. SANIPES, IMARPE, etc..)
- **NEXT: direct involving!**
Grant applications 2019 with **SANIPES & IMARPE**