

Análisis de los Muestreos de Camarón del Pacífico Mexicano durante la Veda de 2011

*Dirección General de Investigación Pesquera en el
Pacífico Norte y Sur.*

***Programa
Camarón***



Directorio

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Director General de Investigación Pesquera en el Atlántico

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Director General de Investigación Pesquera en el Pacífico

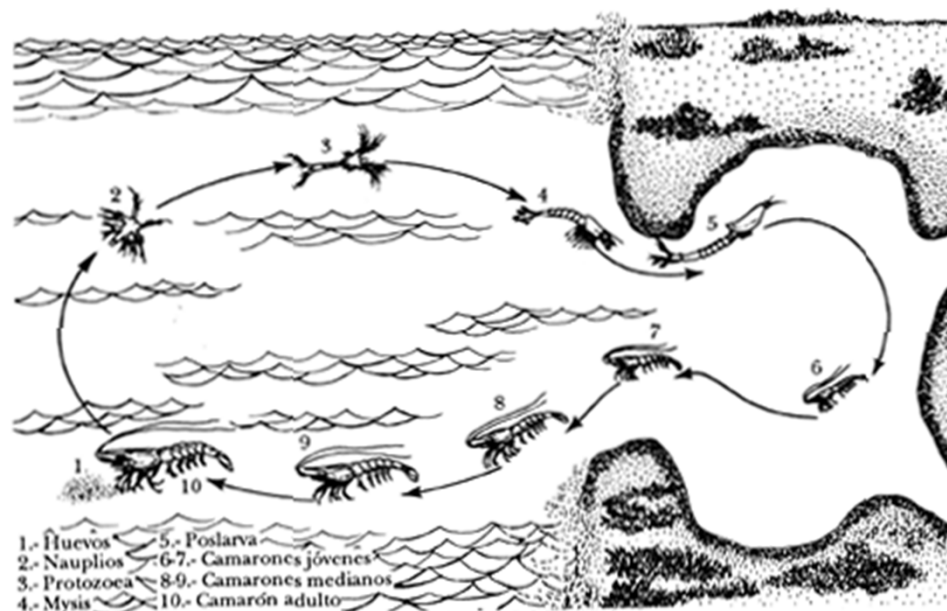
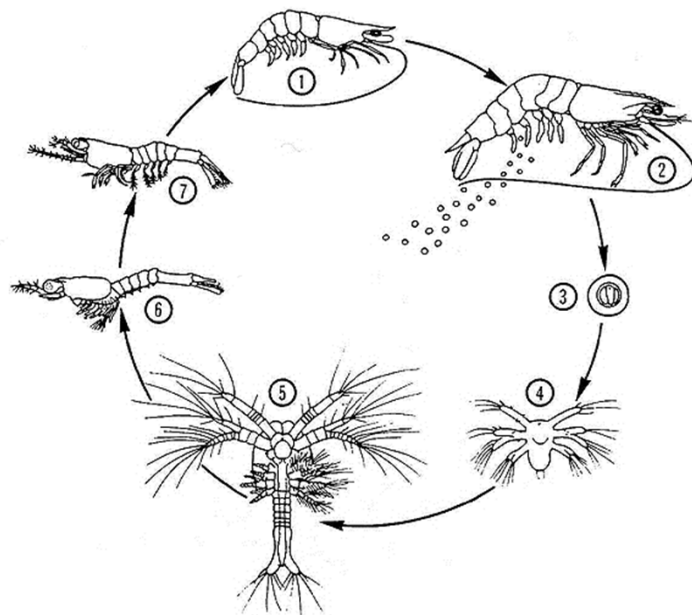
Dr. Marco Linné Unzueta Bustamante

Director General de Investigación en Acuicultura

Objetivo de la veda



- **Protección (Biológico):** Proteger el período de mayor actividad reproductiva de las especies explotadas comercialmente





Objetivo de la veda

- **Aprovechamiento (Económico):** Asegurar que los reclutas generados durante el período reproductivo adquieran **tamaños de mayor valor comercial**





ÁREA DE ESTUDIO

Área de estudio

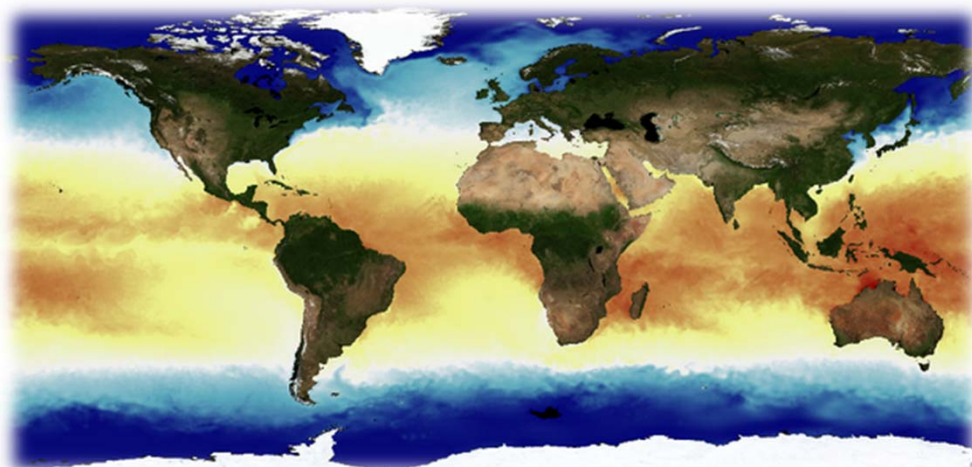


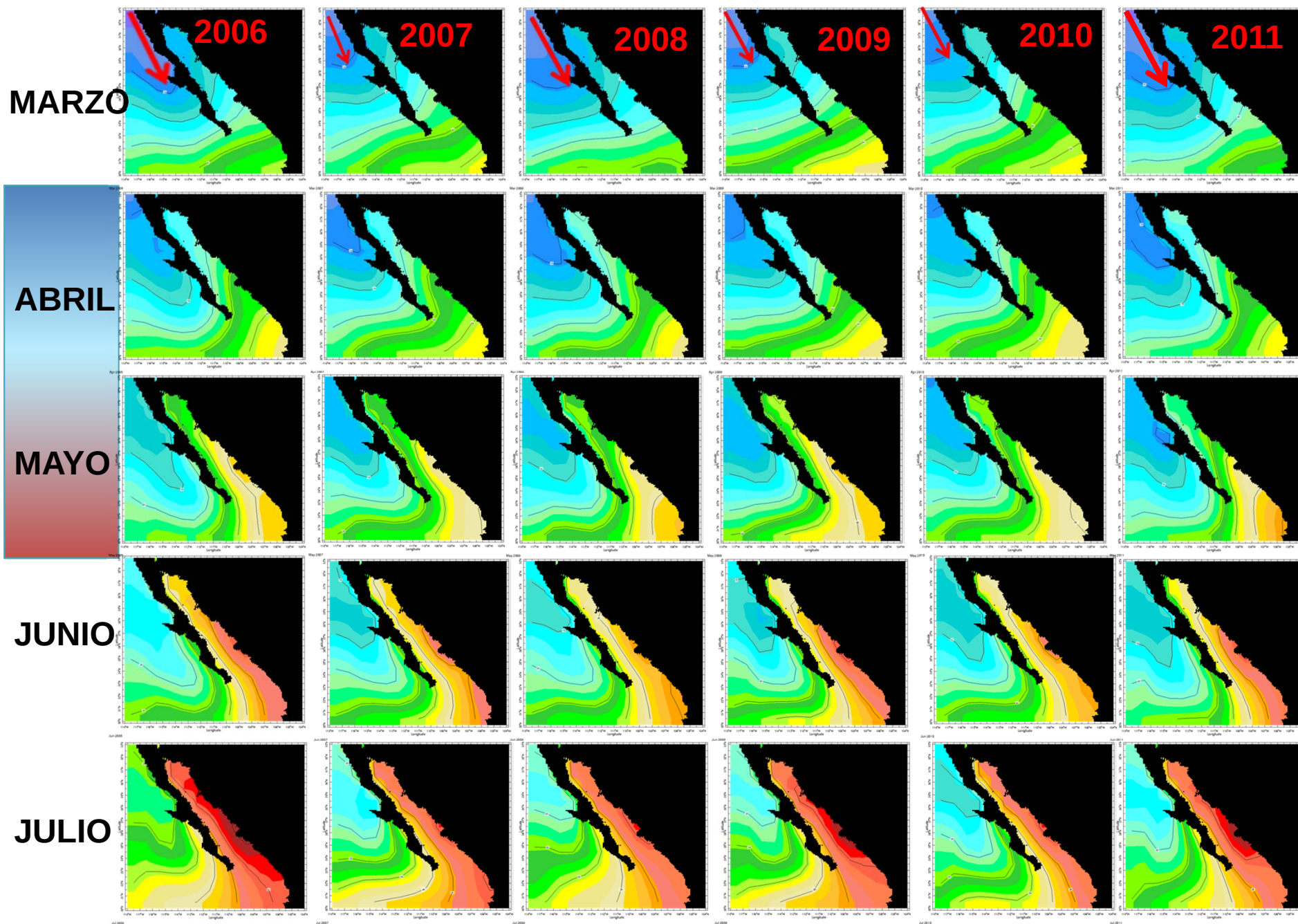


ANÁLISIS AMBIENTAL



Temperatura Superficial del Mar





2006

2007

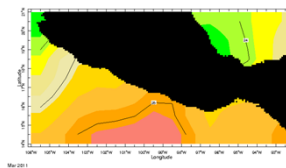
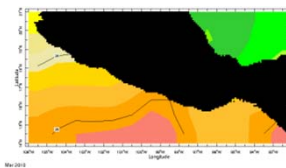
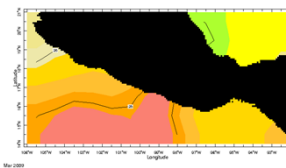
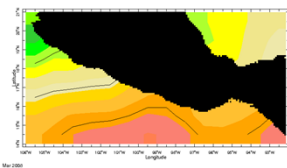
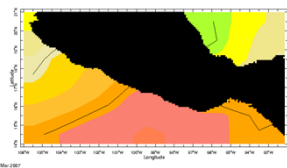
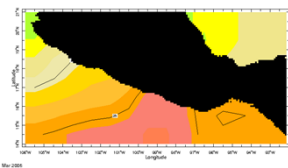
2008

2009

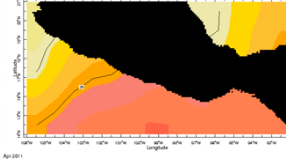
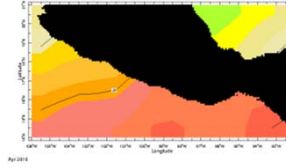
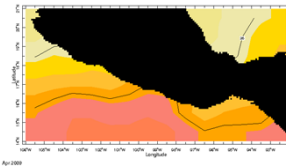
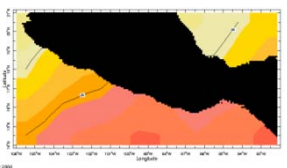
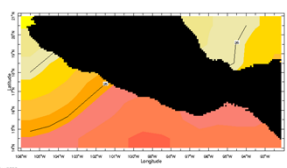
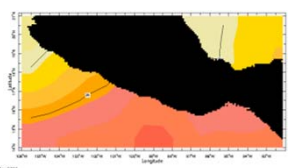
2010

2011

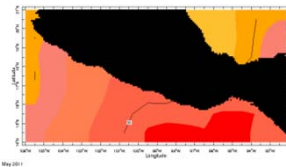
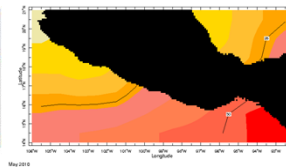
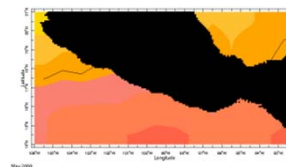
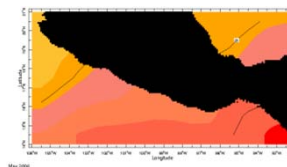
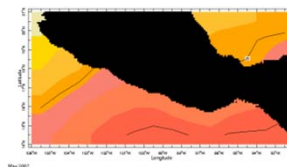
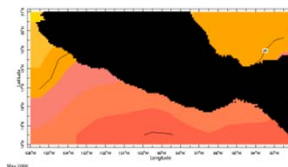
MARZO



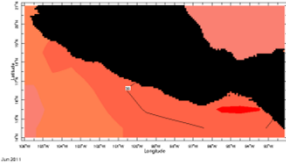
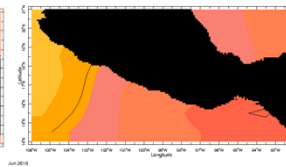
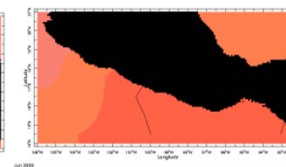
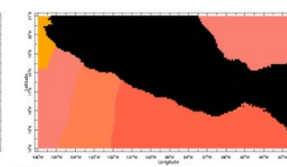
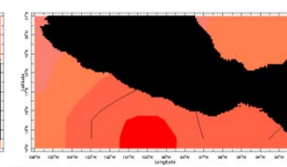
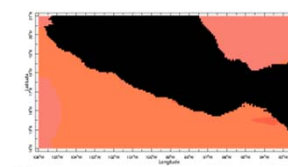
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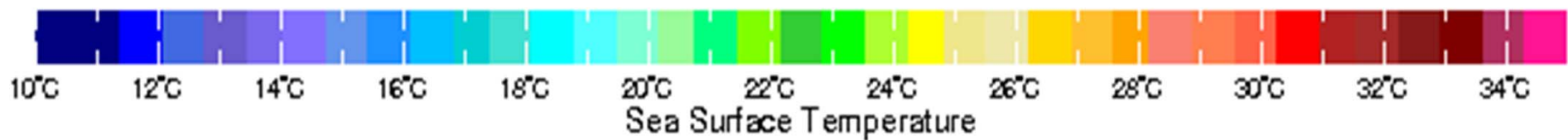
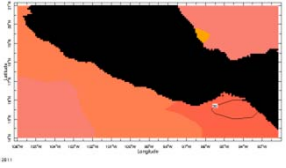
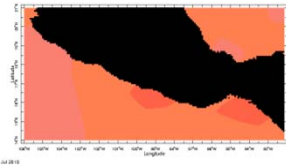
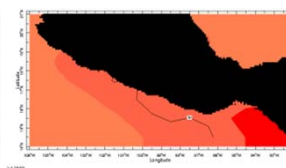
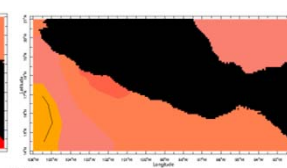
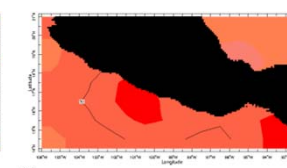
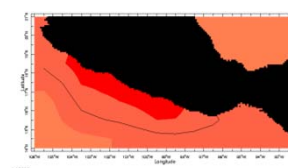
MAYO



JUNIO



JULIO

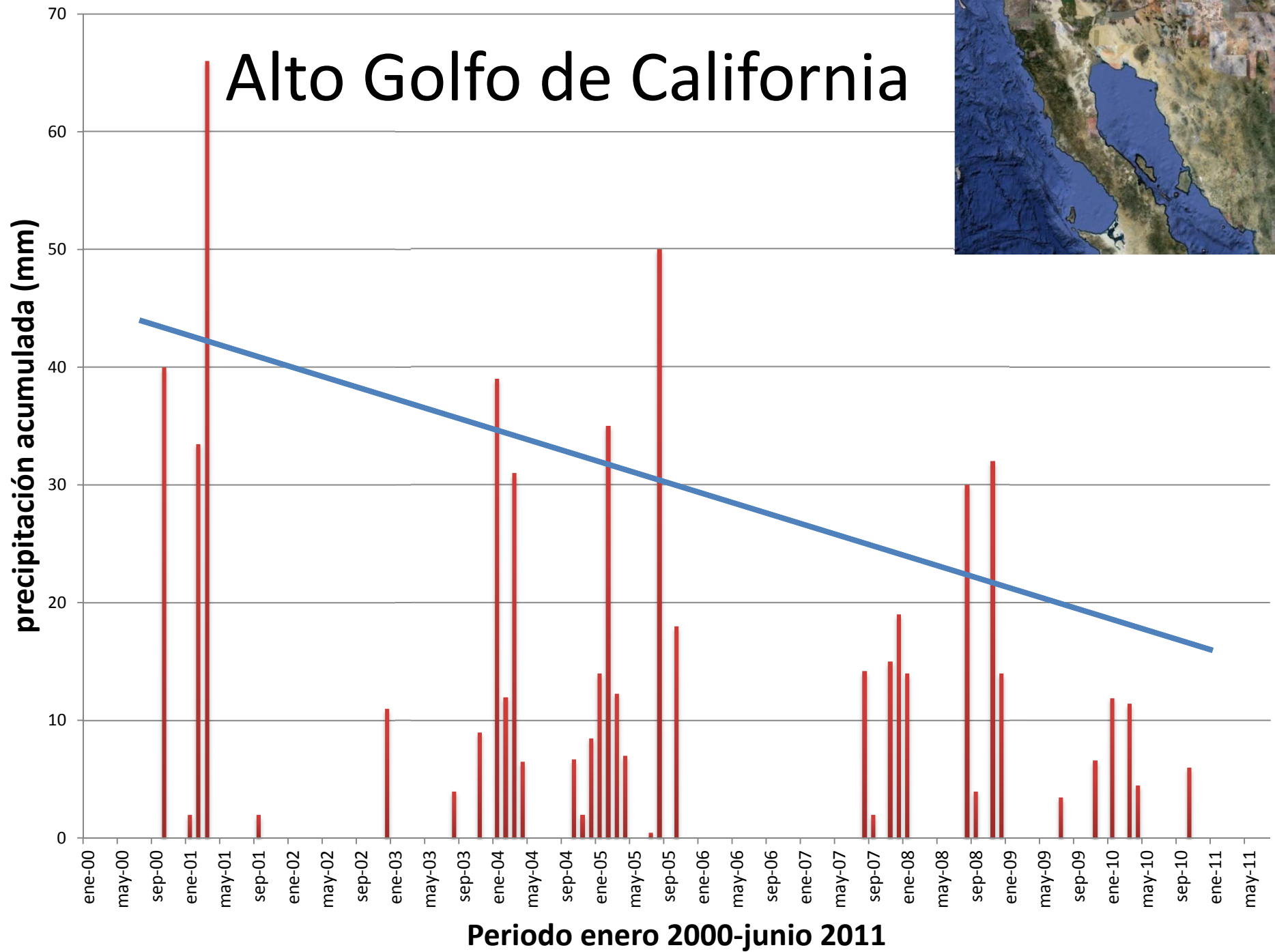


Precipitación Pluvial

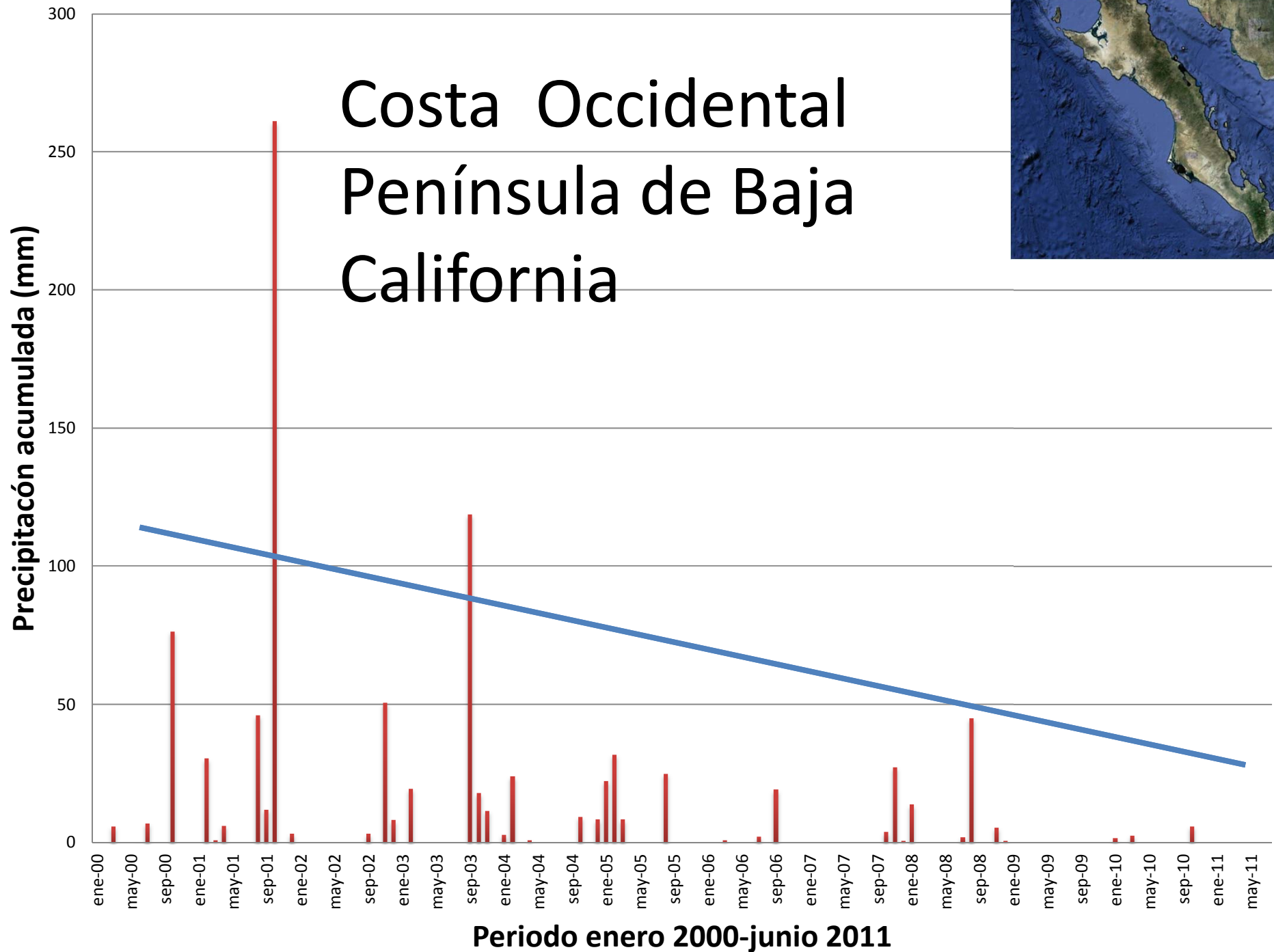


Promedio Histórico

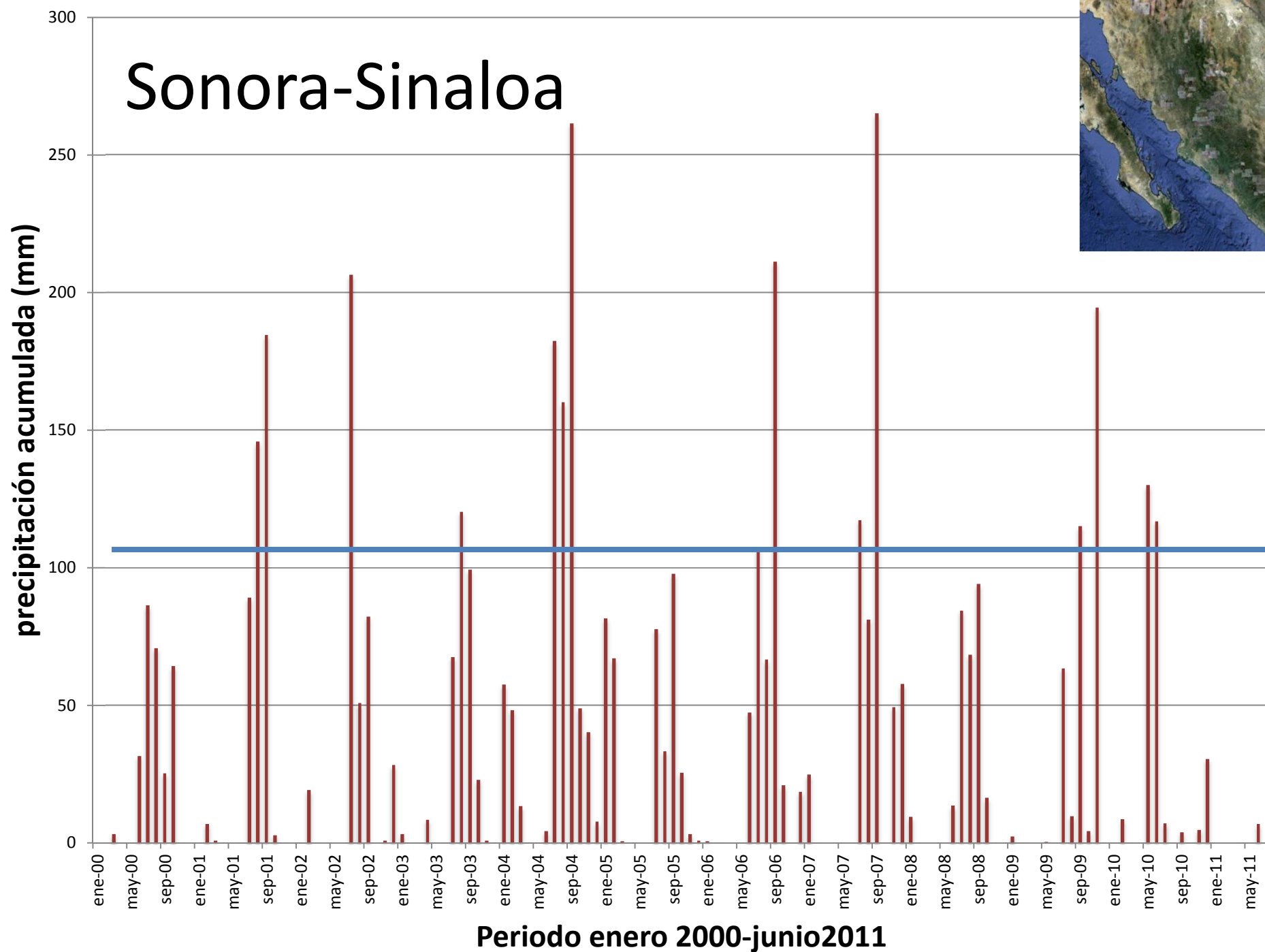
Alto Golfo de California



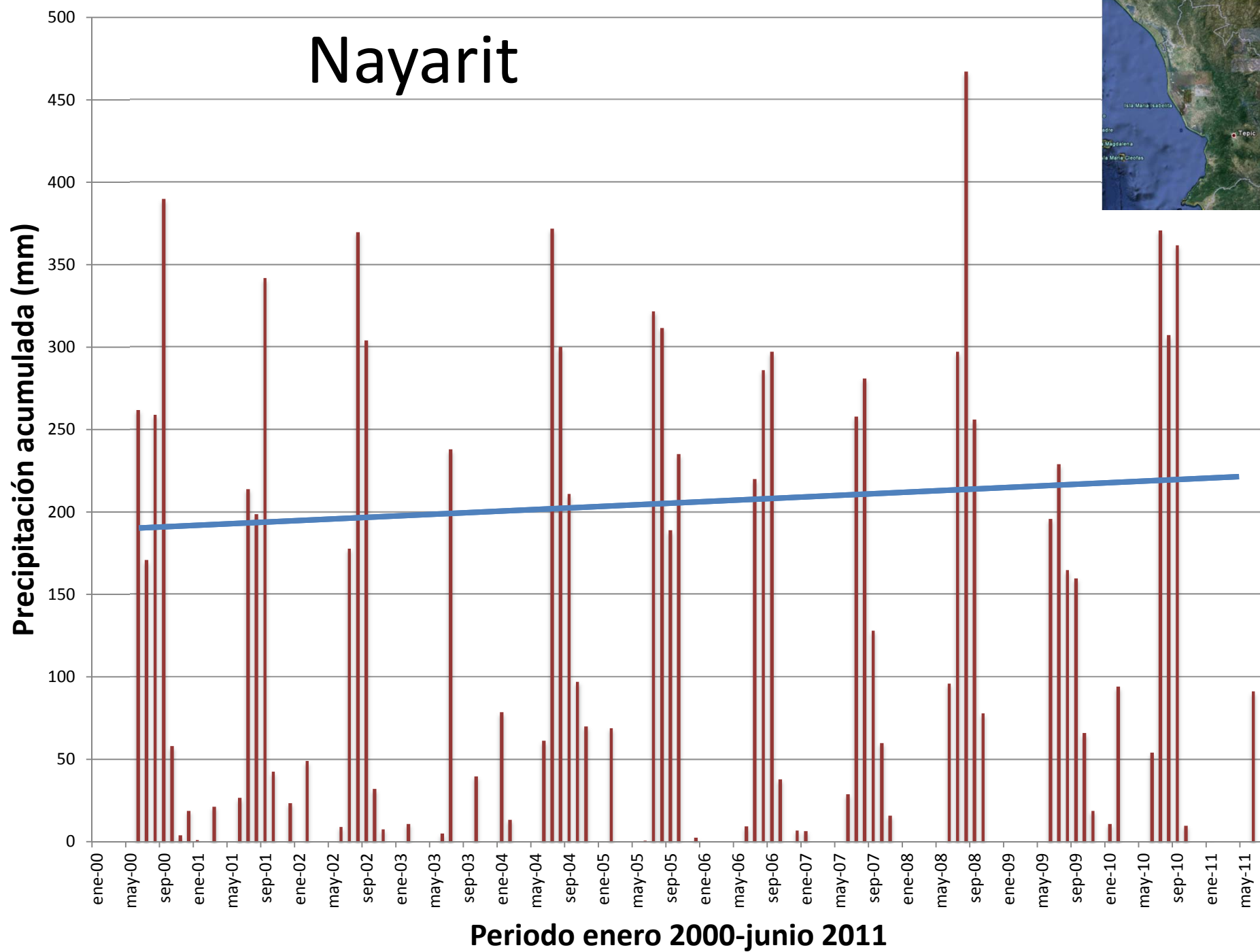
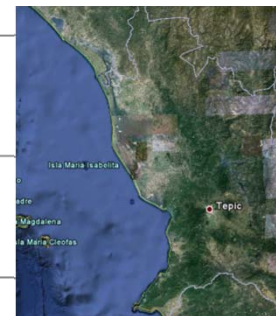
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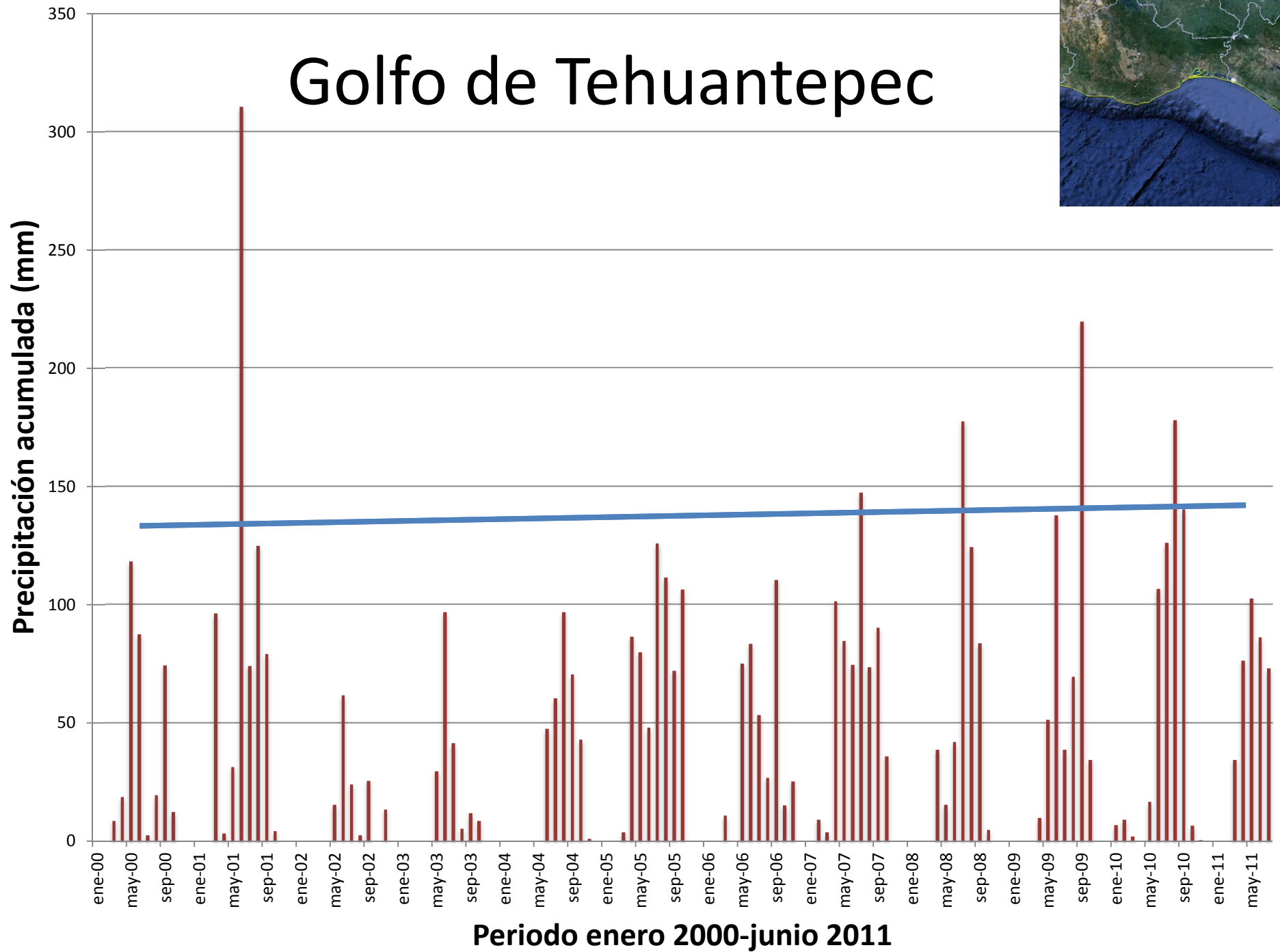
Sonora-Sinaloa



Nayarit



Golfo de Tehuantepec

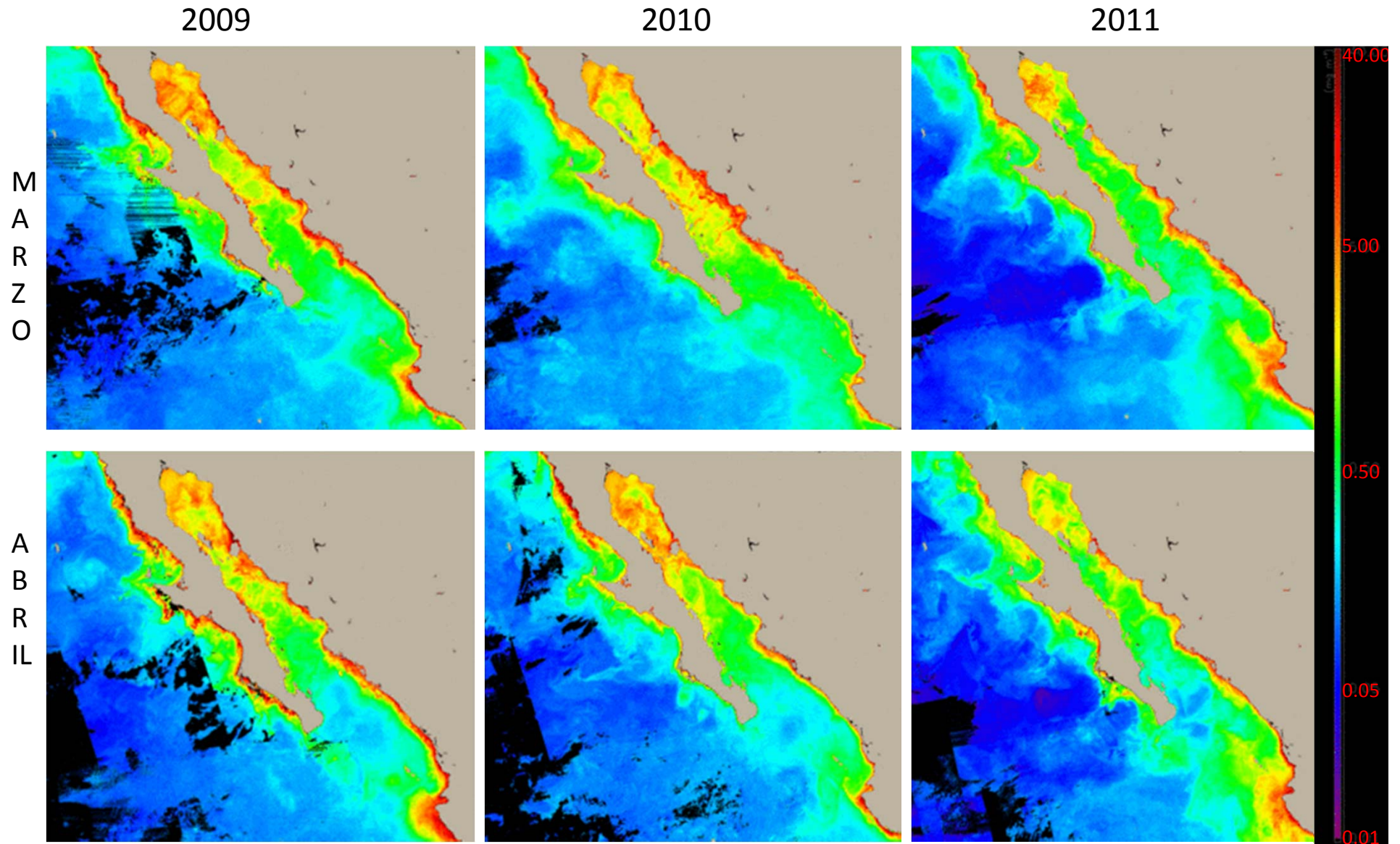




Concentración de Clorofila

Zona Norte del Pacífico Mexicano

Concentración de Clorofila (marzo y abril)



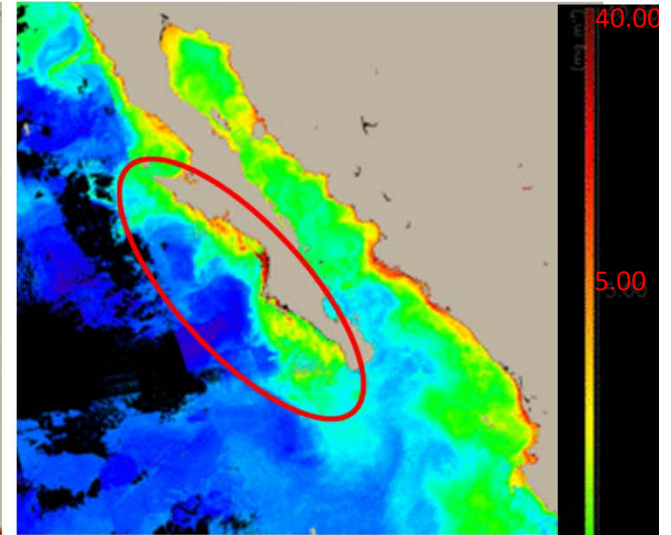
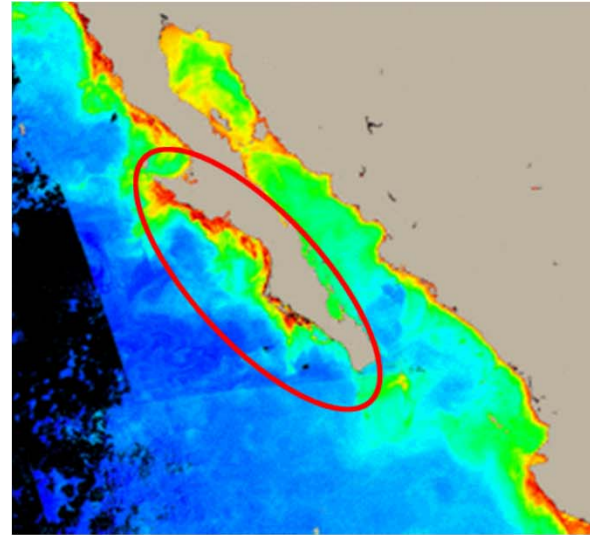
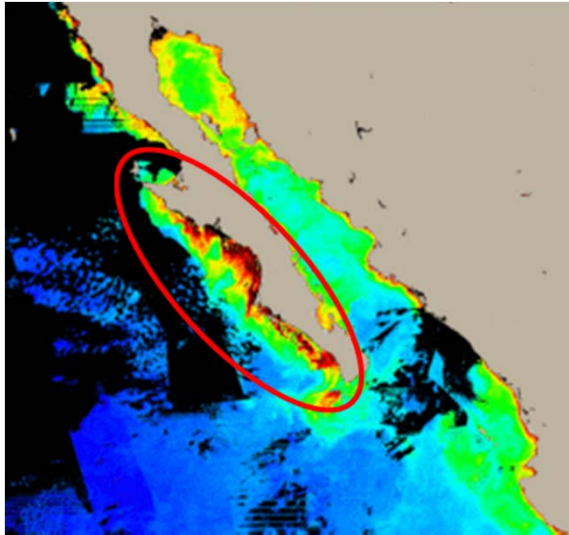
Concentración de Clorofila (mayo y junio)

2009

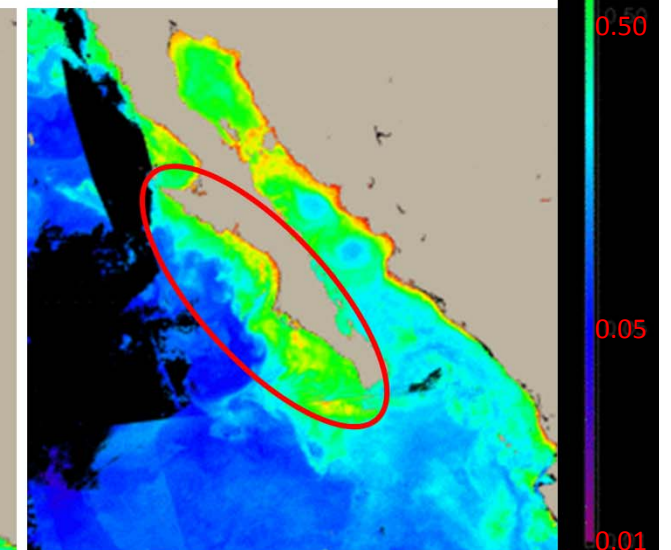
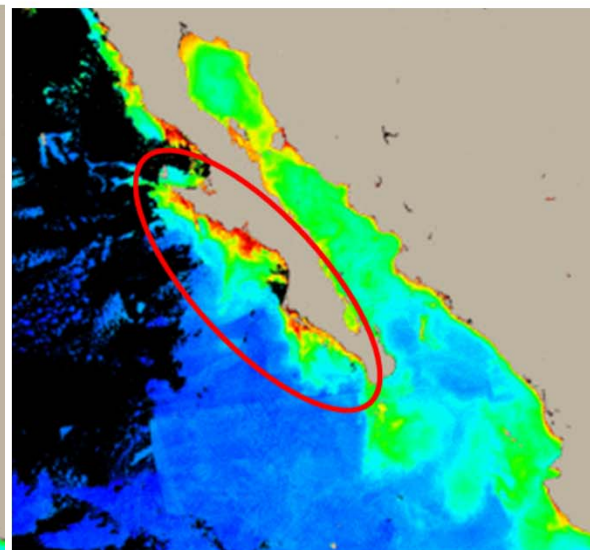
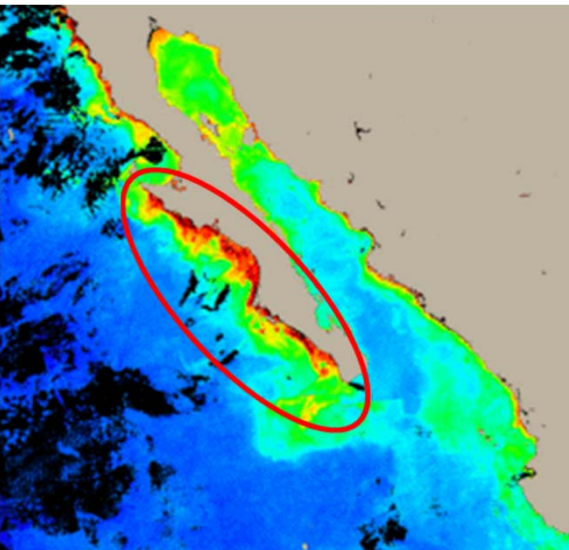
2010

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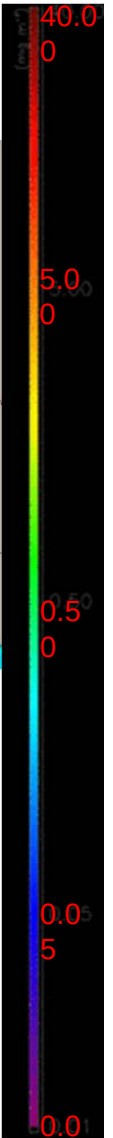
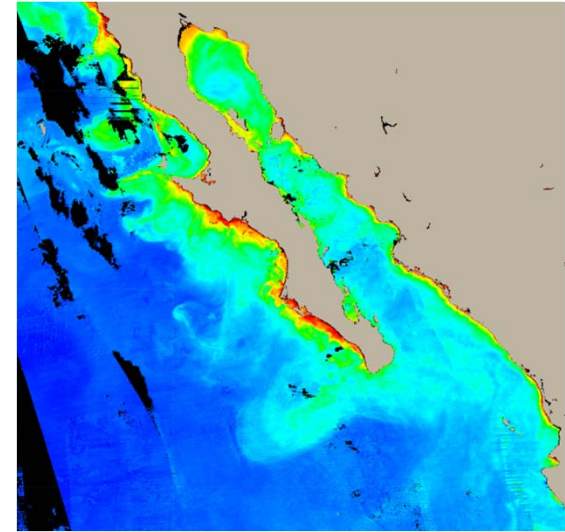
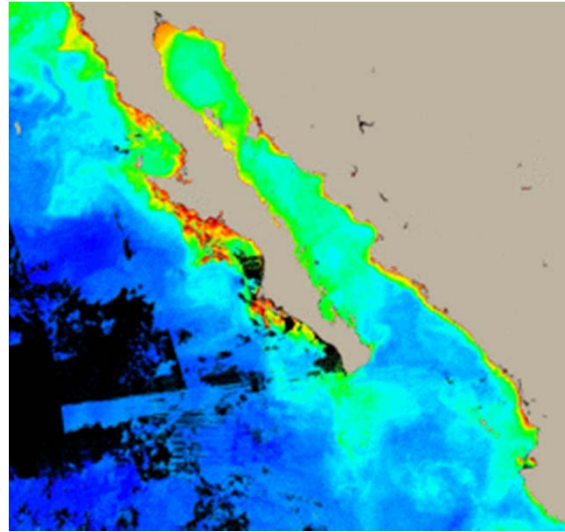
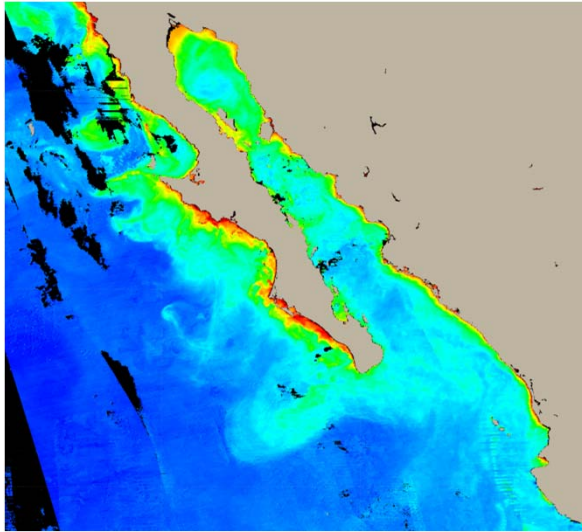
Concentración de Clorofila (julio)

2009

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Concentración de Clorofila

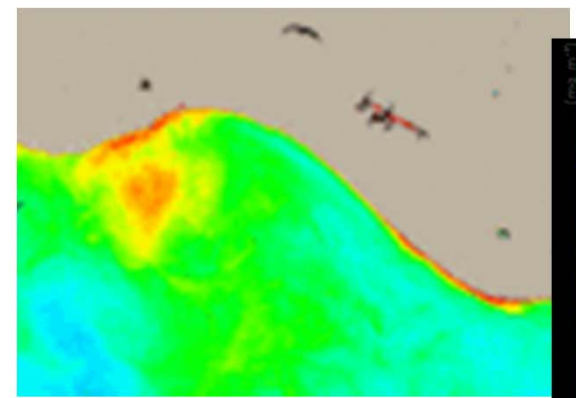
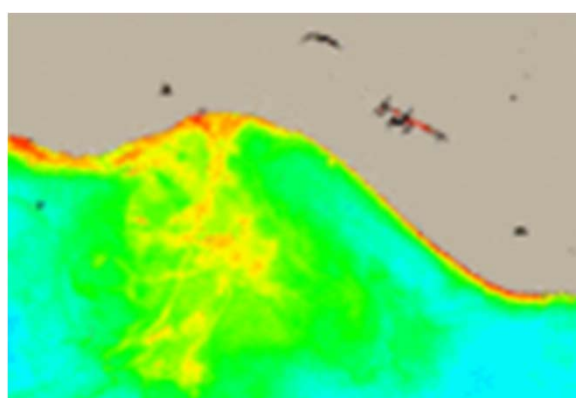
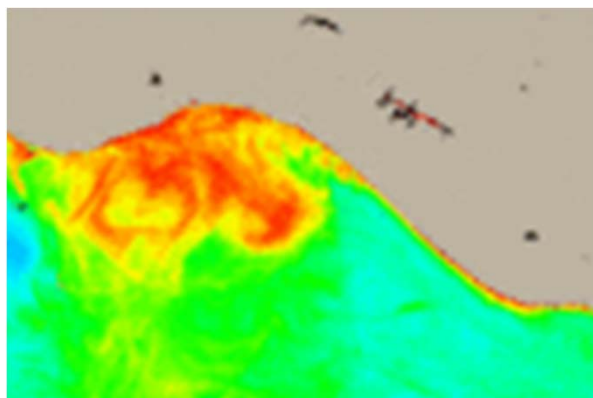
Zona del Golfo de Tehuantepec

2009

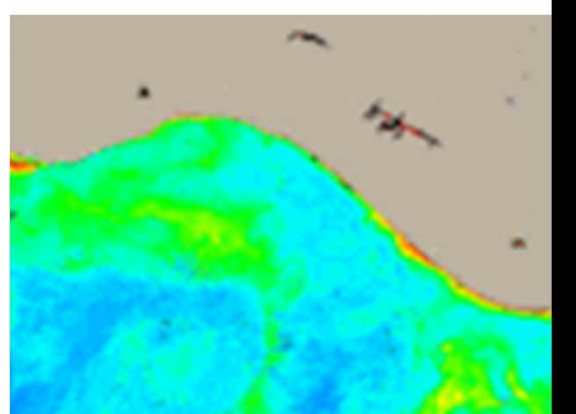
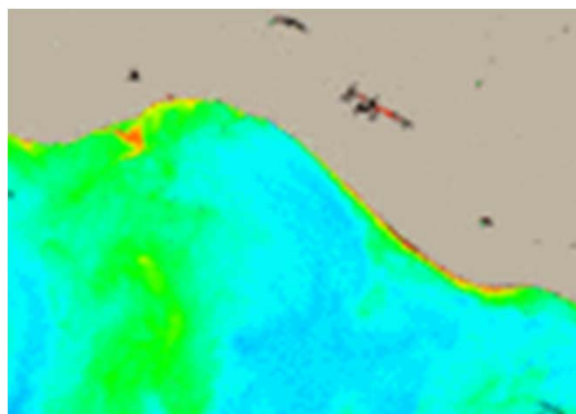
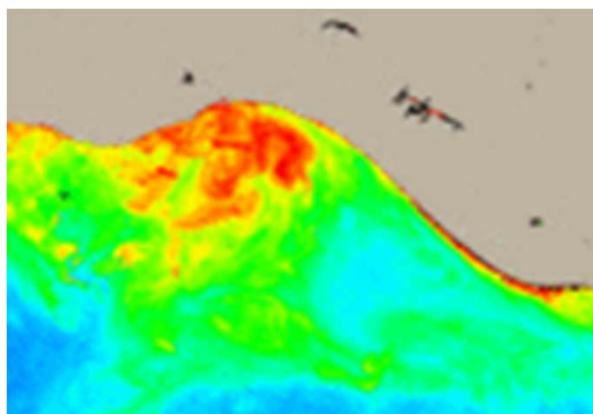
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2011

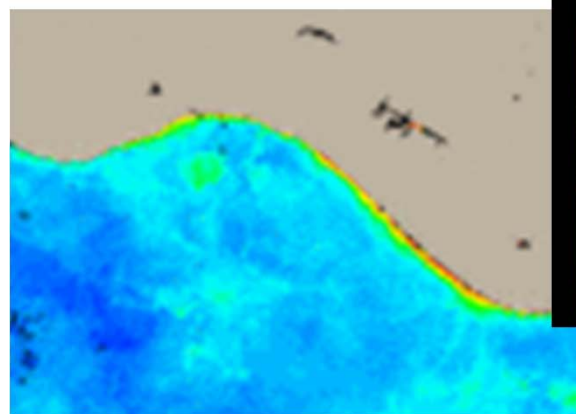
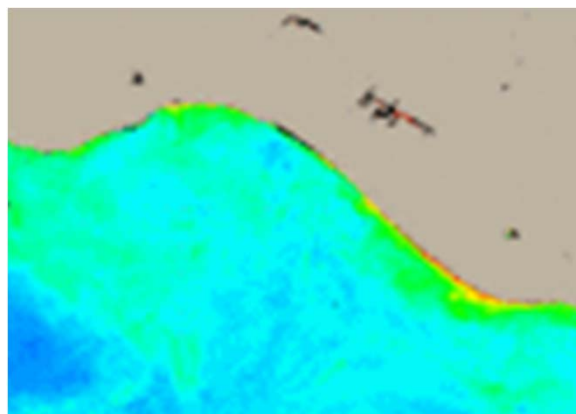
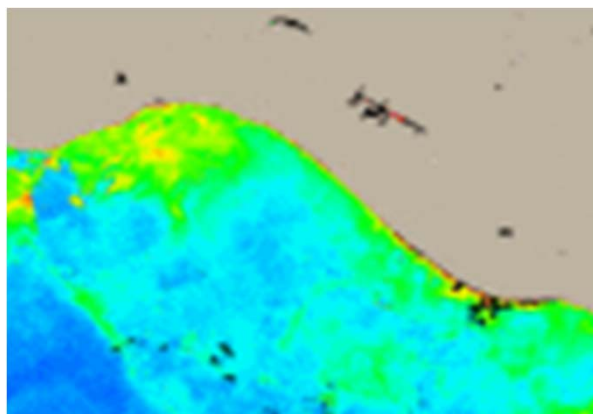
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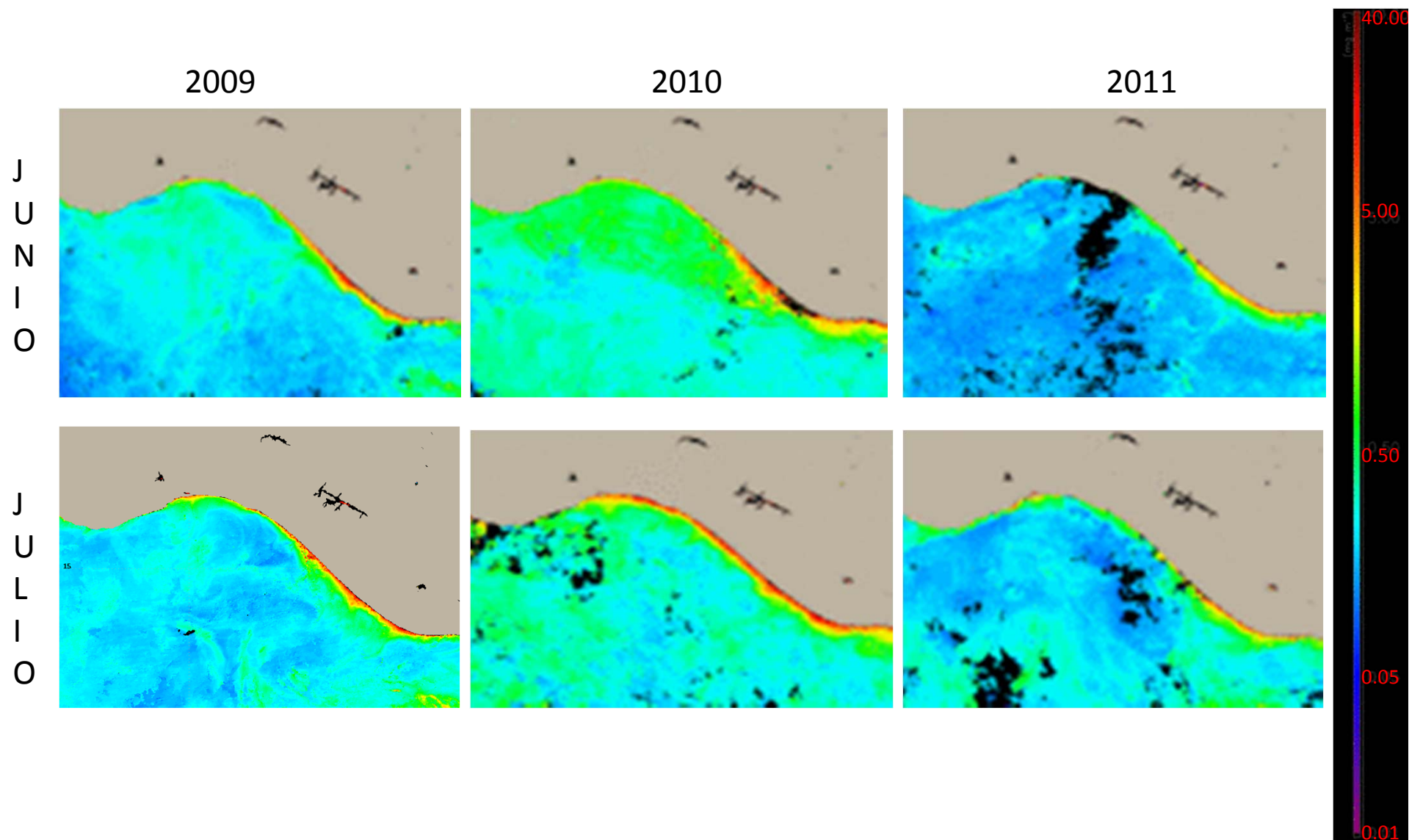


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EFECTO NIÑO / NIÑA

El-Niño



La-Niña

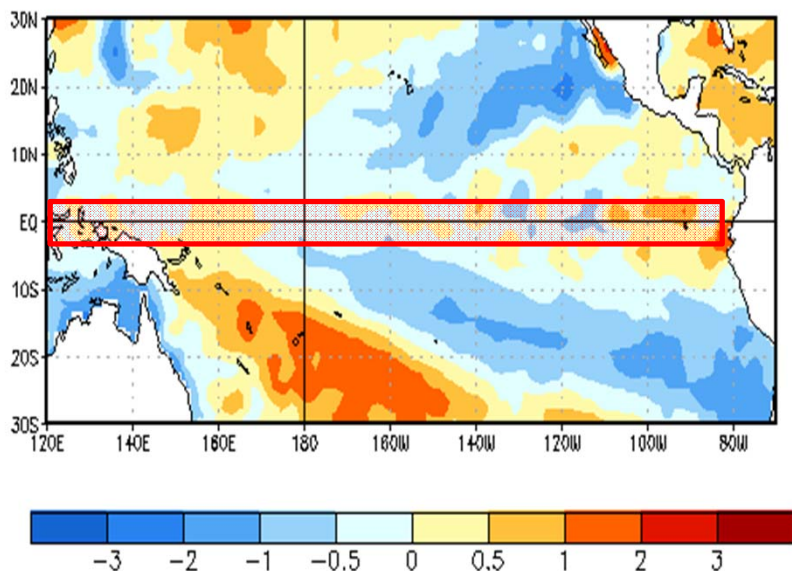


Situación actual de las condiciones de “La Niña” y Pronósticos 2011, emitidos por la NOAA

Las anomalías de la temperatura superficial del Pacífico Ecuatorial durante julio de 2011, mostraron valores cerca del promedio oscilando entre -0.2°C y 0.5°C . Sin embargo la anomalía térmica de la subsuperficie oceánica (de 0 a 300 m) continuó debilitándose y actualmente se registra la anomalía térmica cerca de cero.

SST Anomalies ($^{\circ}\text{C}$)

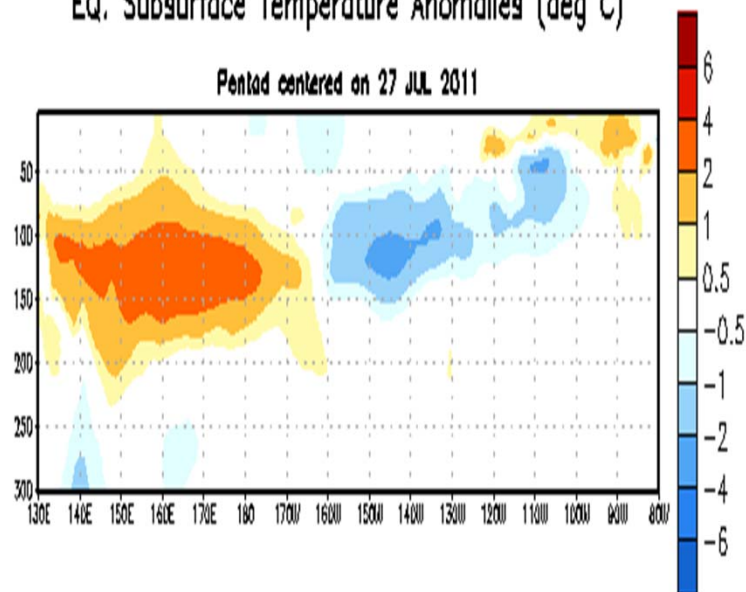
27 JUL 2011



Zona de “El Niño”

EQ. Subsurface Temperature Anomalies (deg C)

Pentad centered on 27 JUL 2011



Profundidad de 0 a 300m
En el Océano Pacífico Ecuatorial

Resumen: Se espera que las condiciones ENSO-neutral continúen a través del otoño del 2011 en el Hemisferio Norte, con condiciones ENSO-neutral o La Niña después del otoño.



RESULTADOS

ALTA MAR

AGUAS PROTEGIDAS

Zona 90

Punta Chipegua

Guatemala

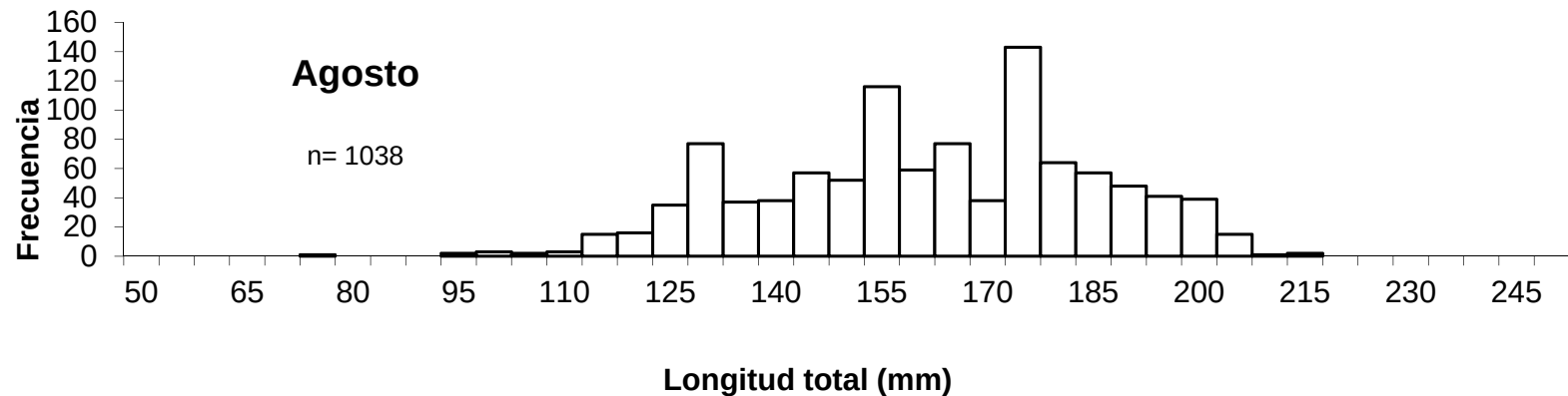
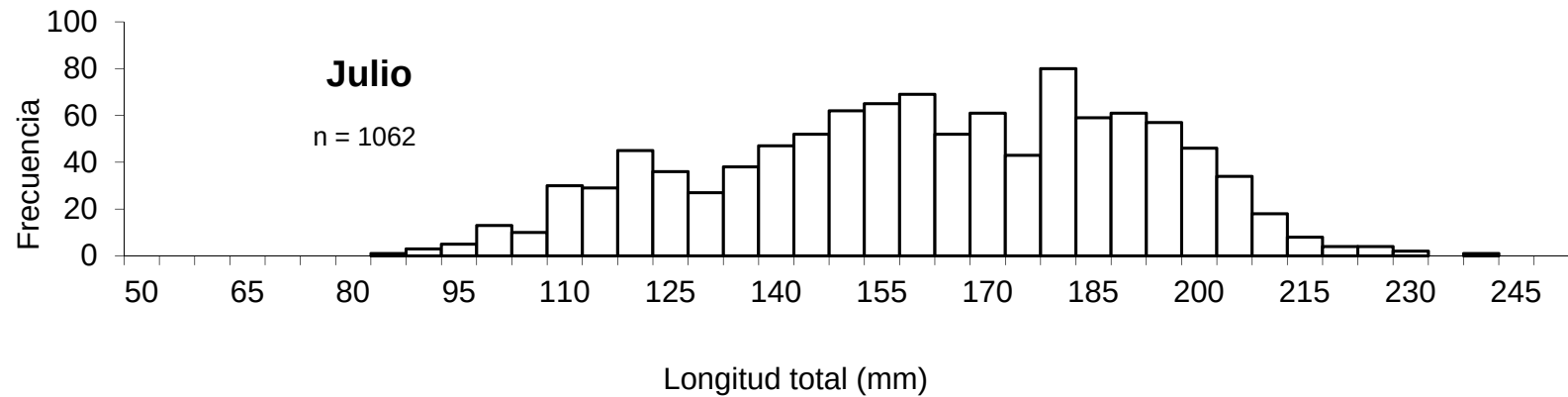
★ Guat

Golfo de Tehuantepec

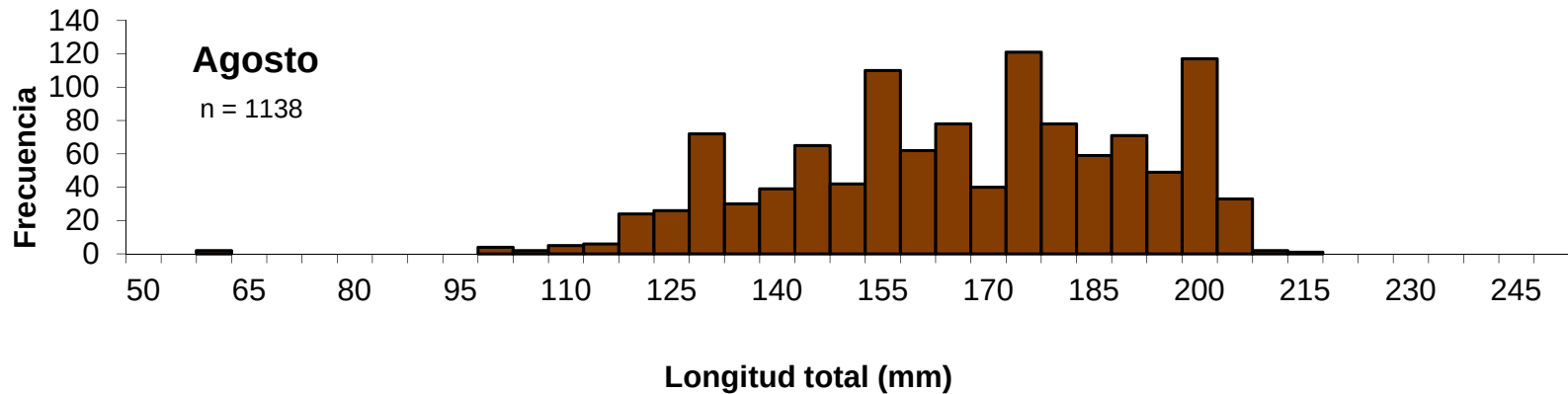
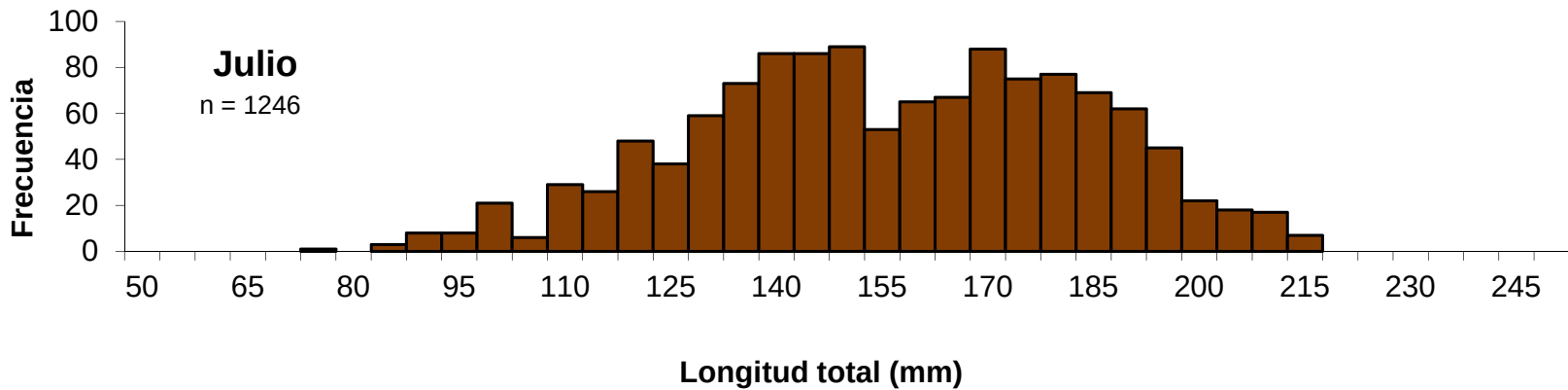




Estructura de tallas - Blanco. Z90

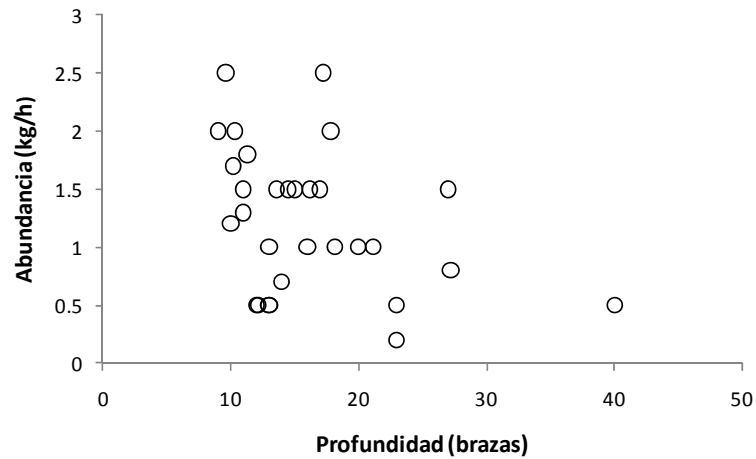


Estructura de tallas - Café. Z90

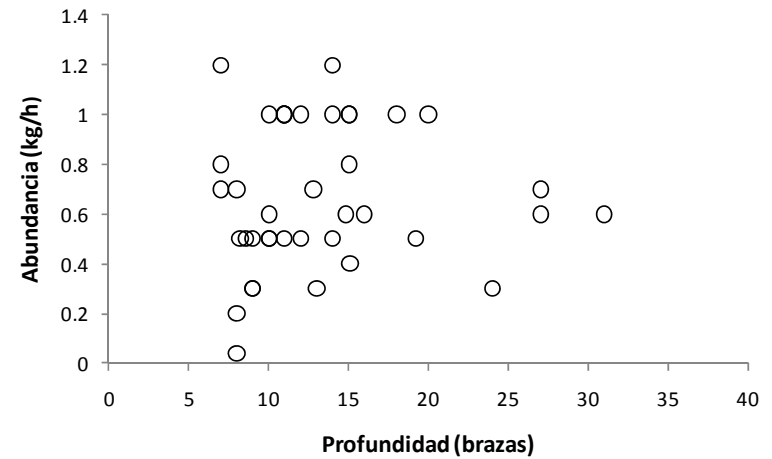


Distribución batimétrica - Blanco Z90

Julio

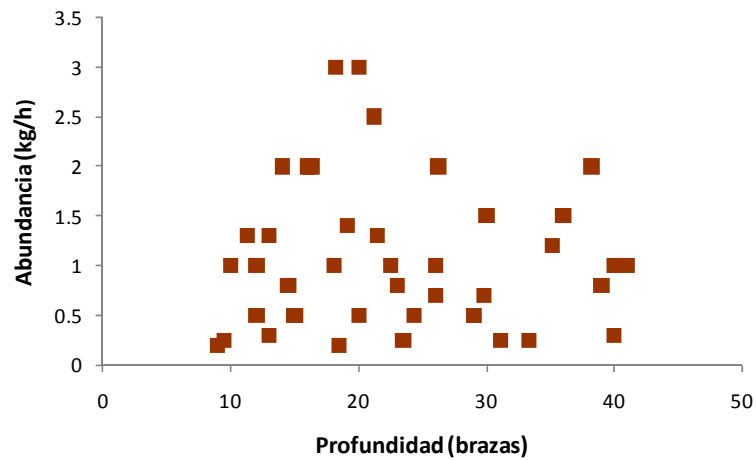


Agosto

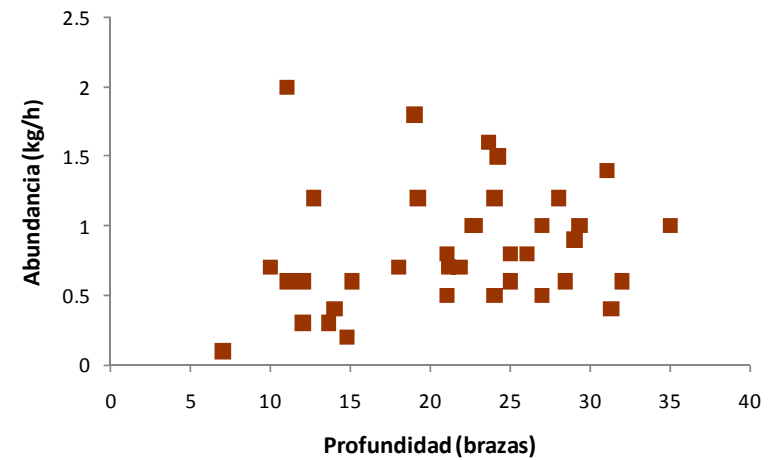


Distribución batimétrica - Café Z90

Julio



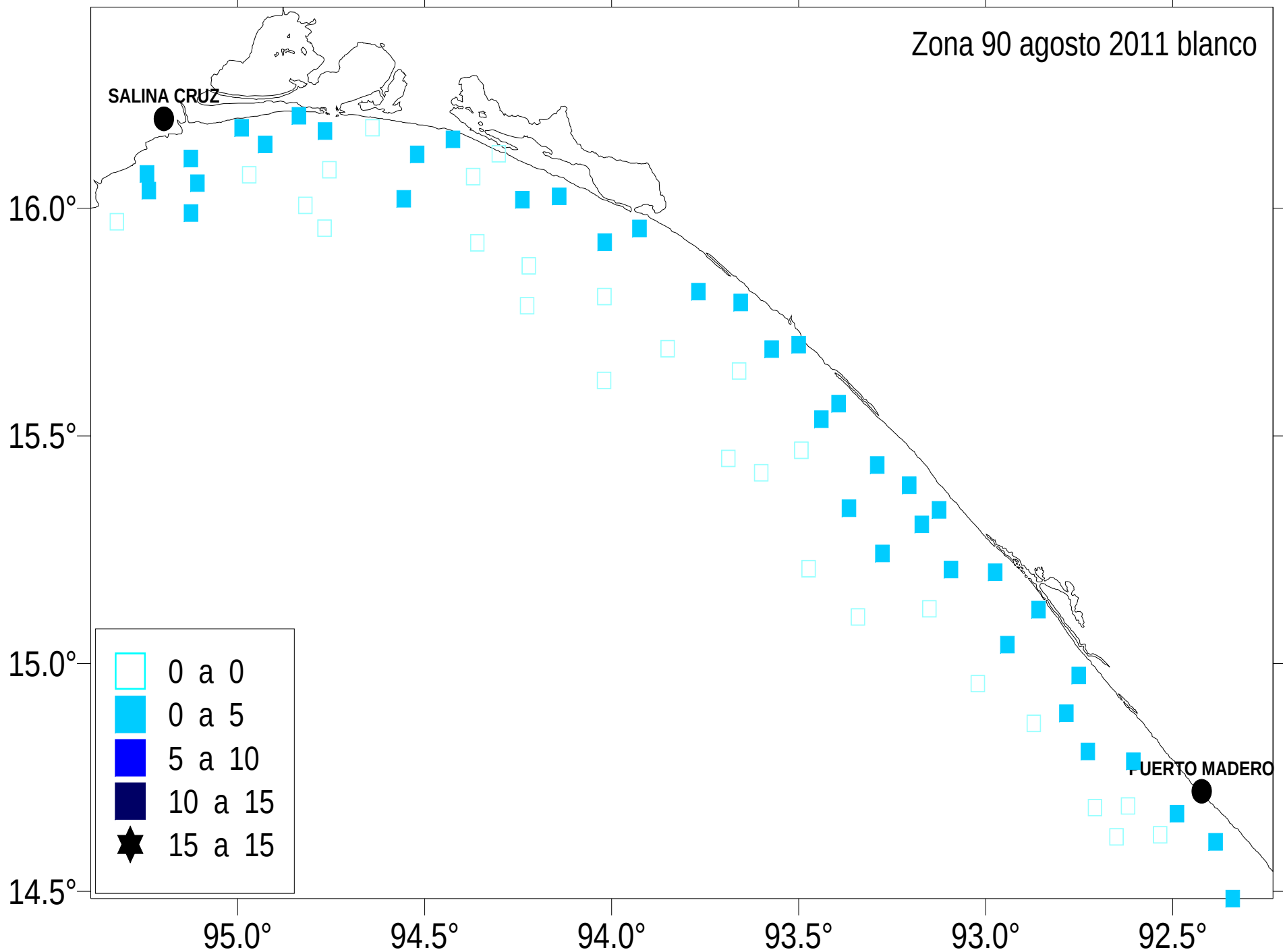
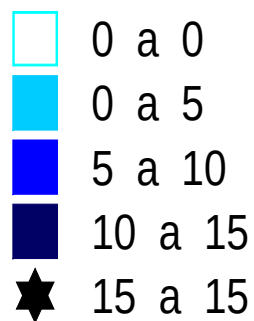
Agosto

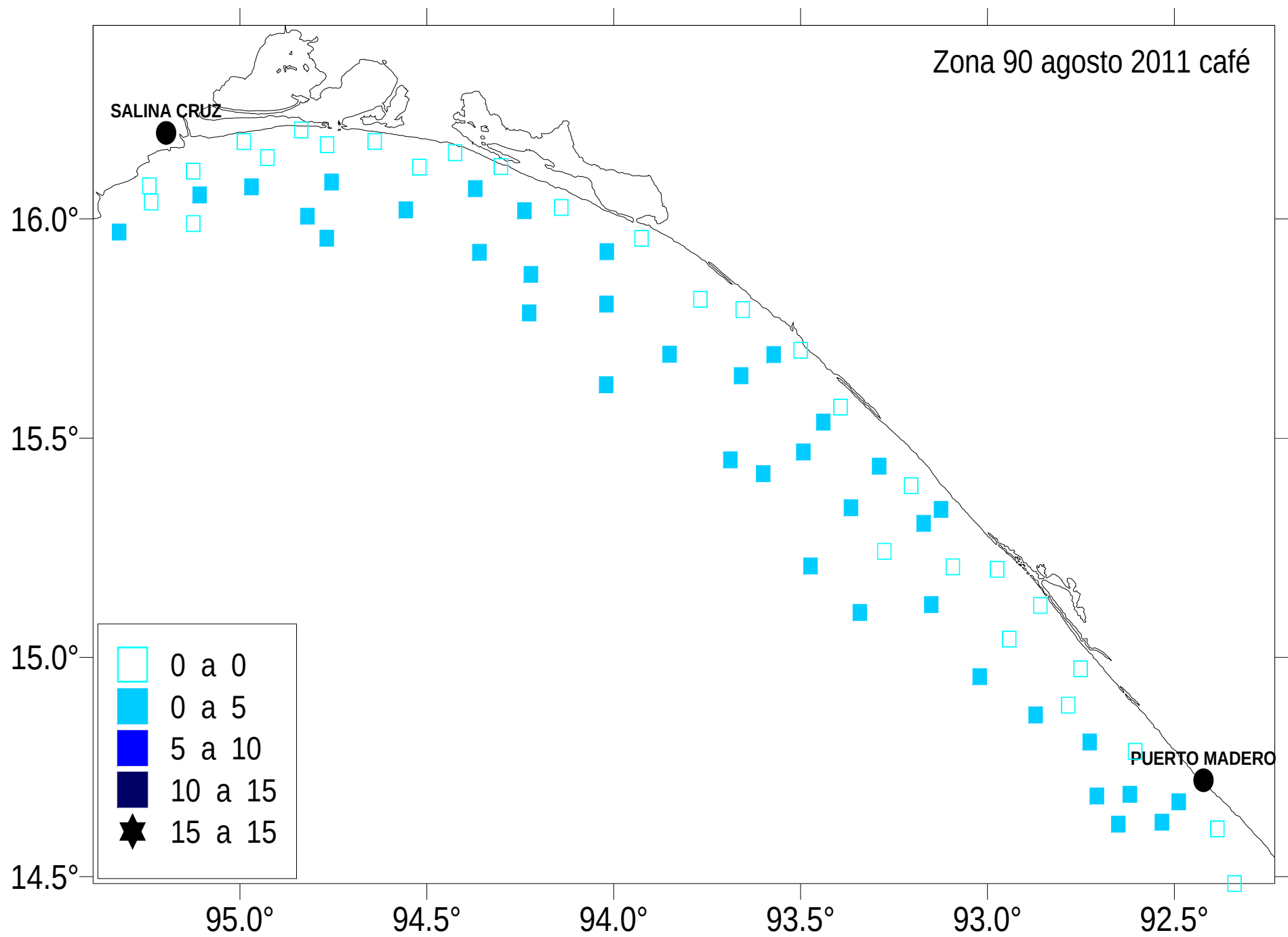


Zona 90 agosto 2011 blanco

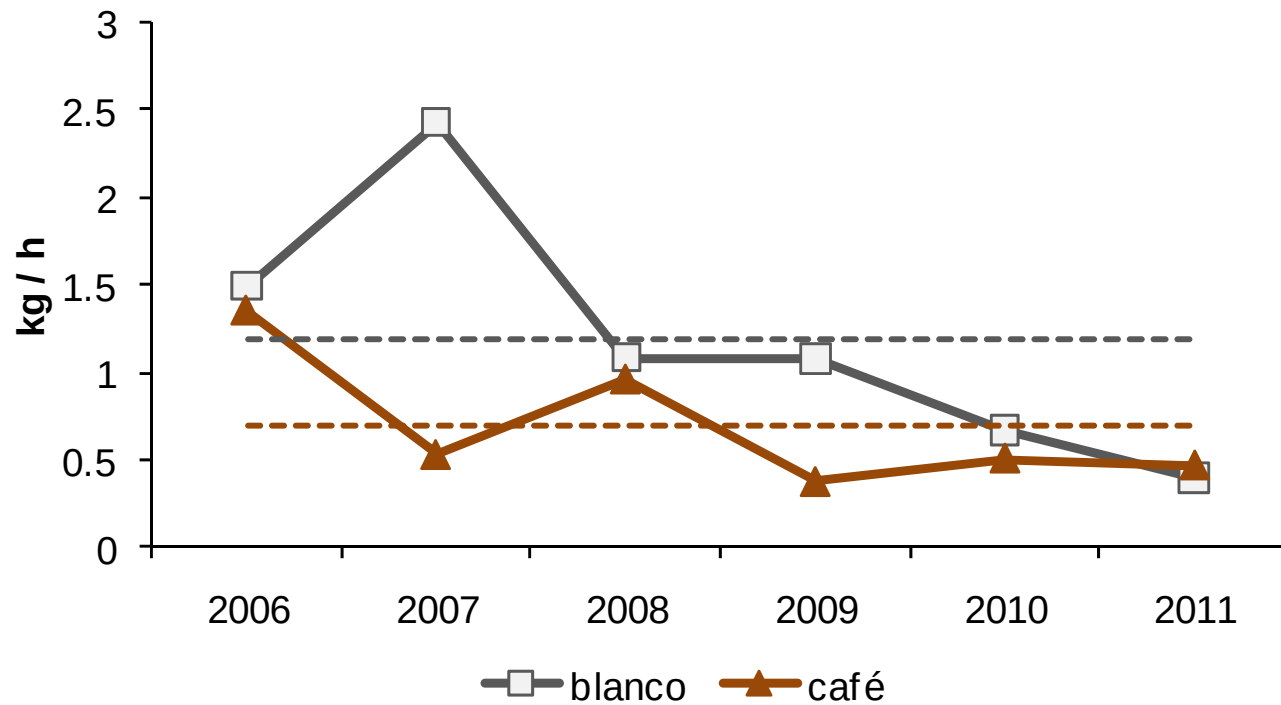
SALINA CRUZ

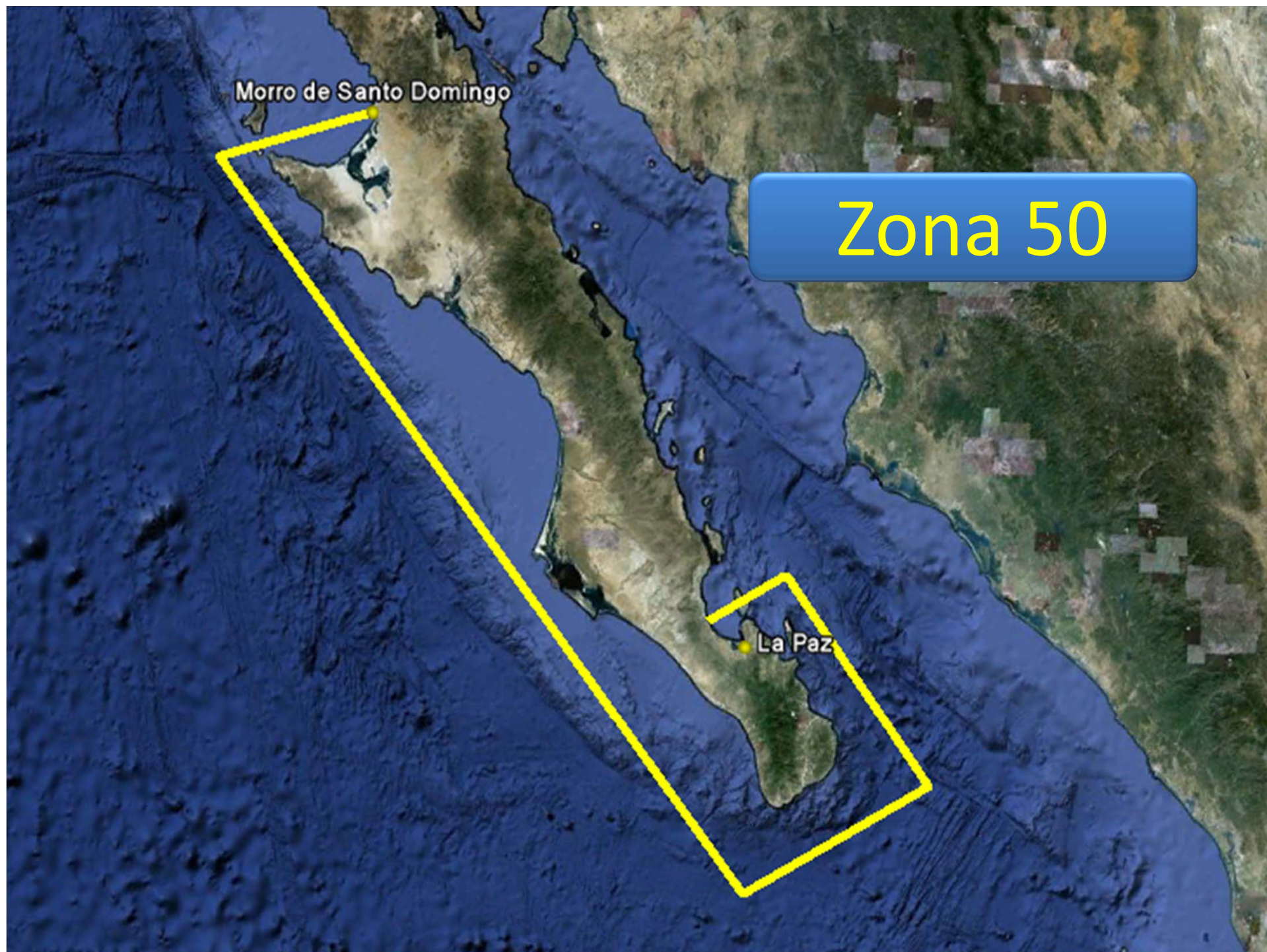
PUERTO MADERO





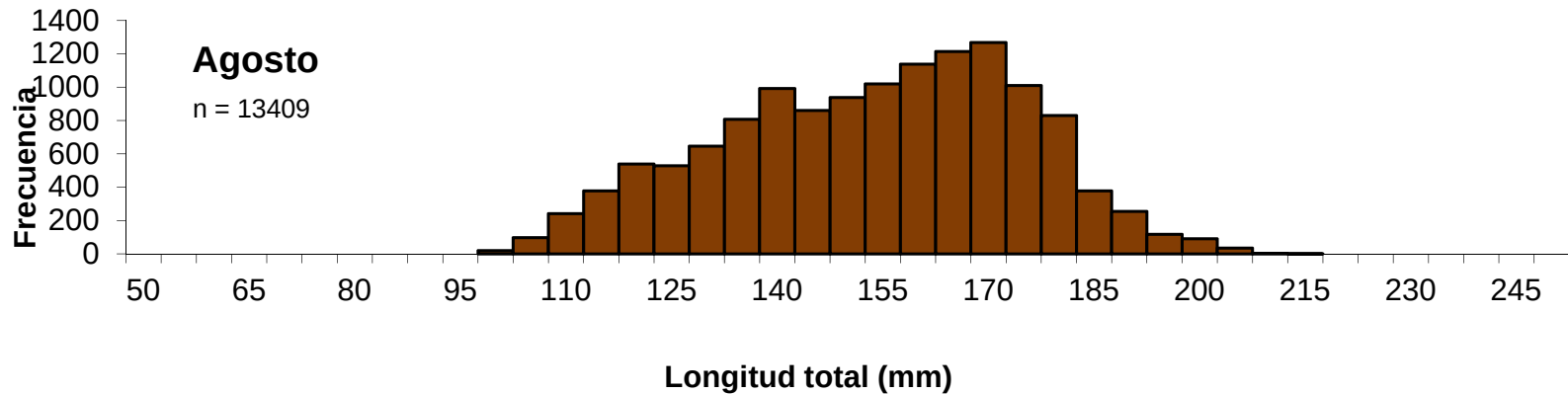
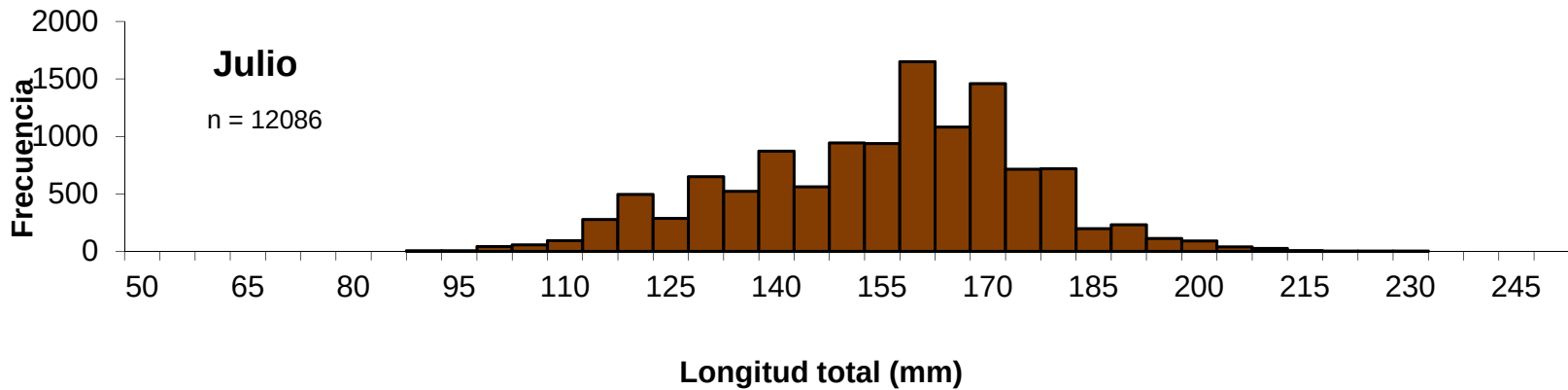
Abundancia histórica. Z90

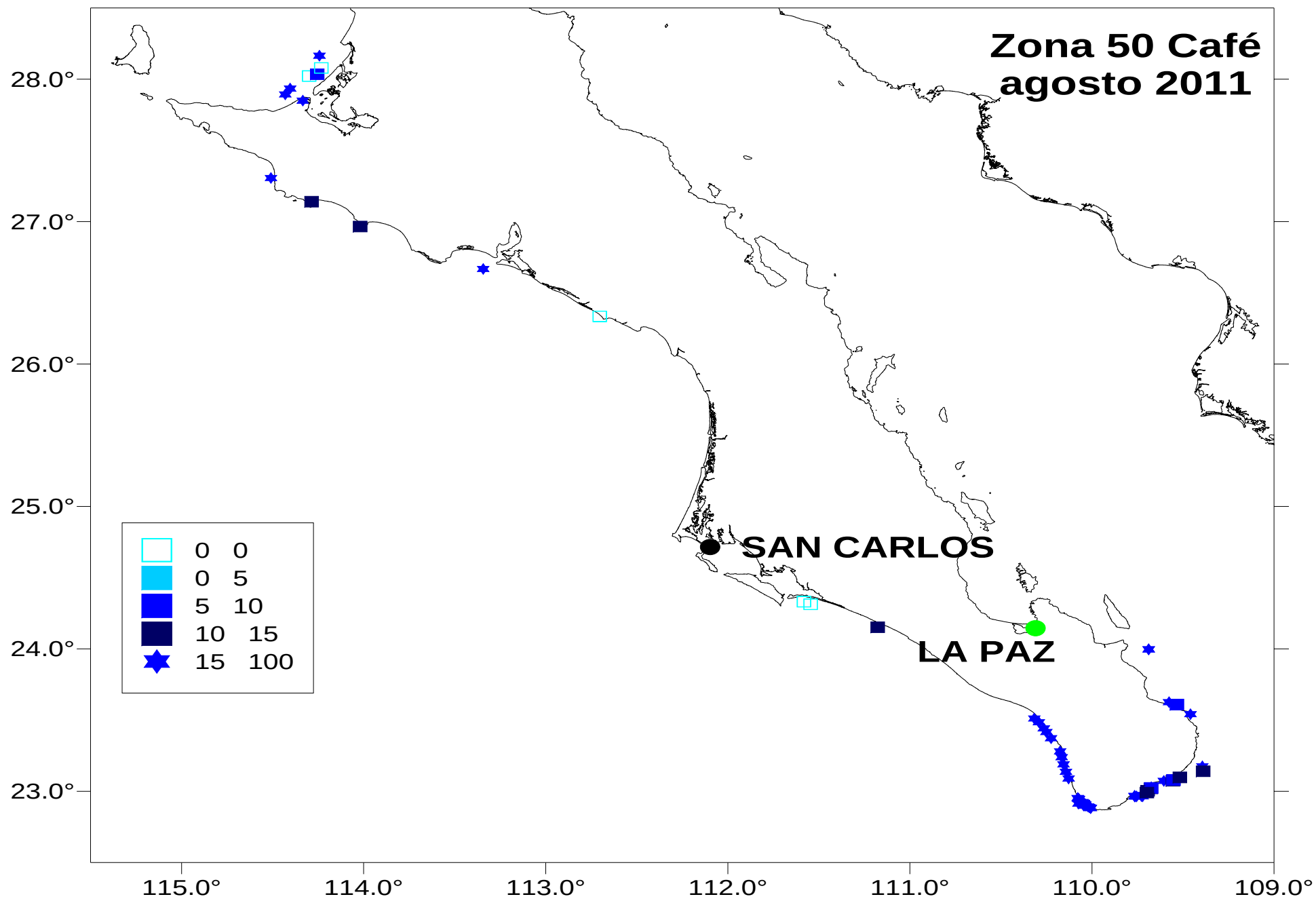




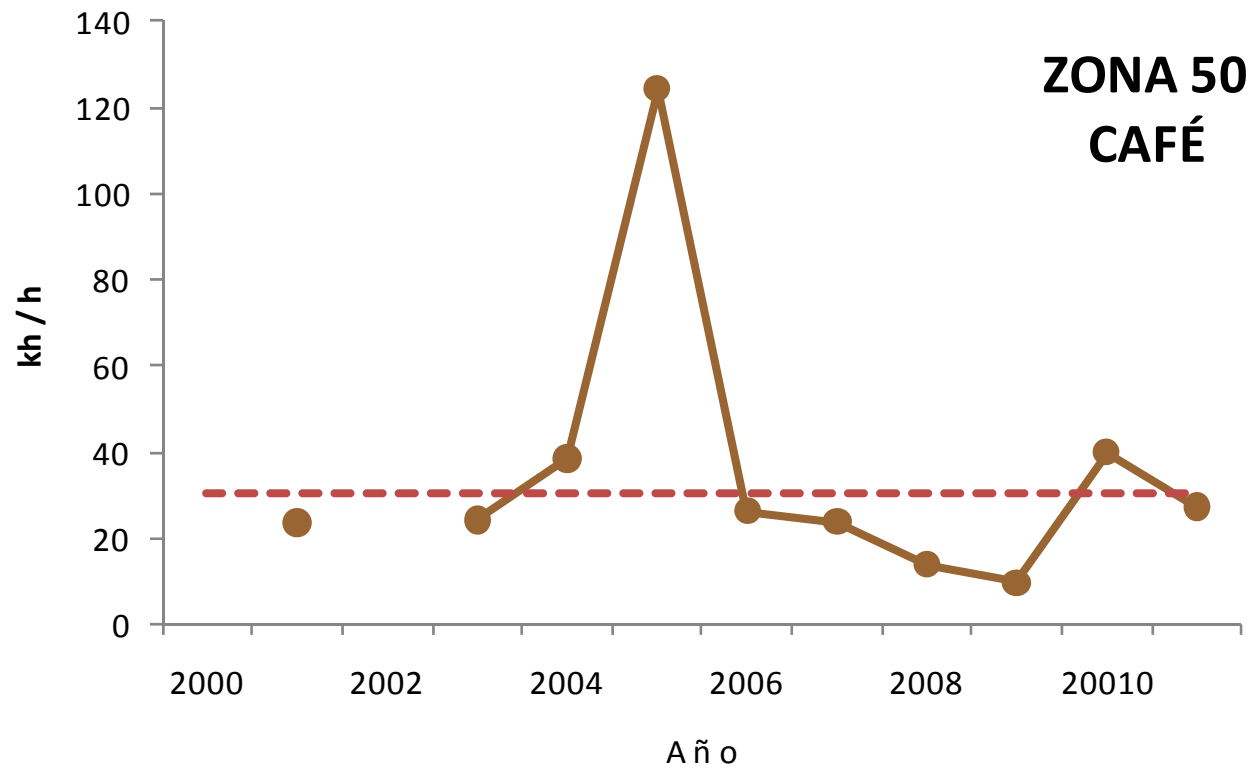


Estructura de tallas - Café. Z50





Abundancia histórica - Café. Z50



A satellite map of the Magdalena Bay area. A red rounded rectangle in the upper right contains the text 'AGUAS PROTEGIDAS'. A small rectangular inset in the center shows a detailed view of a sample location. On the left, white text lists 'Lugares de muestreo:' followed by '• Bahía Magdalena' and '15 Estaciones' at the bottom.

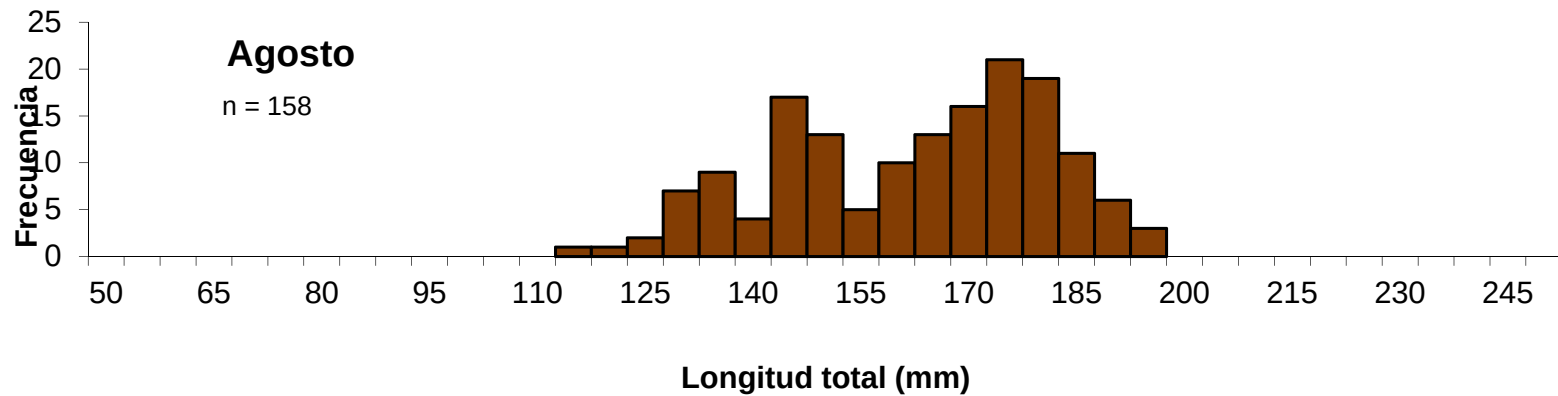
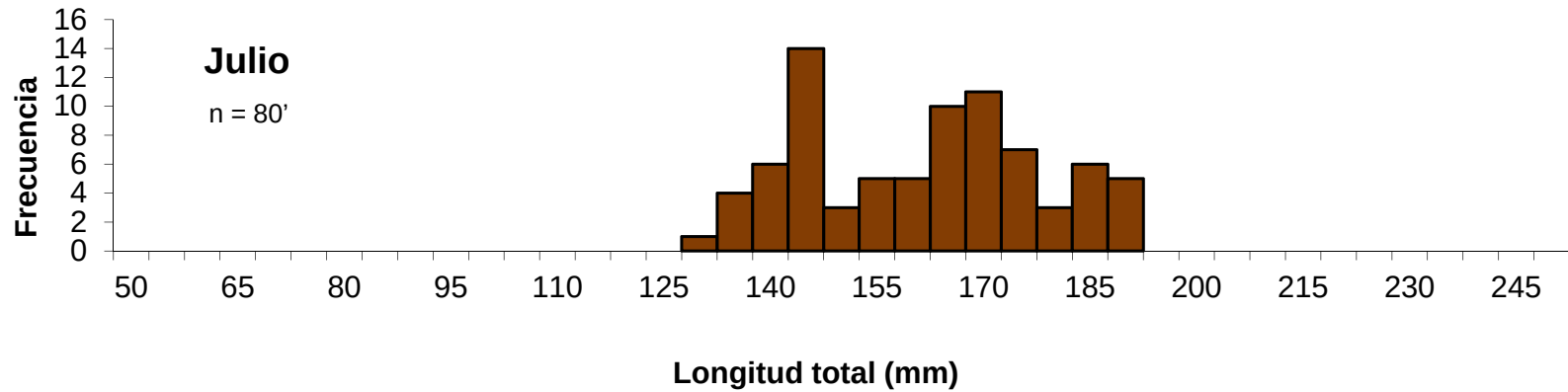
AGUAS PROTEGIDAS

Lugares de
muestreo:

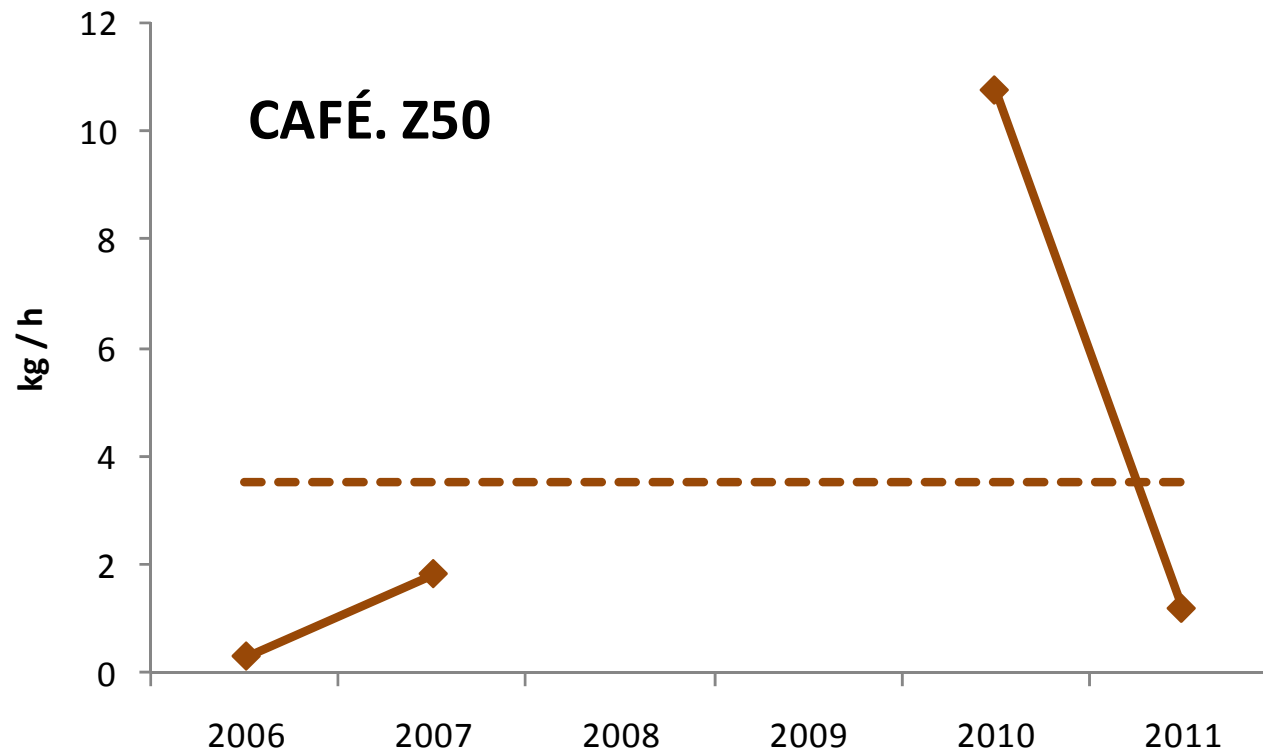
- Bahía
Magdalena

15 Estaciones

Tallas Café. Z50



Abundancia Café. Z50



Boca de Teacapán

Zona 60

Isla San Juanico

Isla Maria Isabelita

Isla Maria Madre

Isla Maria Magdalena

Isla Maria Cleofas

Nayarit

Tepic

Boca Custodios



Boca de Teacapán

ALTA MAR

Isla San Juanico

Isla Maria Isabelita

Isla Maria Madre

Isla Maria Magdalena

Isla Maria Cleofas

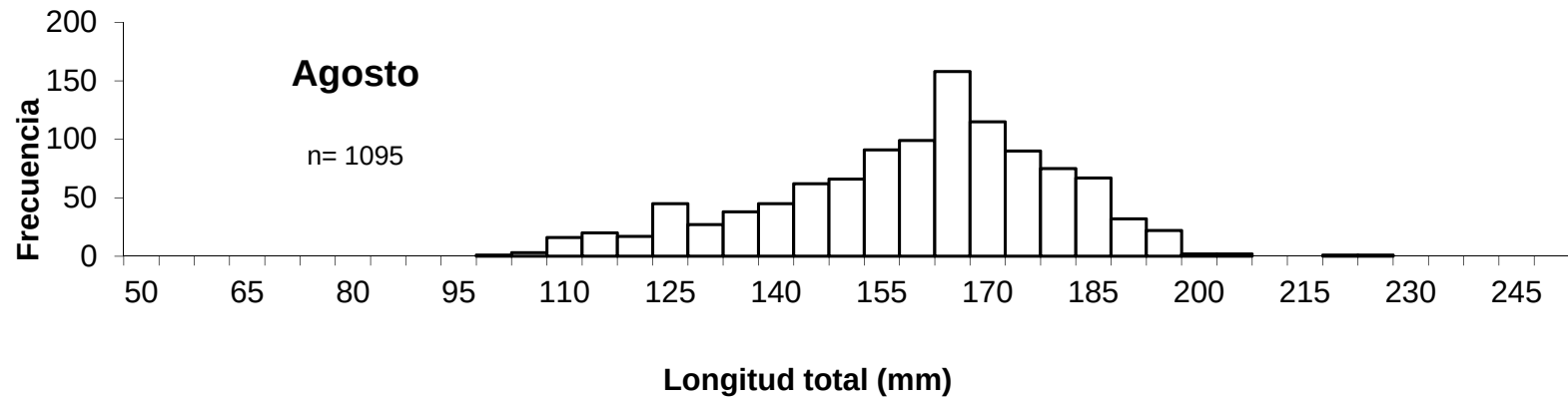
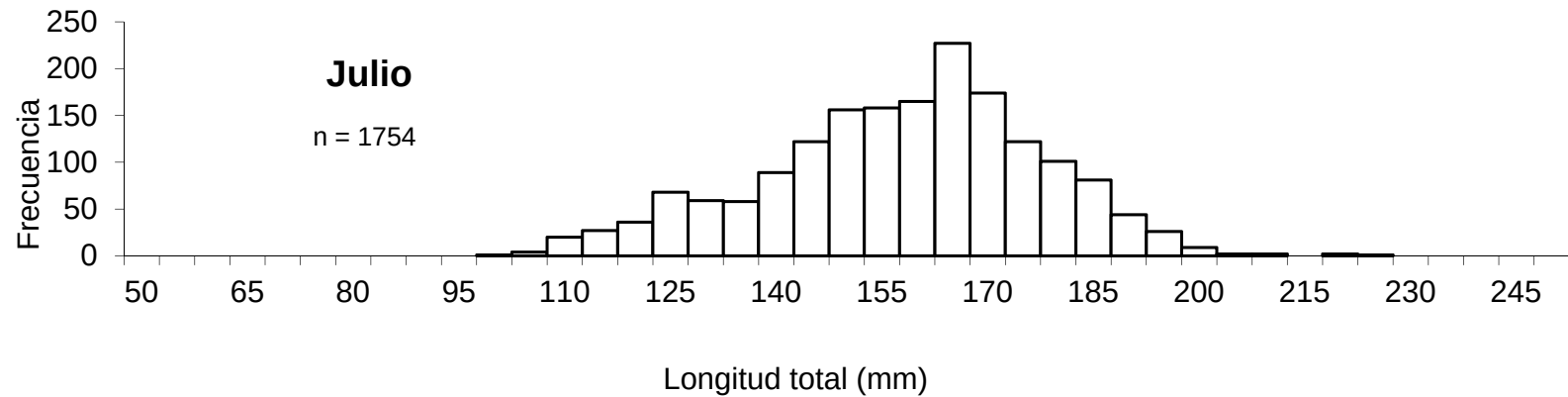
Nayarit

Tepic

Boca Custodios

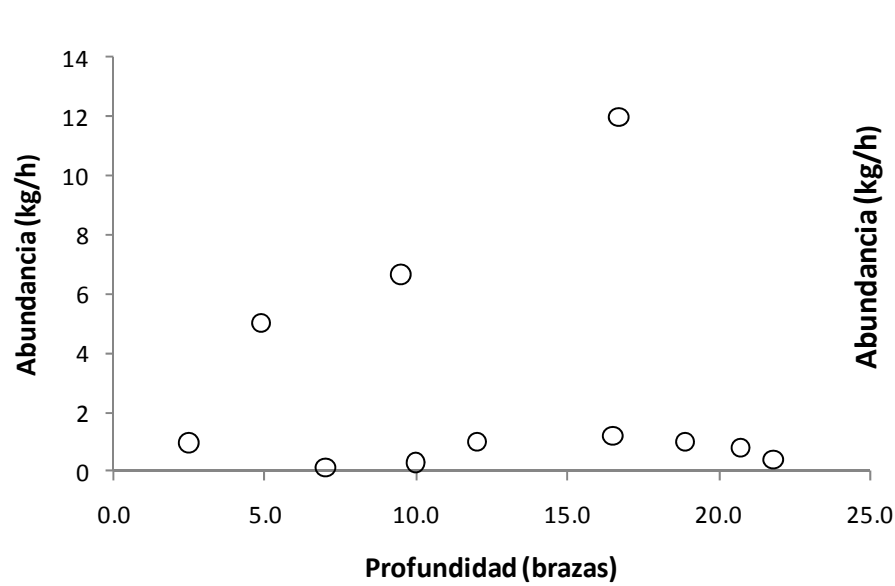


Estructura de tallas - Blanco Z60

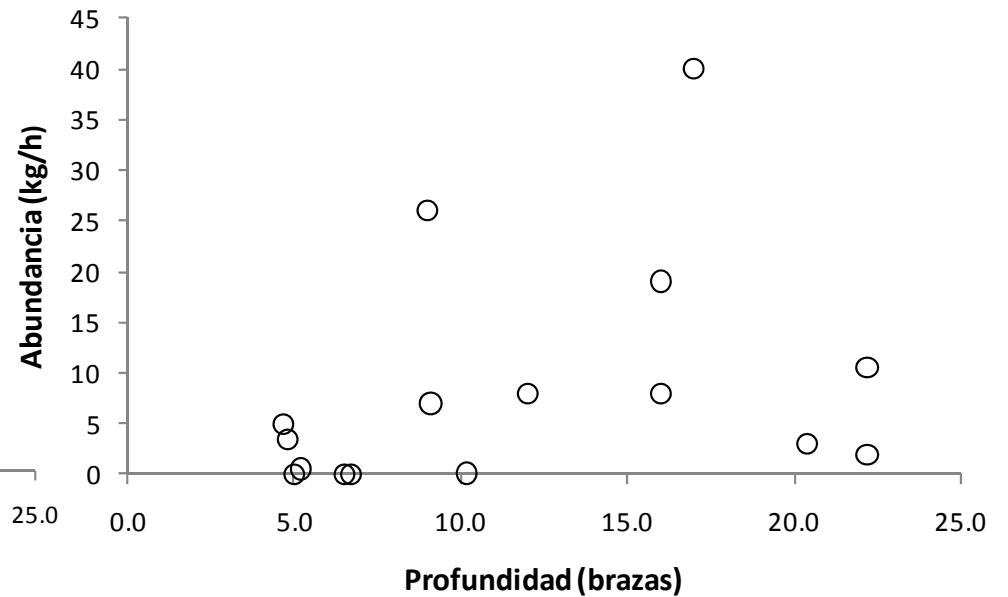


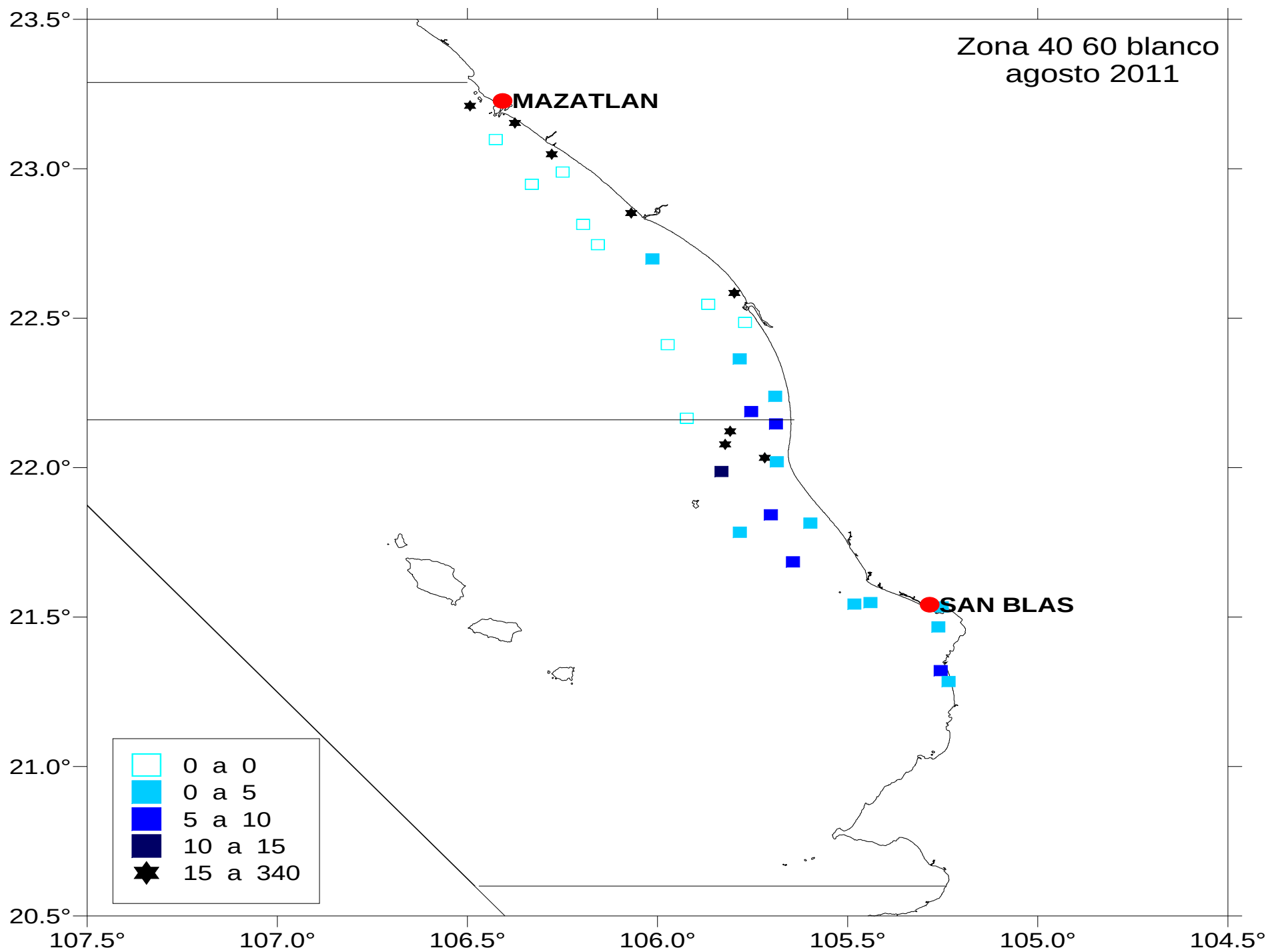
Distribución batimétrica - Blanco Z60

Julio

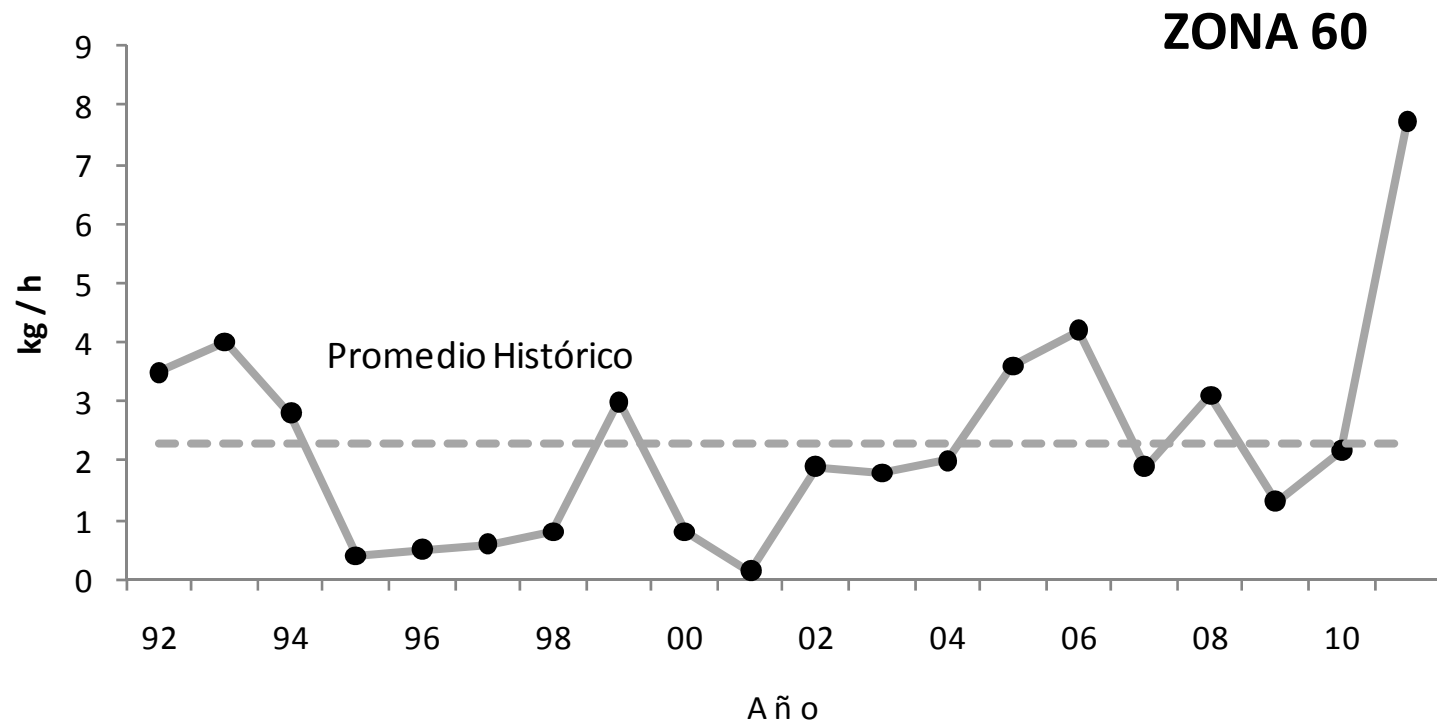


Agosto





Abundancia histórica - Blanco. Z60



An aerial photograph of a coastal region. A river flows from the top left towards the bottom right, where it meets a large body of water. The river has several meanders and a small island in the middle. The surrounding land is green, likely forested. A red rectangular label with rounded corners is positioned in the upper right quadrant of the image.

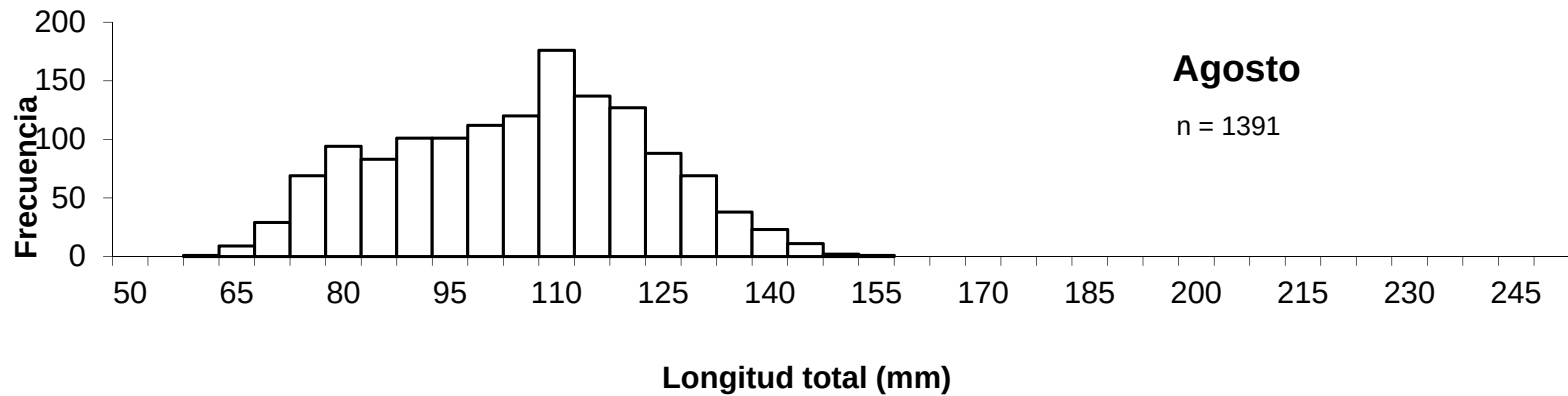
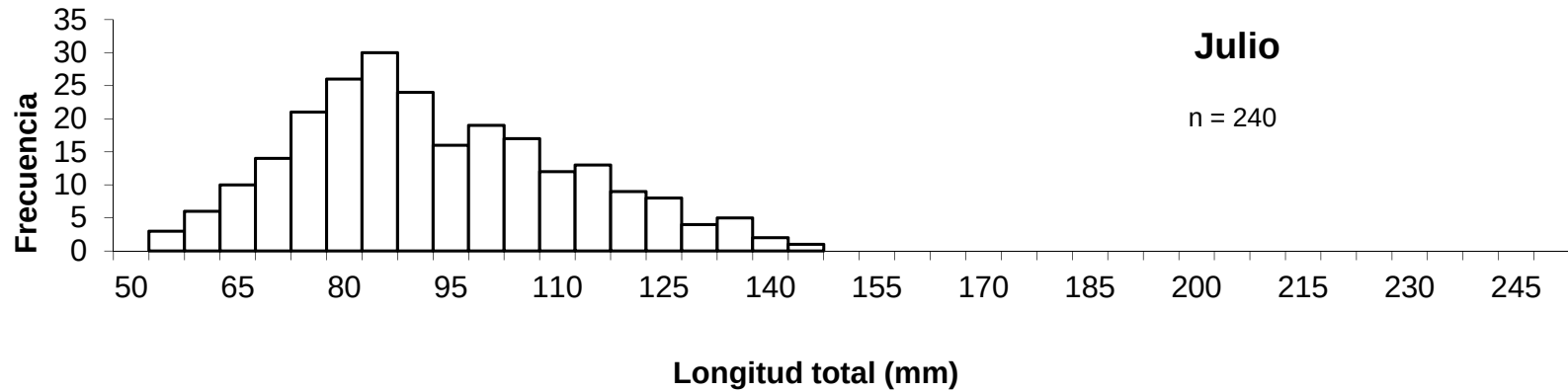
AGUAS PROTEGIDAS

Lugares de muestreo:

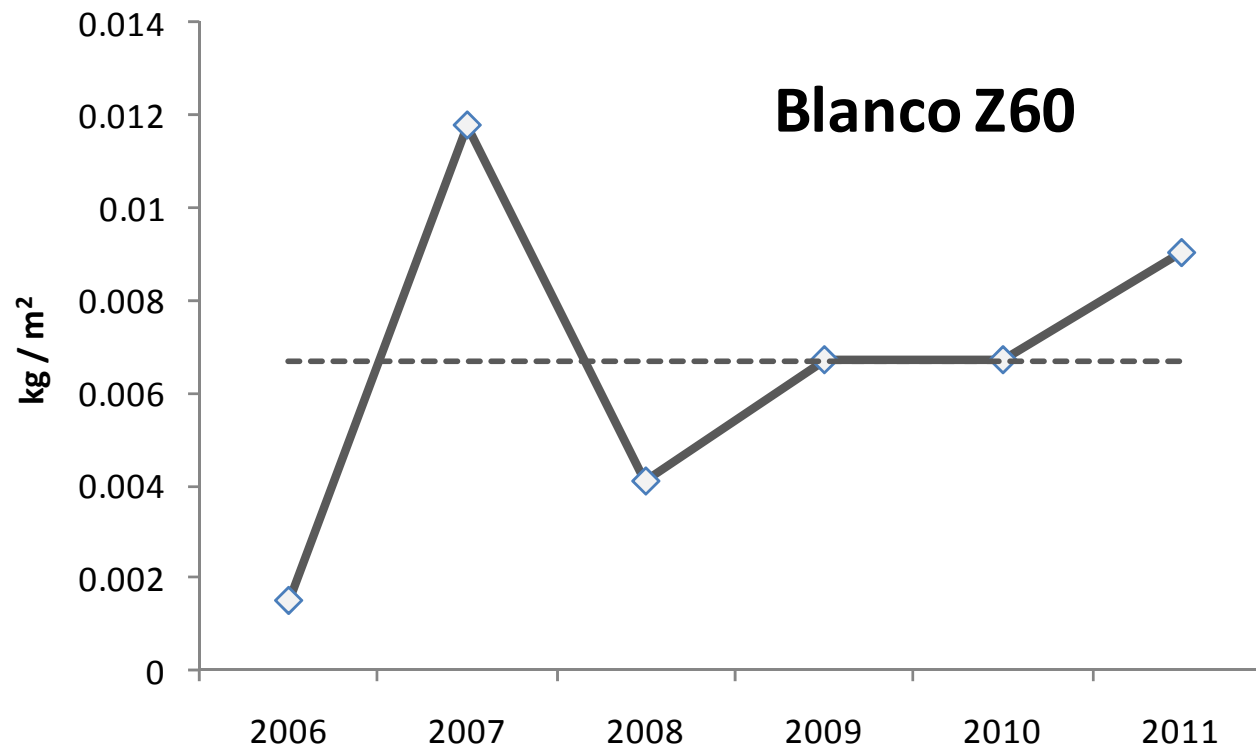
- Puerta de Palapares
- Santa Cruz
- Mexcaltitan
- Pericos
- San Miguelito
- Pescadero
- Laureles
- Quimichis
- Palmar de Cuautla

42 Estaciones

Tallas Blanco. Z60



Abundancia Blanco. Z60



Mazatlán



Zona 40

Boca de Teacapán





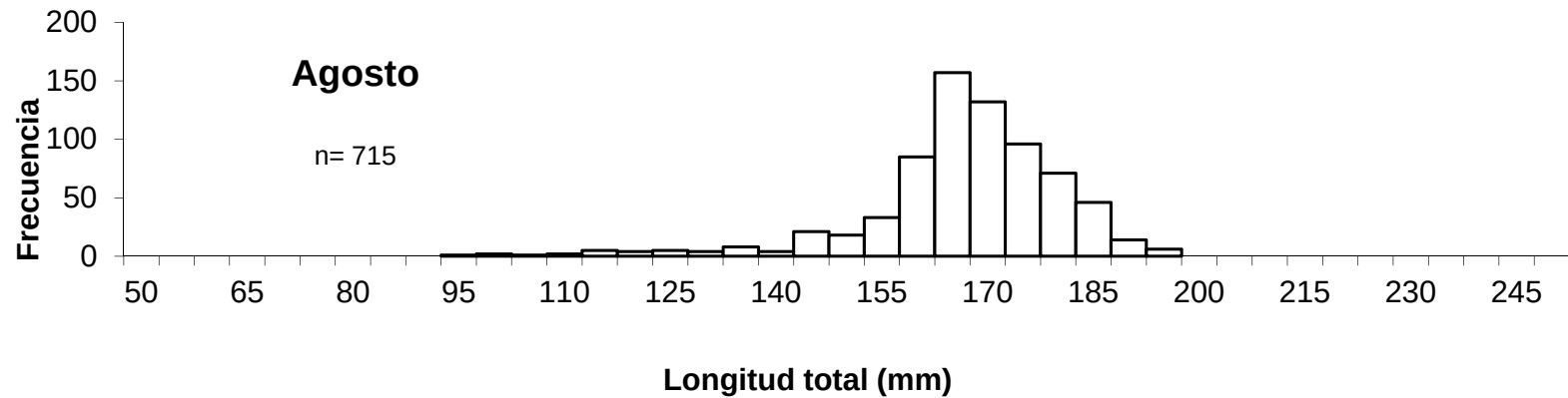
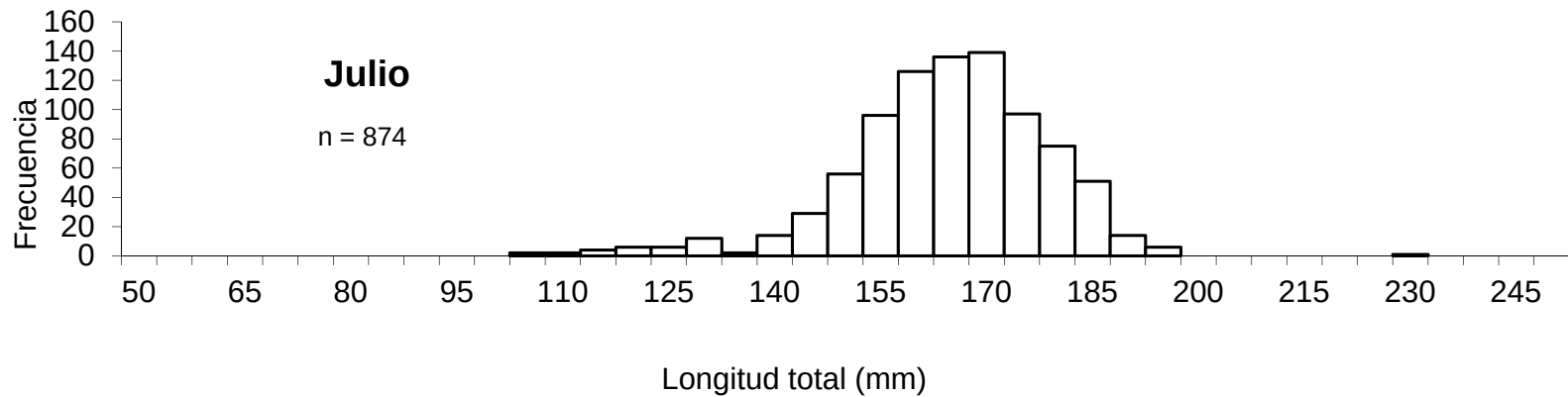
Mazatlán



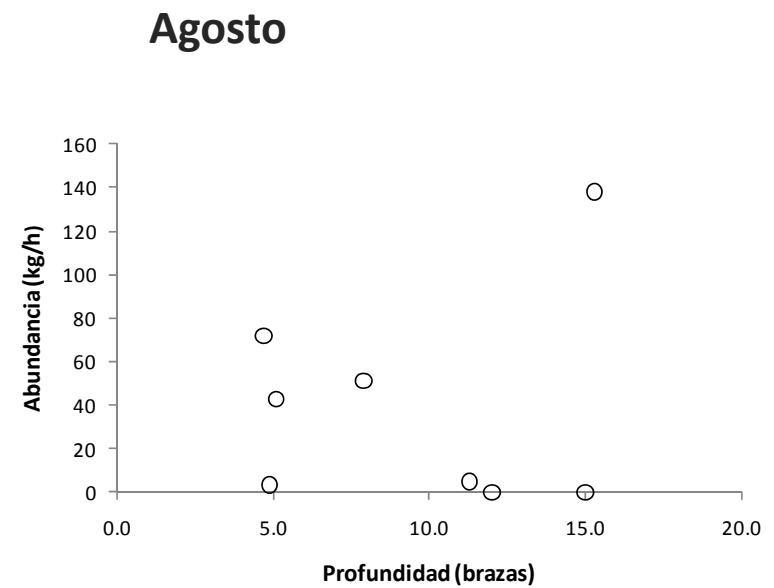
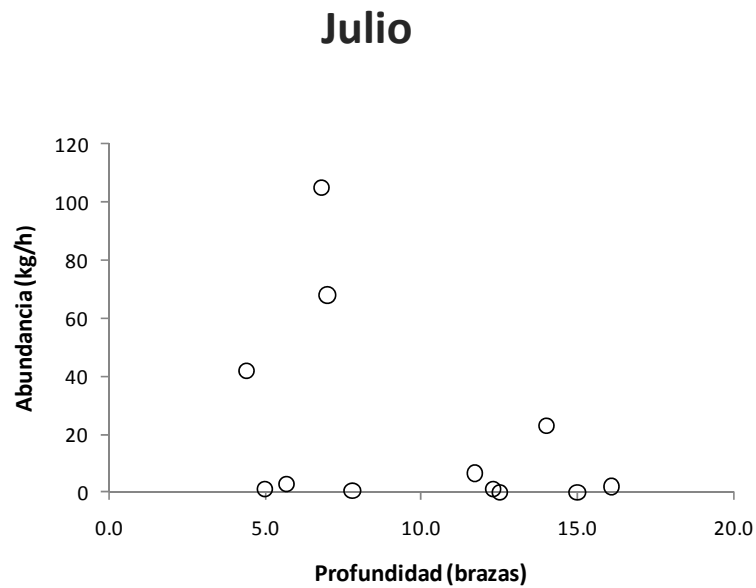
ALTA MAR

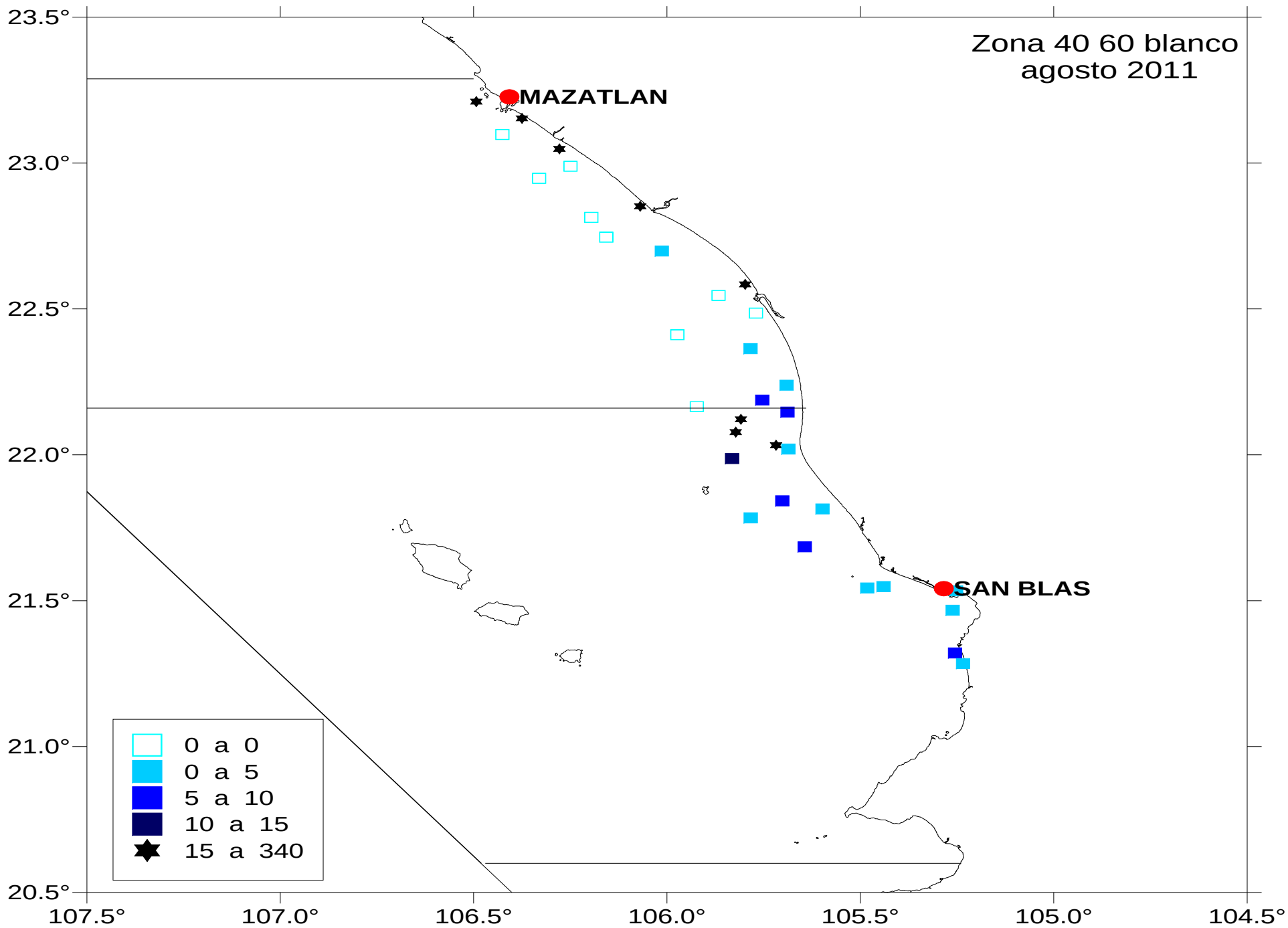
Boca de Teacapan

Estructura de tallas - Blanco. Z40

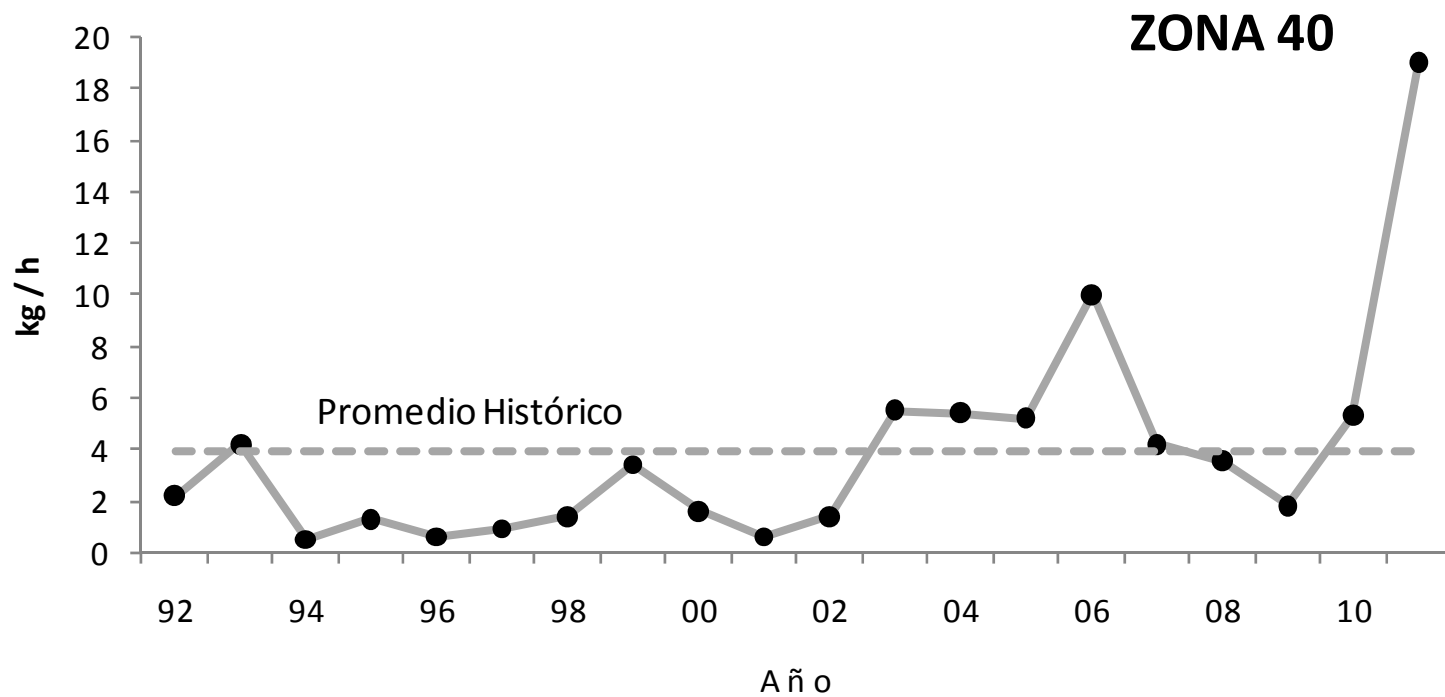


Distribución batimétrica - Blanco . Z40





Abundancia histórica - Blanco. Z40



A satellite map of a coastal region, likely in Mexico, showing a large body of water on the left and a narrow strip of land on the right. The land is covered in green vegetation and has a winding river or canal system. A red rectangular label with the text 'AGUAS PROTEGIDAS' is positioned in the upper right corner of the map.

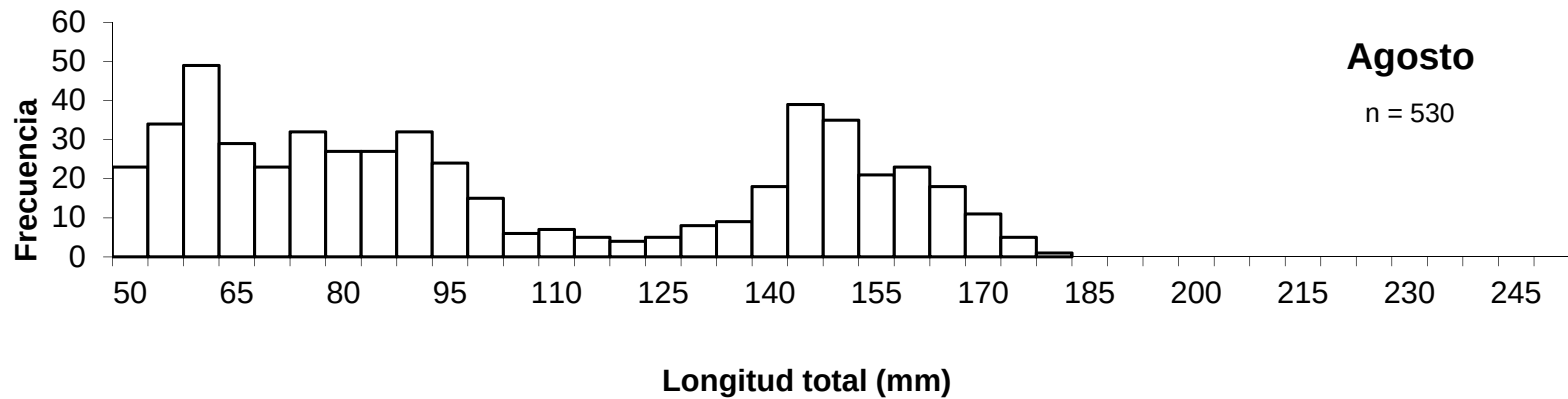
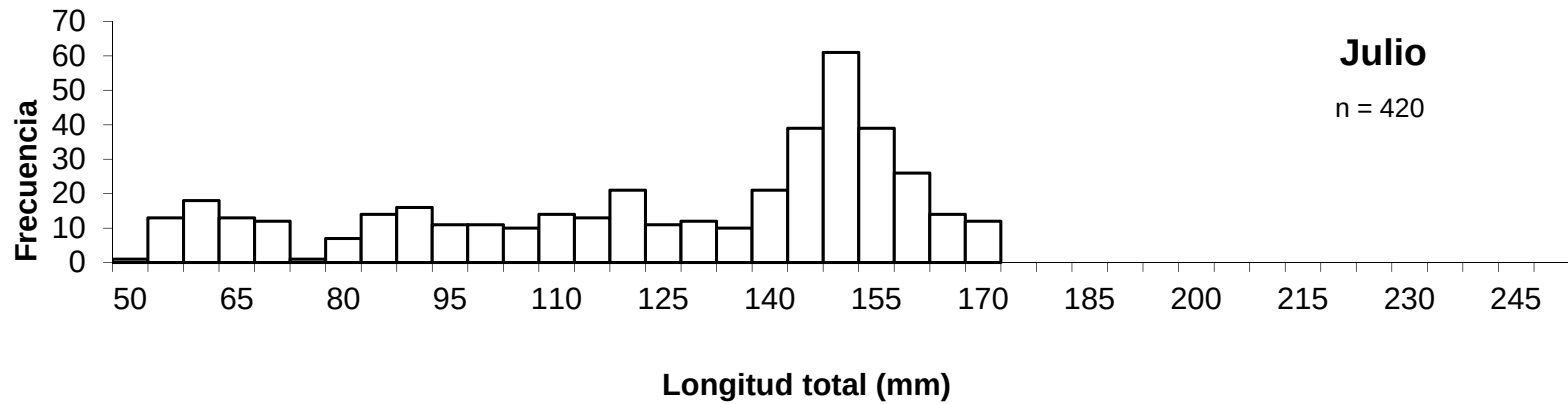
AGUAS PROTEGIDAS

Lugares de muestreo:

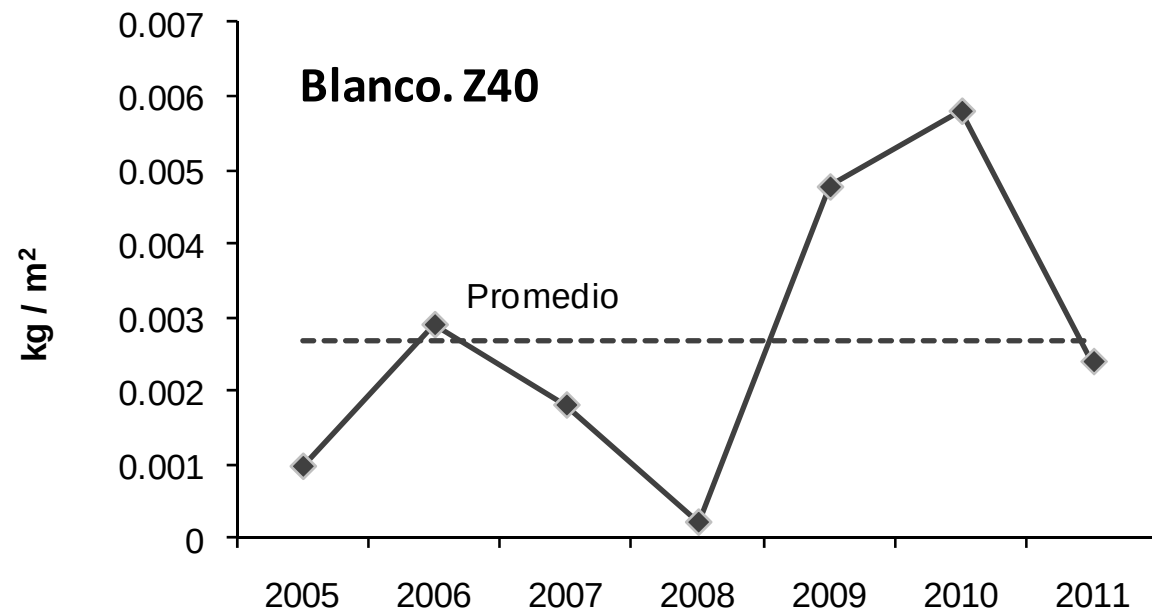
- Huizache
- Caimanero
- Chametla
- Escuinapa - Teacapan

27 Estaciones

Tallas Blanco - Z40



Abundancia Blanco. Z40





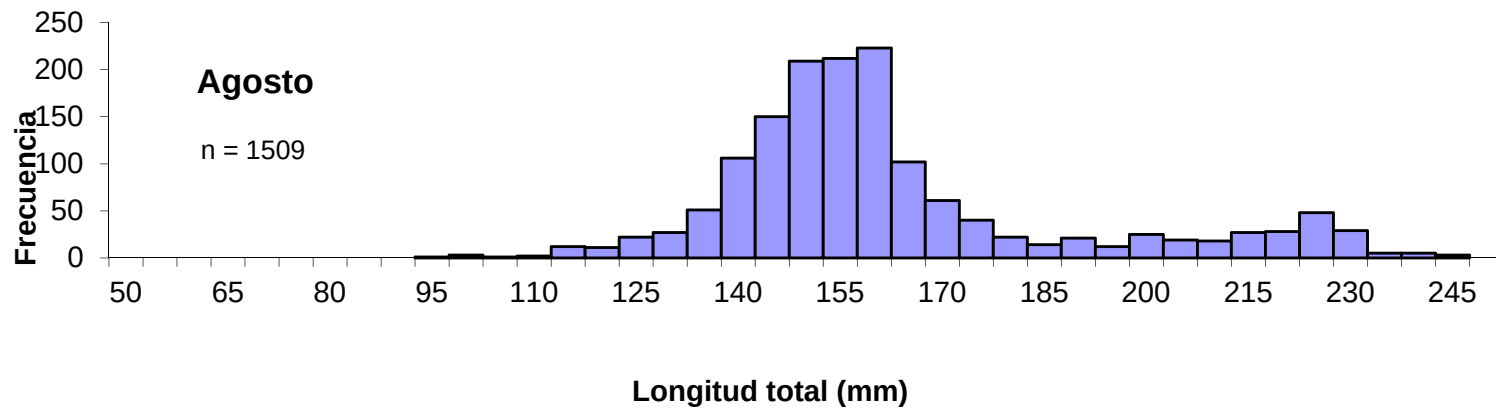
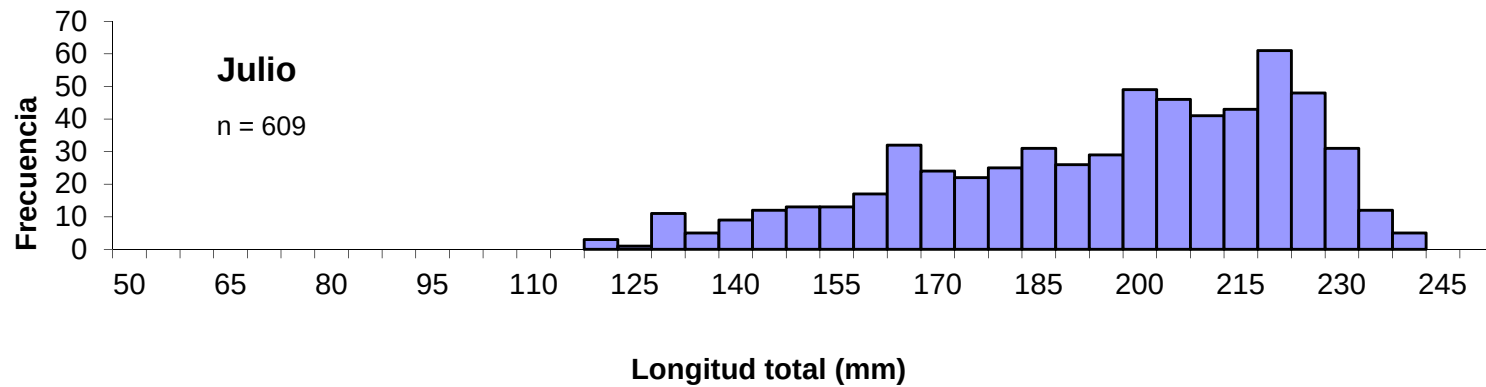


Punta Ahome

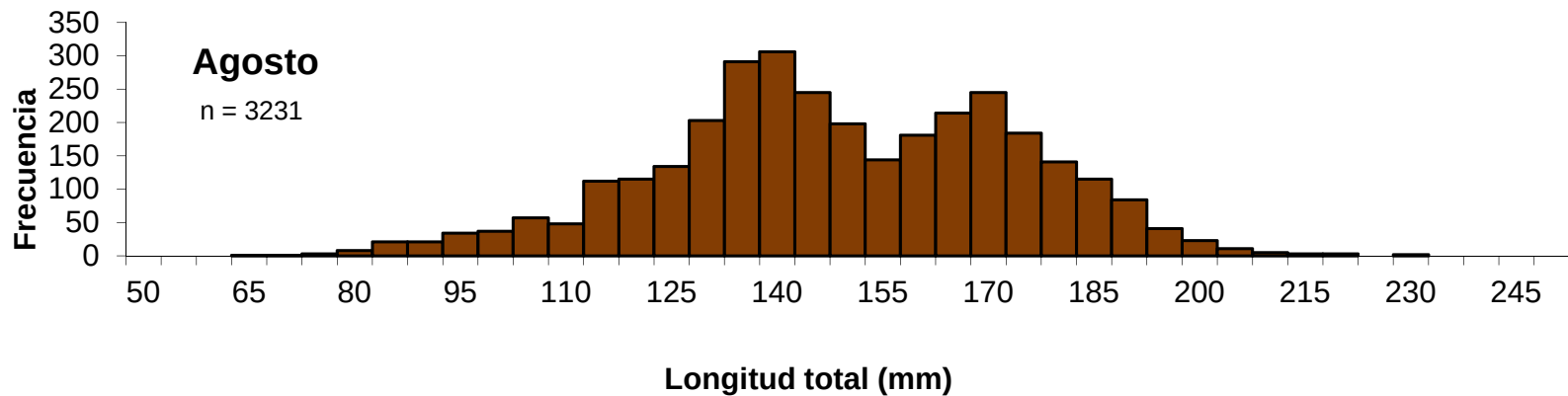
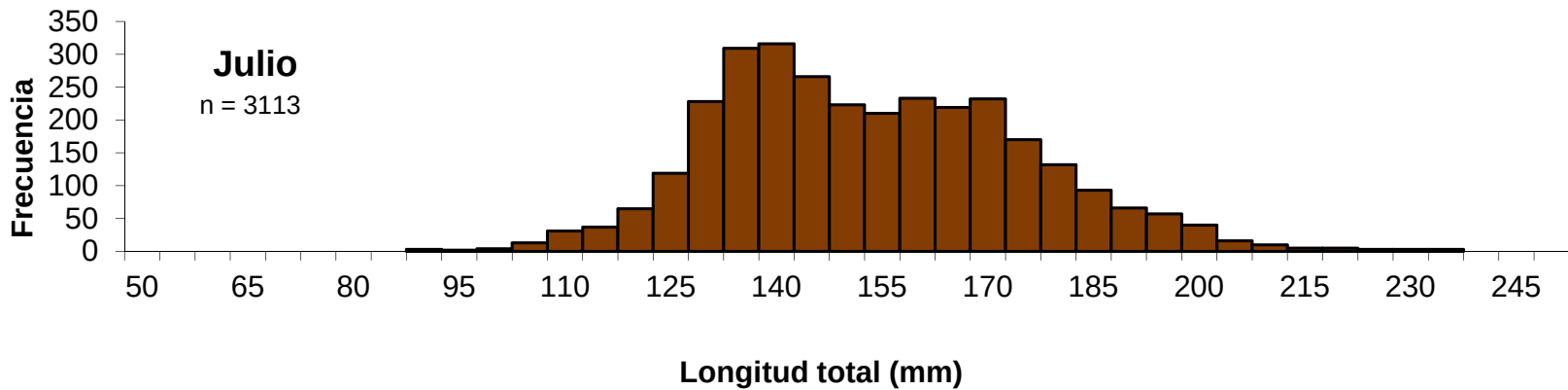
ALTA MAR

Mazatlán

Estructura de tallas - Azul. Z30

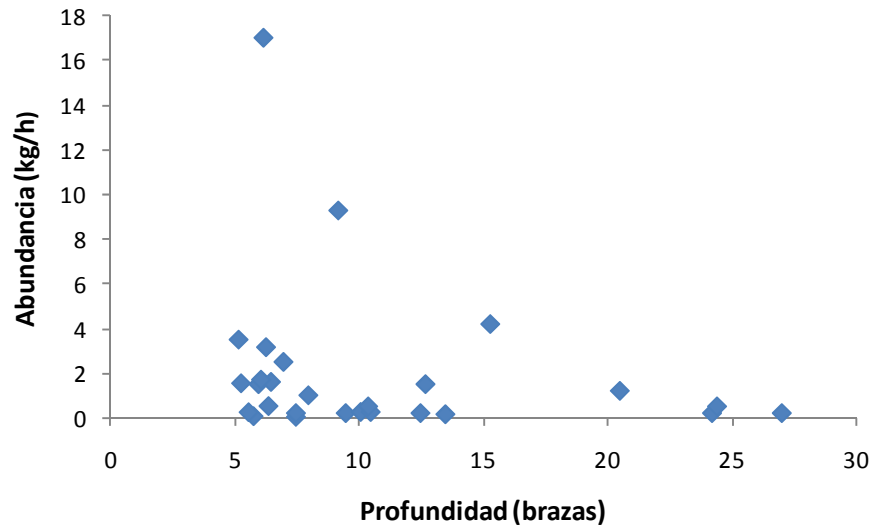


Estructura de tallas - Café. Z30

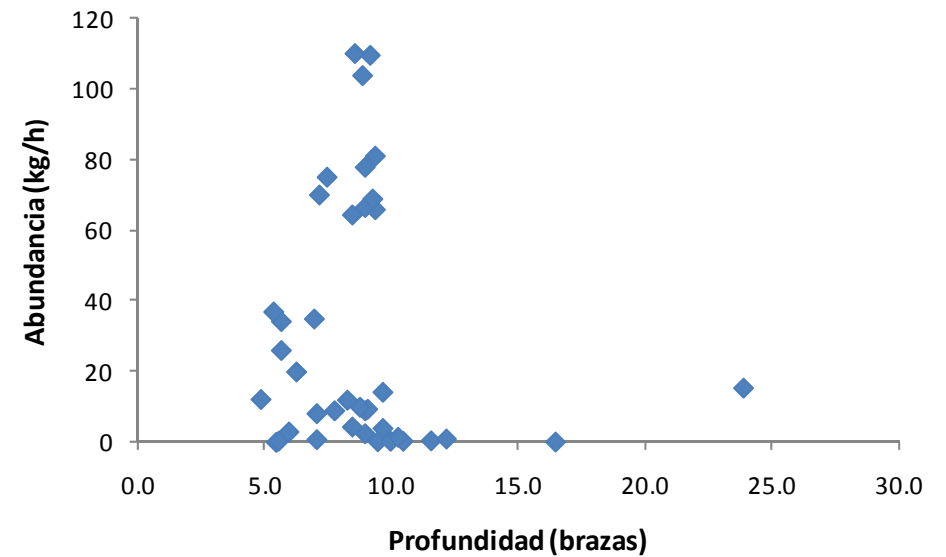


Distribución batimétrica - Azul . Z30

Julio

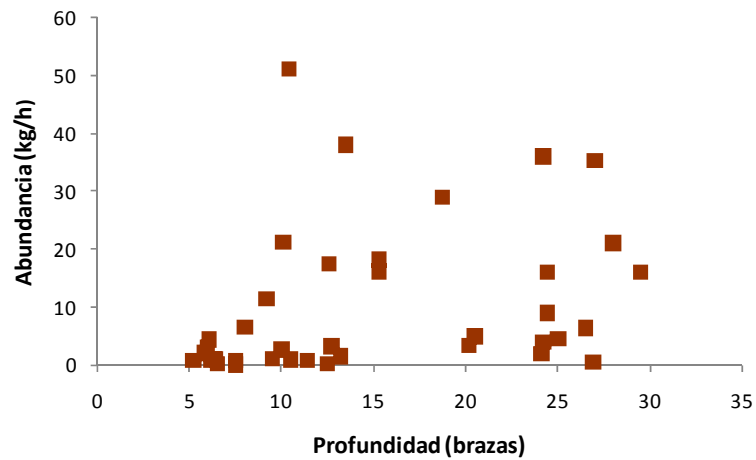


Agosto

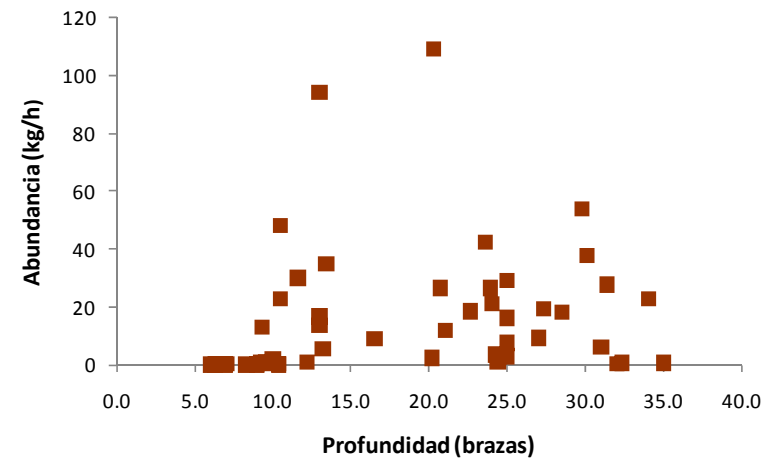


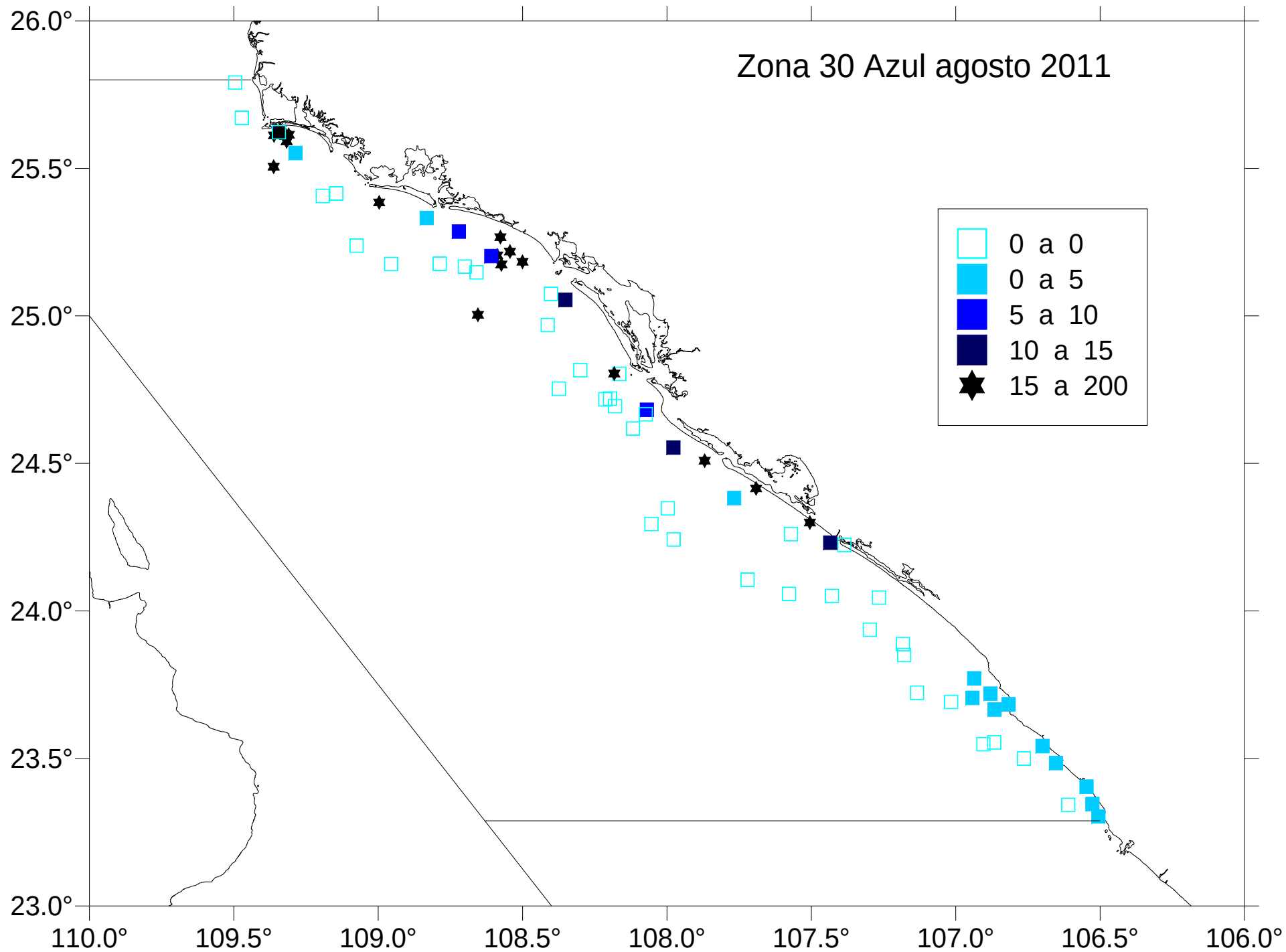
Distribución batimétrica - Café . Z30

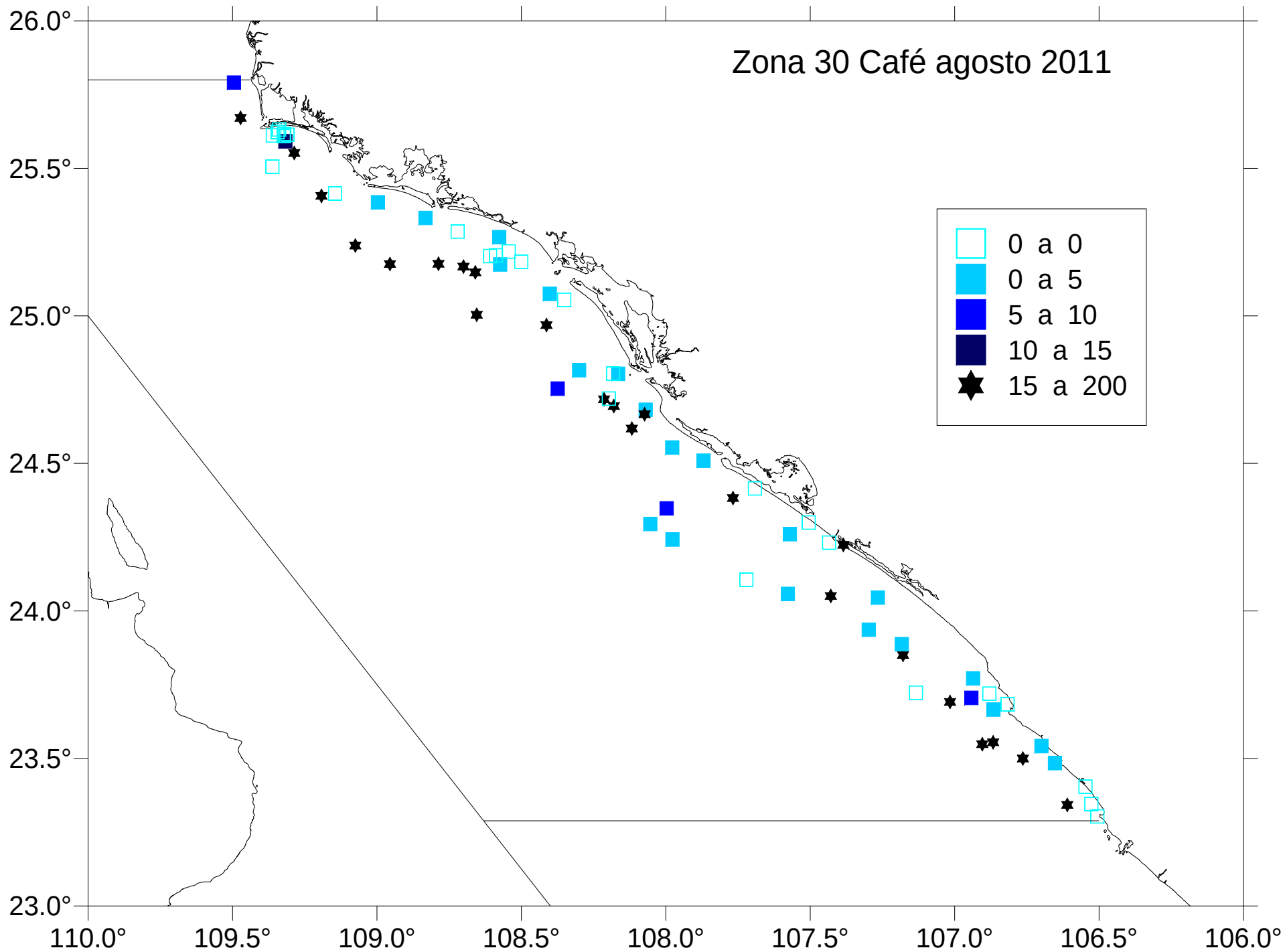
Julio



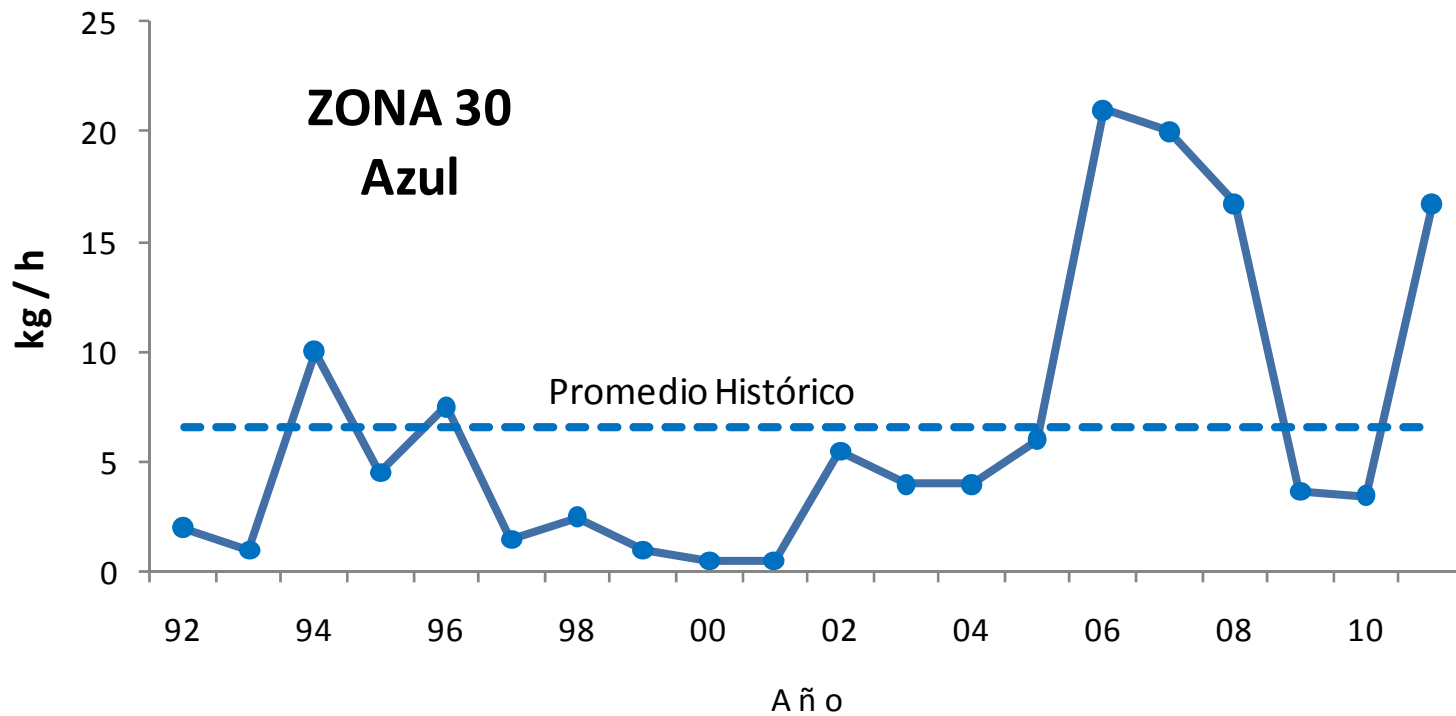
Agosto



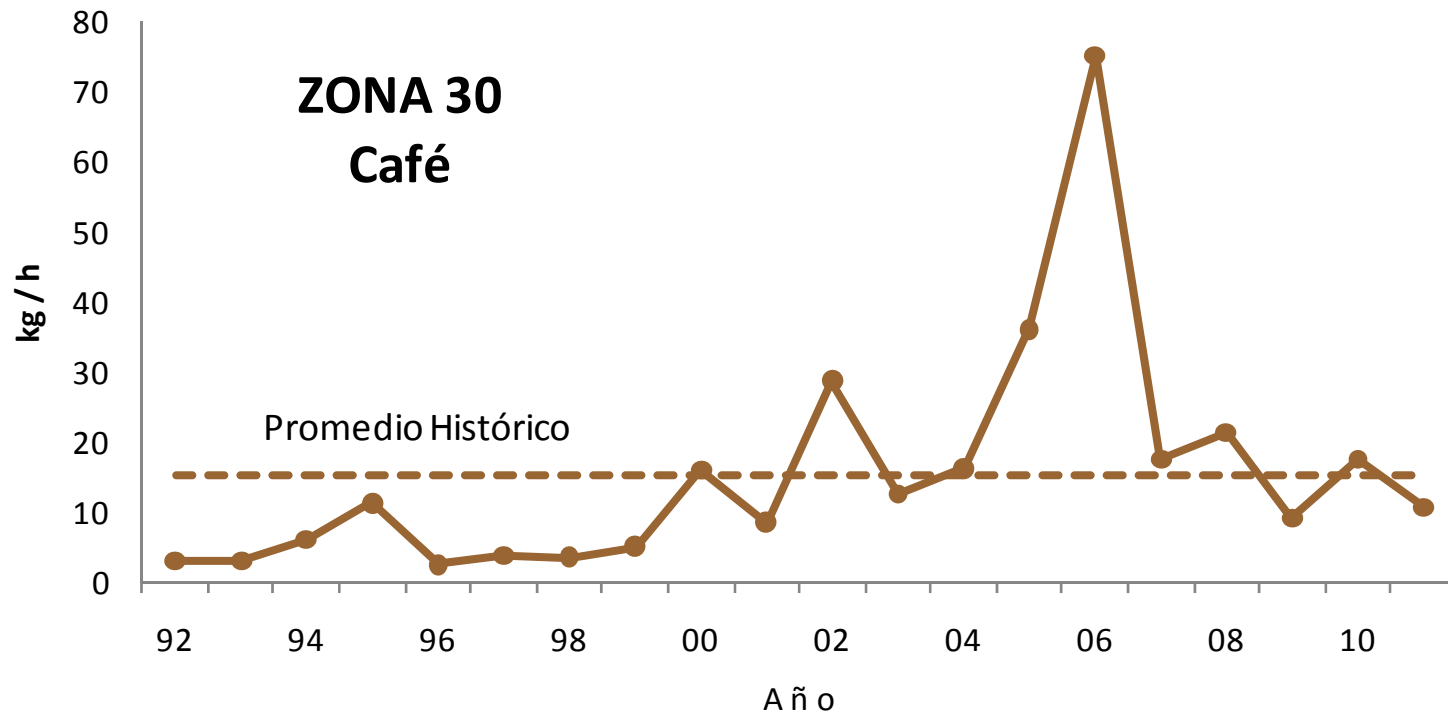




Abundancia histórica - Azul. Z30



Abundancia histórica - Café. Z30



A satellite map of a coastal region, likely in Mexico, showing a large body of water on the left and a landmass on the right. The landmass features a complex network of rivers and estuaries. A red rectangular label with the text 'AGUAS PROTEGIDAS' is positioned in the upper right quadrant of the image.

AGUAS PROTEGIDAS

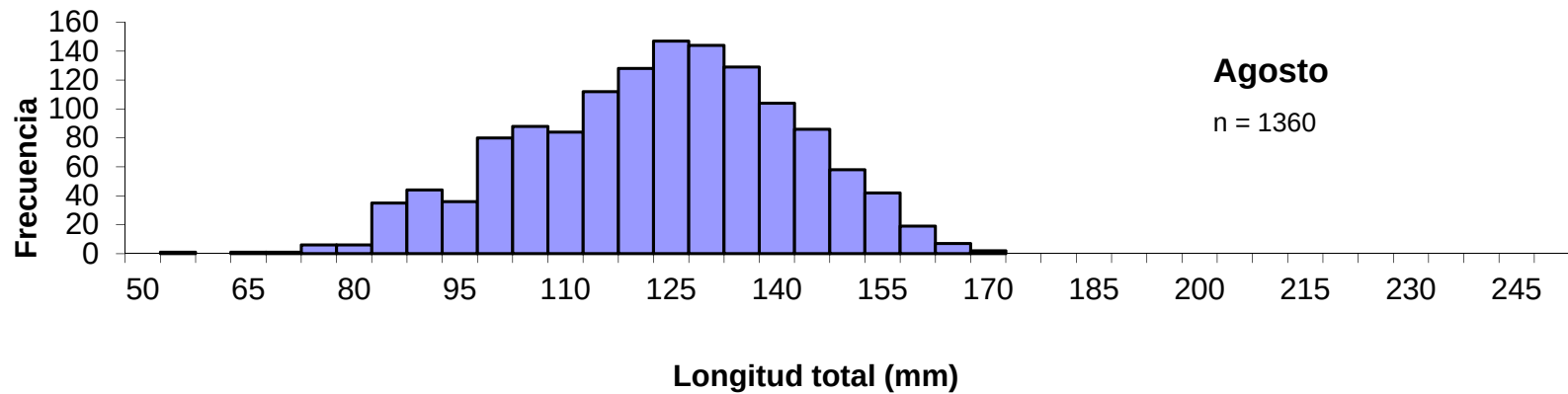
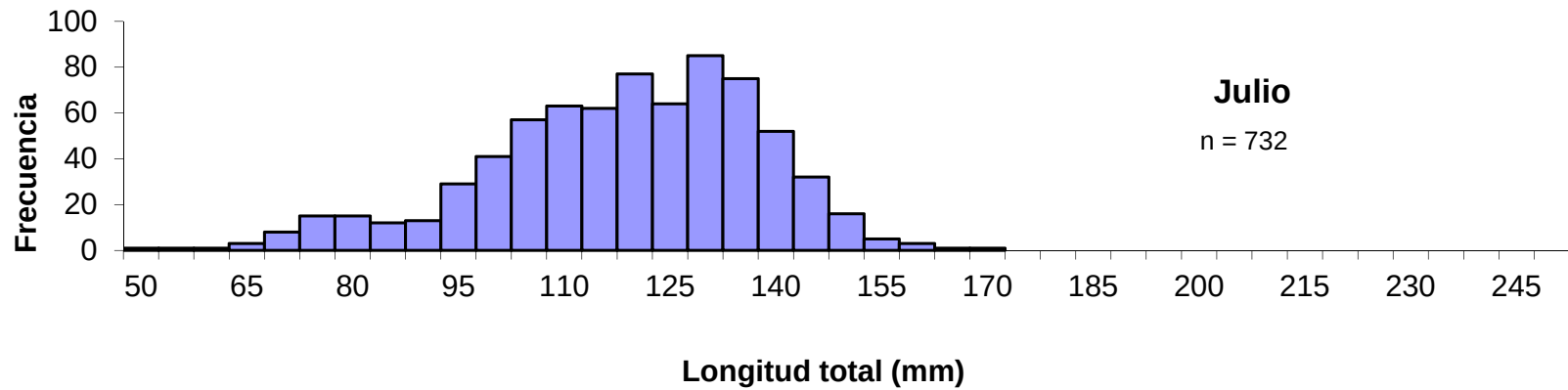
Bahías

Lugares de muestreo:

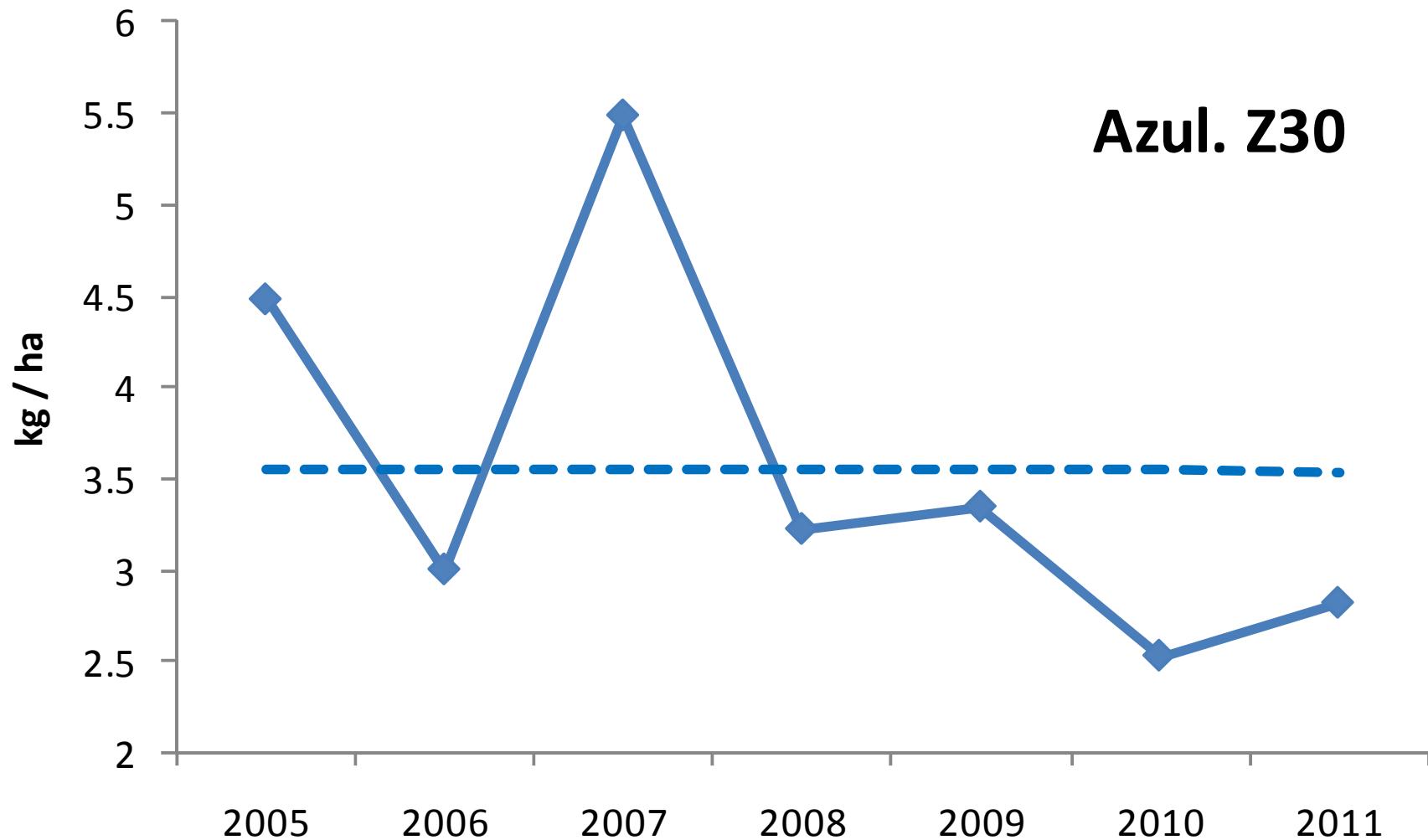
- Ensenada del Pabellón - Altata
- Santa Ma. La Reforma
- Navachiste
- Topolobampo - Ohuira

56 Estaciones

Tallas Azul. B-Z30



Abundancia Azul. B-Z30



B. Sta. Ma. La Reforma

Ribera

Lugares de muestreo:

- Santa Ma. La Reforma
- Navachiste

12 Estaciones

Área de trabajo

RIBERA

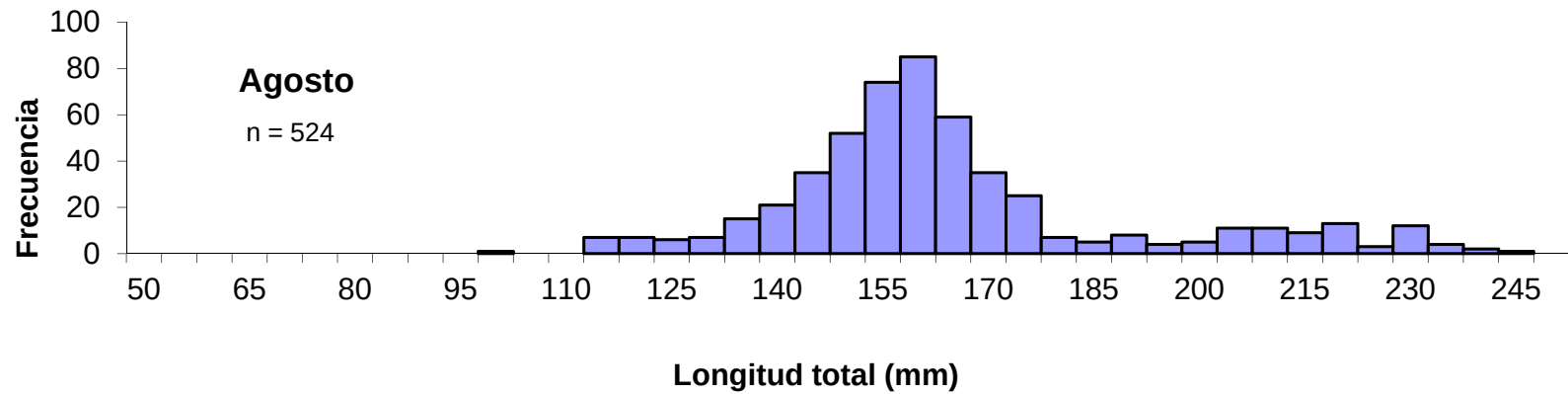
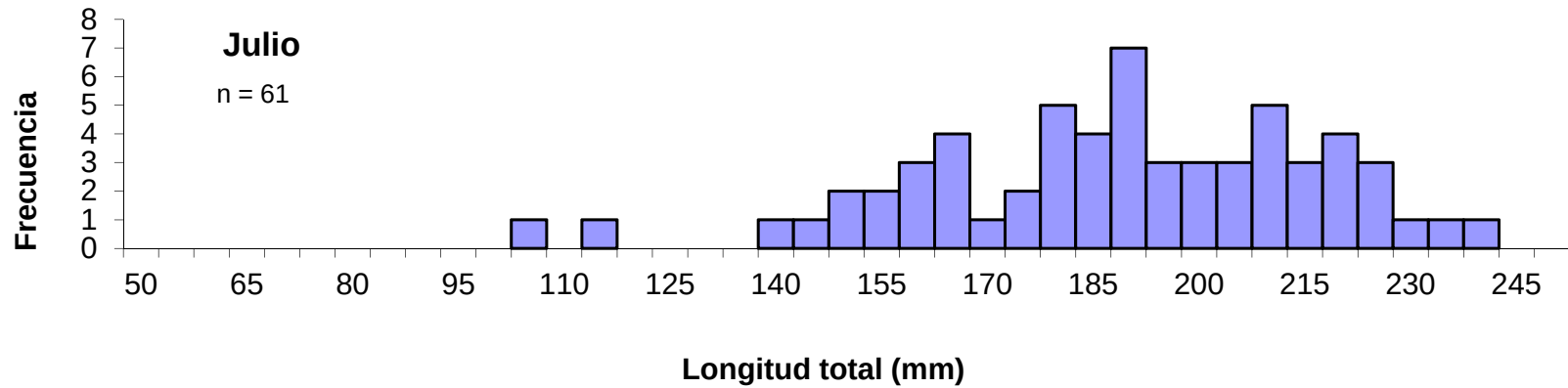
Boca de la Tonina



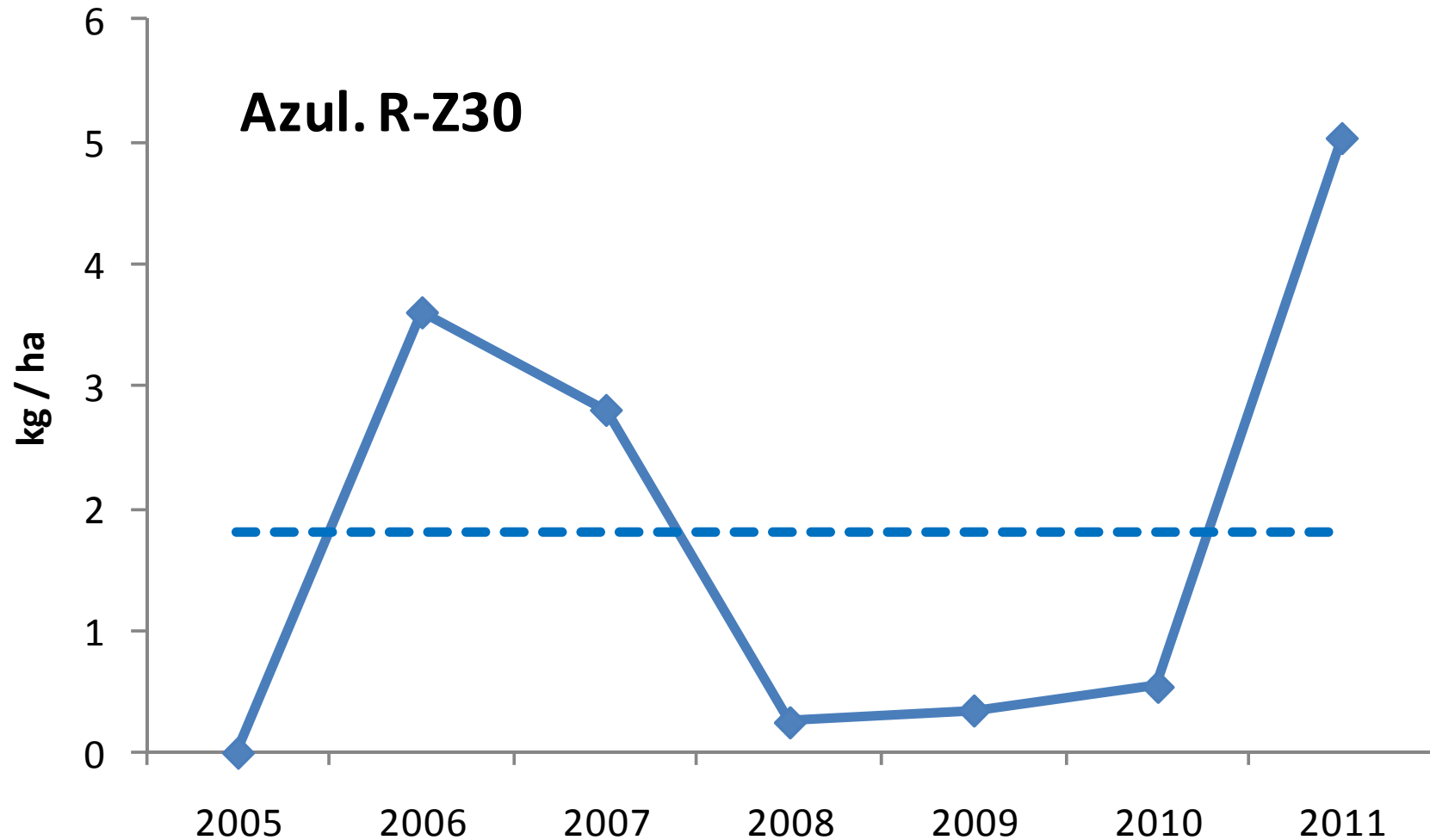
Image © 2006 TerraMetrics

© 2005 Google

Tallas Azul. R-Z30



Abundancia Azul. R-Z30





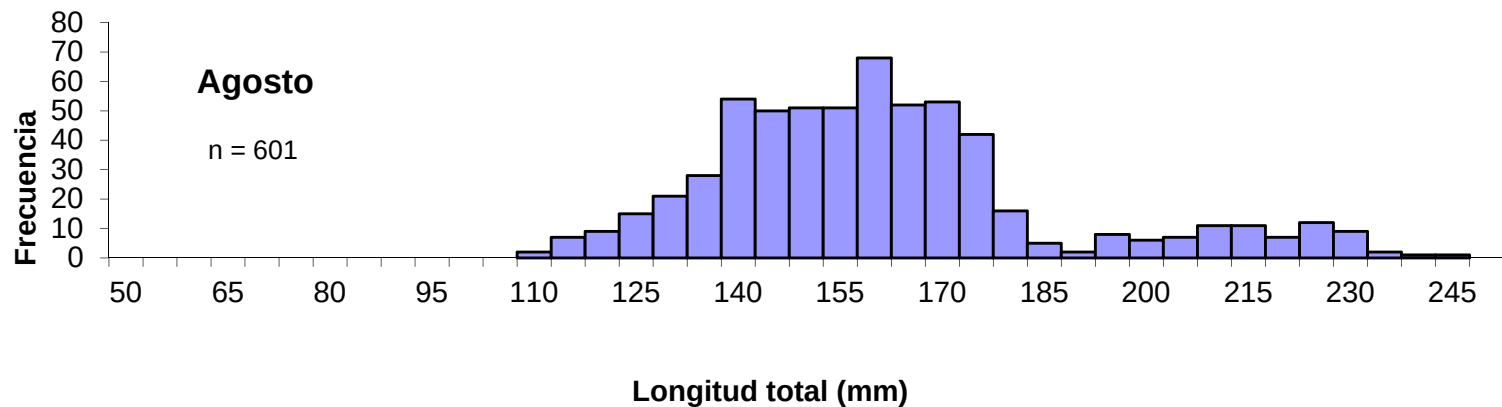
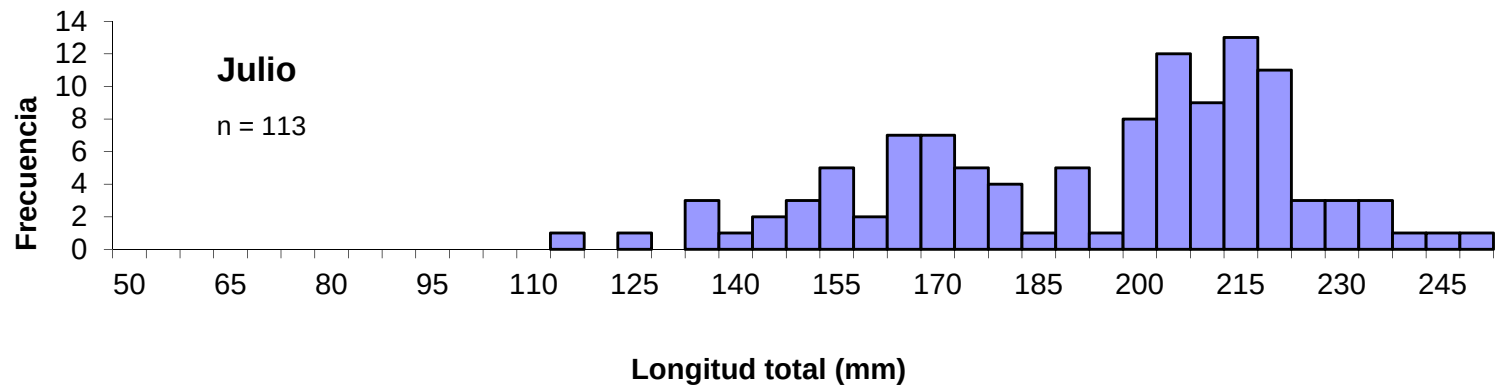
Bahia de Kino

Zona 20

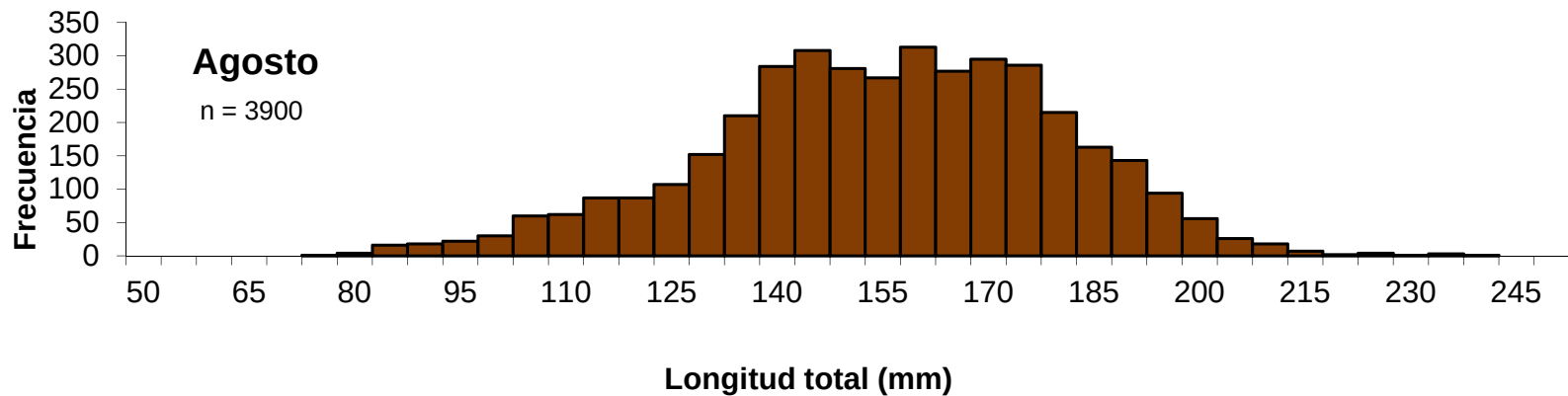
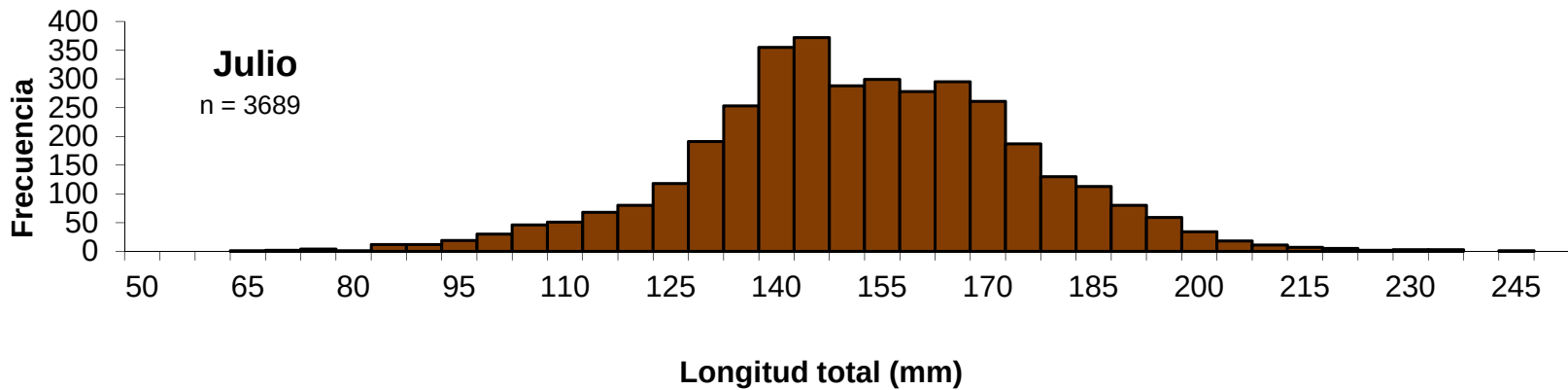
Punta Ahome



Estructura de tallas - Azul. Z20



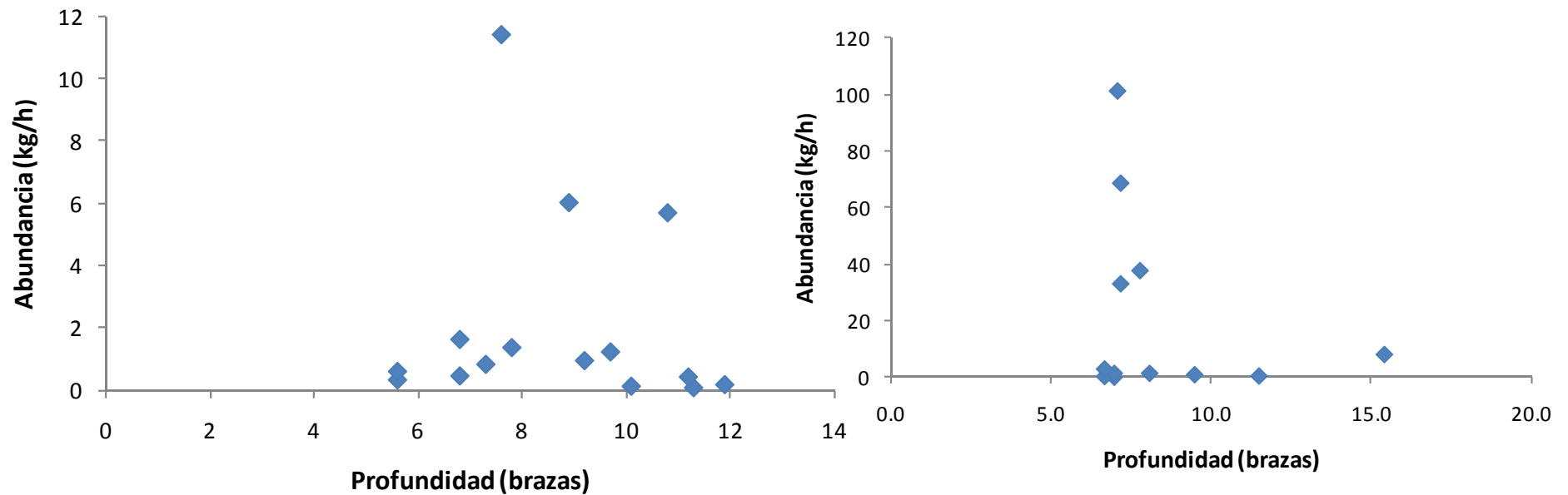
Estructura de tallas - Café. Z20



Distribución batimétrica - Azul. Z20

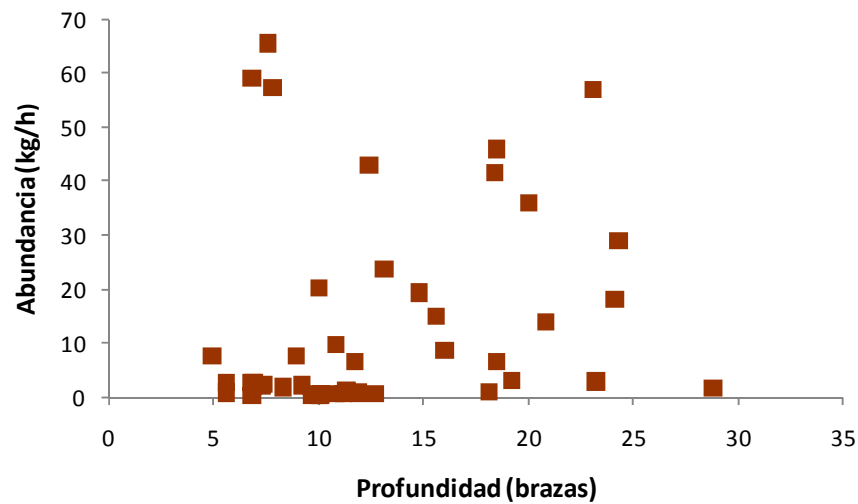
Julio

Agosto

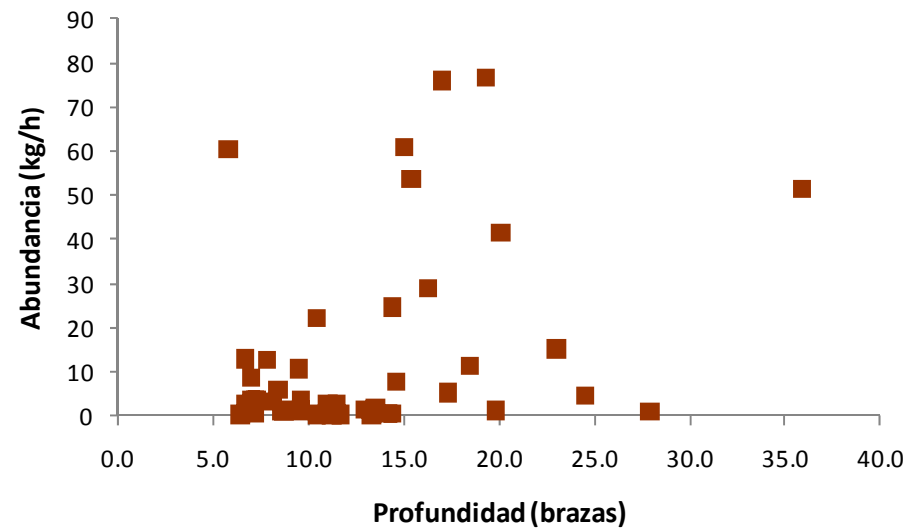


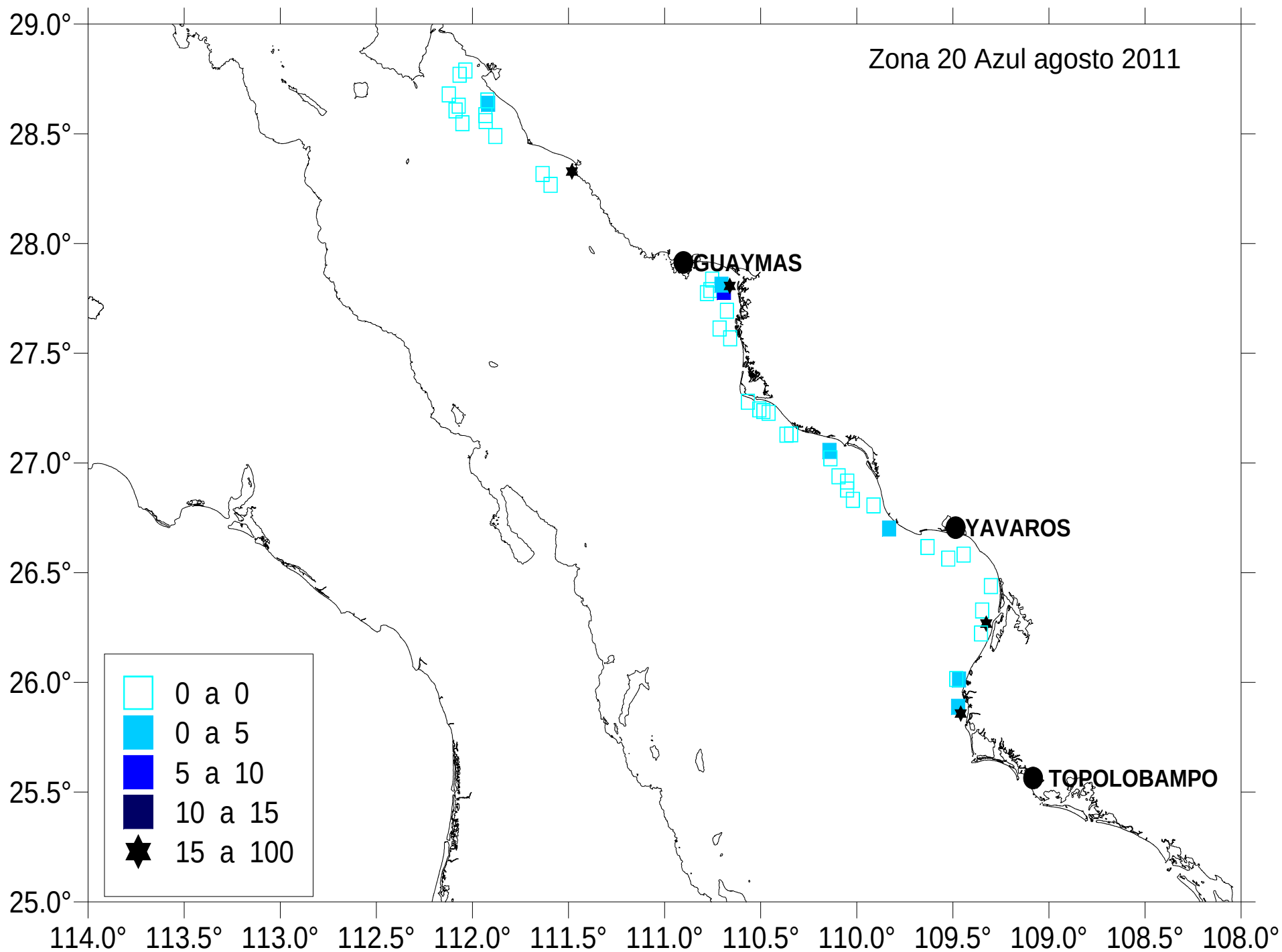
Distribución batimétrica - Café. Z20

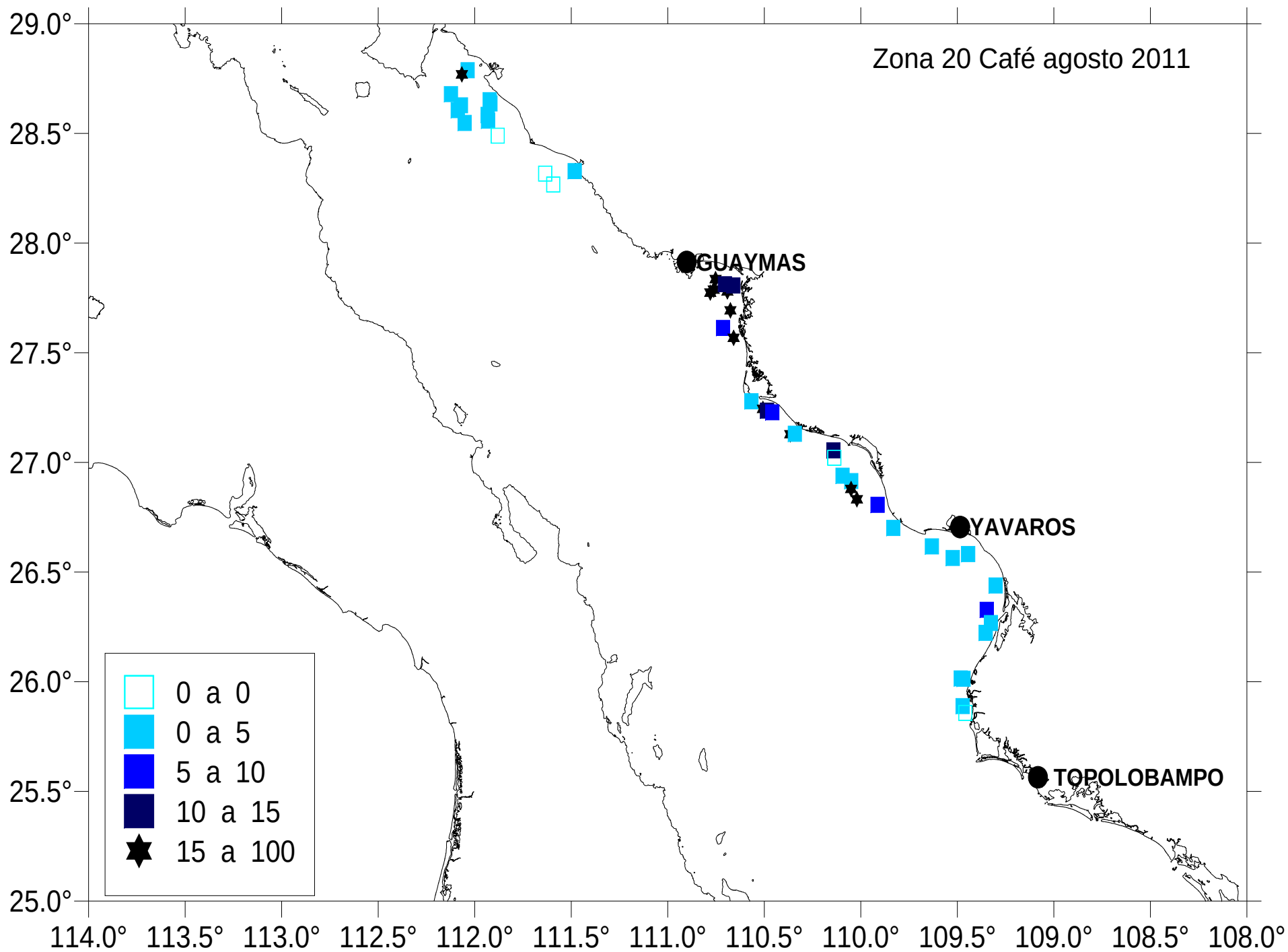
Julio



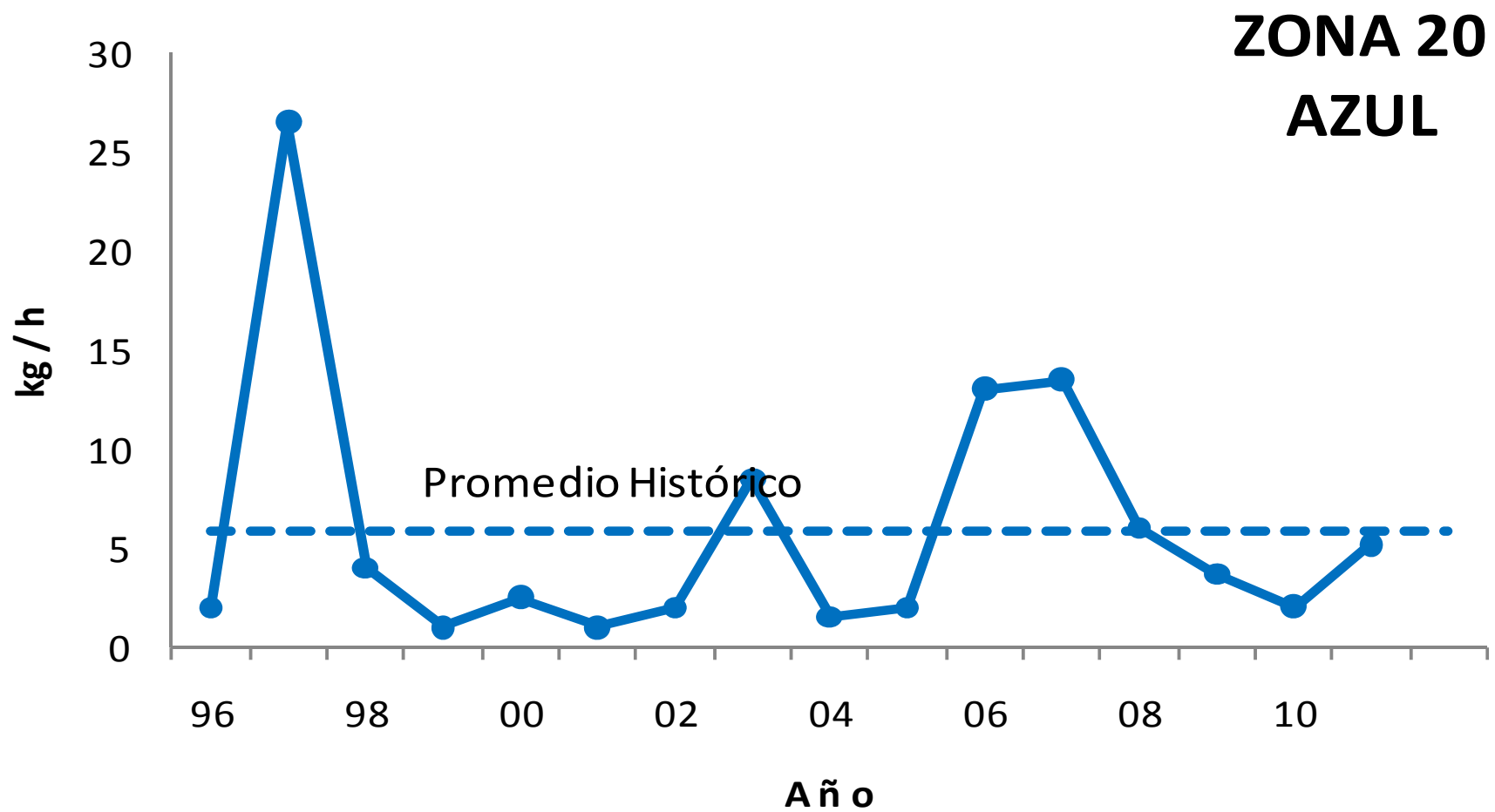
Agosto



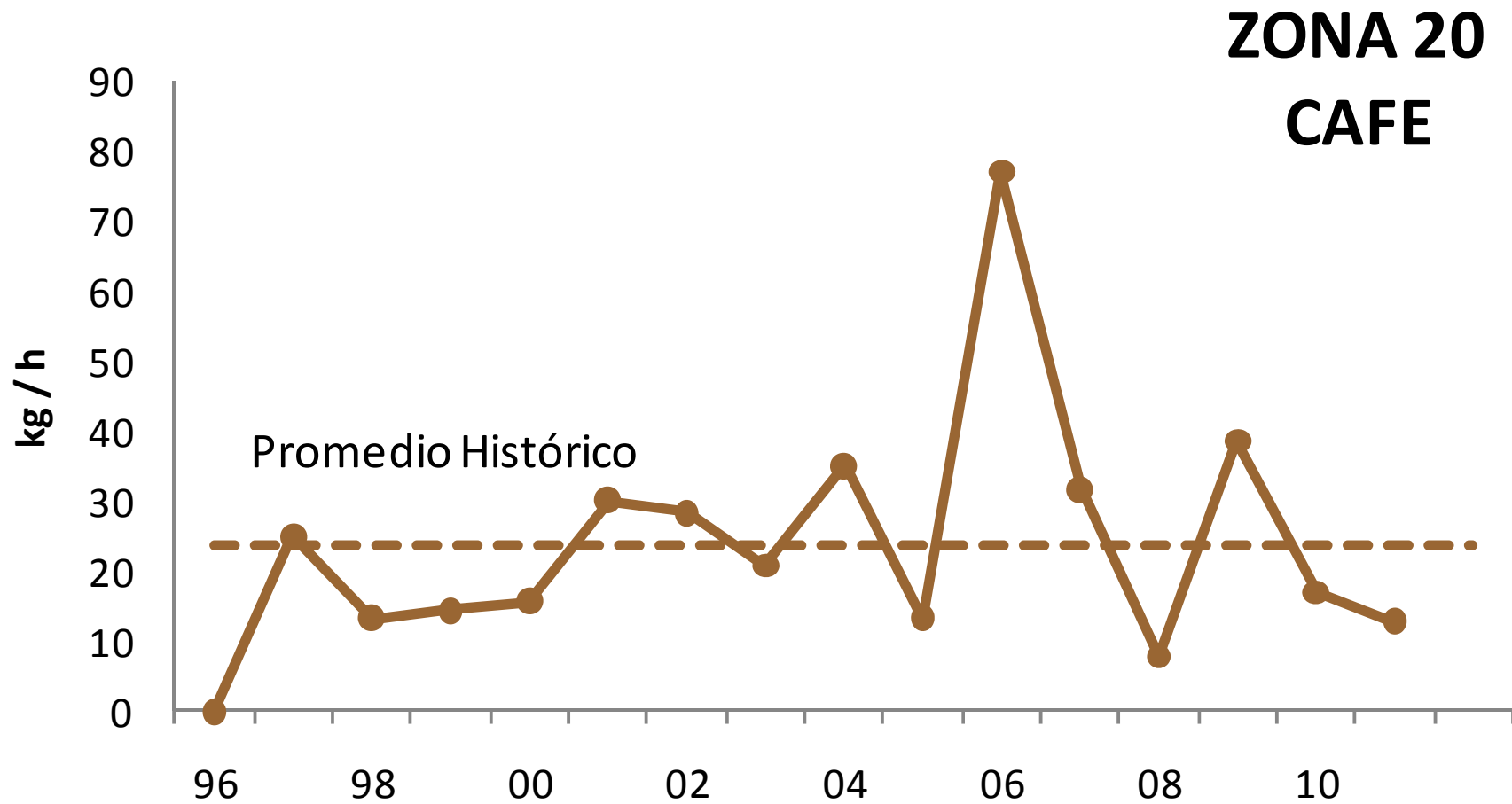




Abundancia histórica - Azul. Z20



Abundancia histórica - Café. Z20



AGUAS PROTEGIDAS

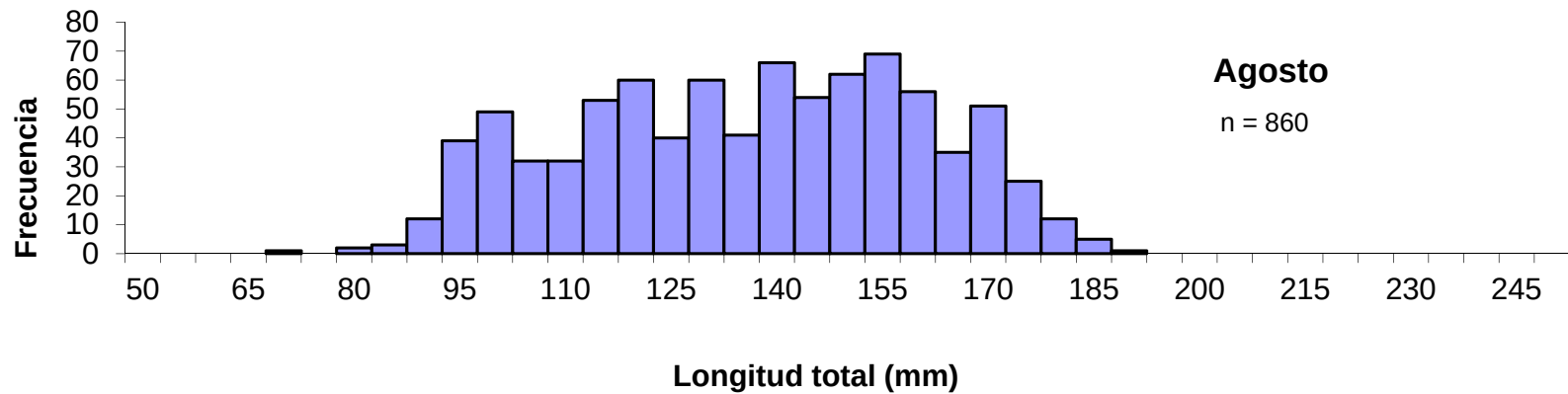
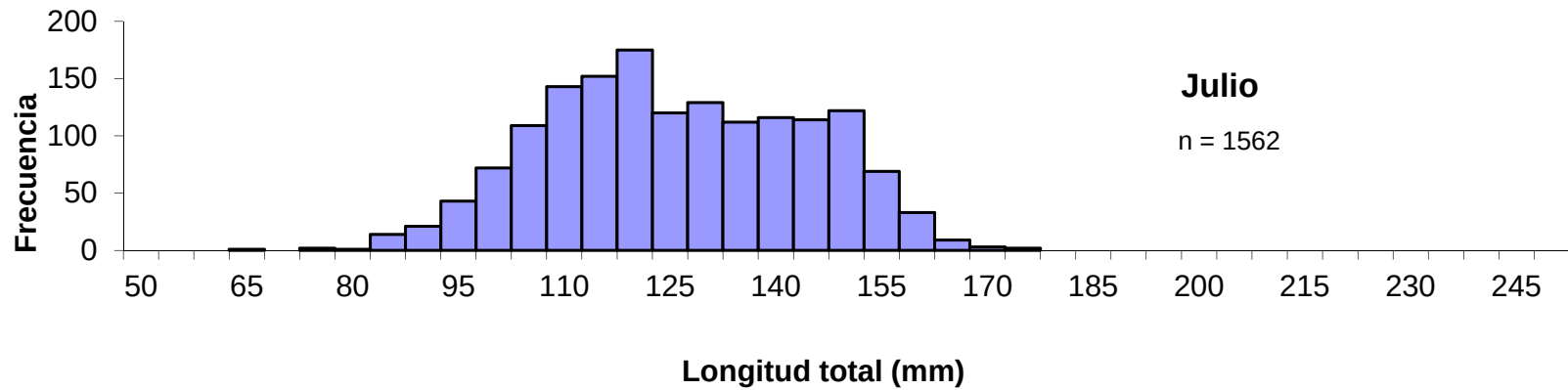


BAHÍAS DE SONORA



40 Estaciones

Tallas Azul. Z20



Abundancia Azul. Z20





Zona 10

San Felipe

Puerto Peñasco

Bahia San Luis Gonzaga

Bahia de Kino



San Felipe

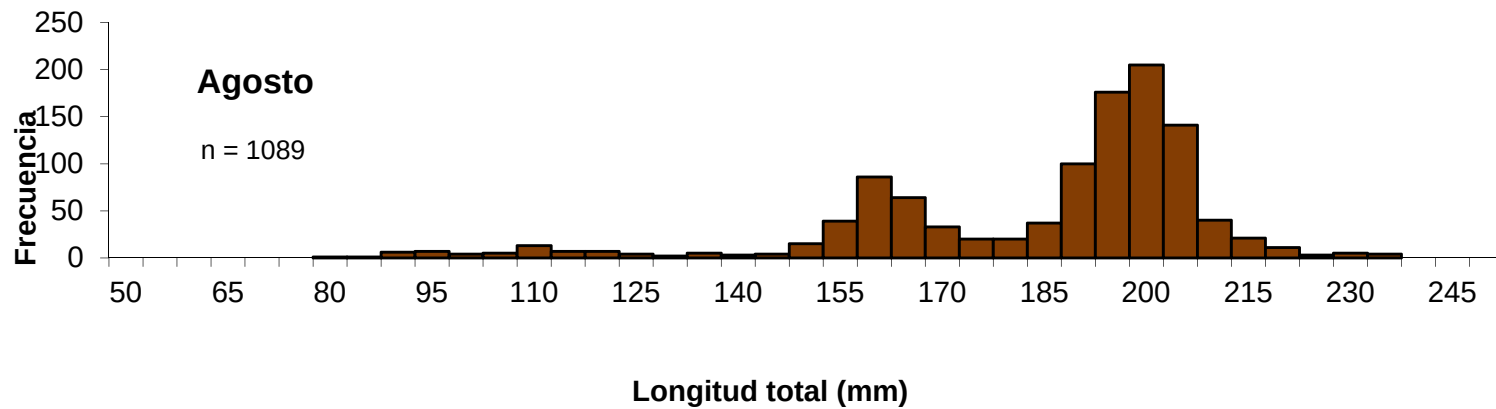
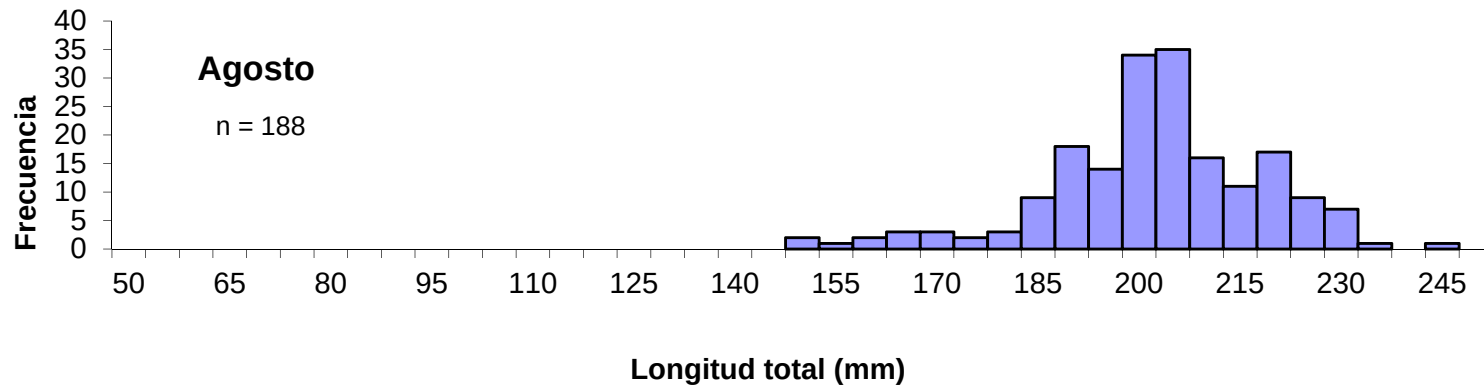
Puerto Peñasco

ALTA MAR

Bahia San Luis Gonzaga

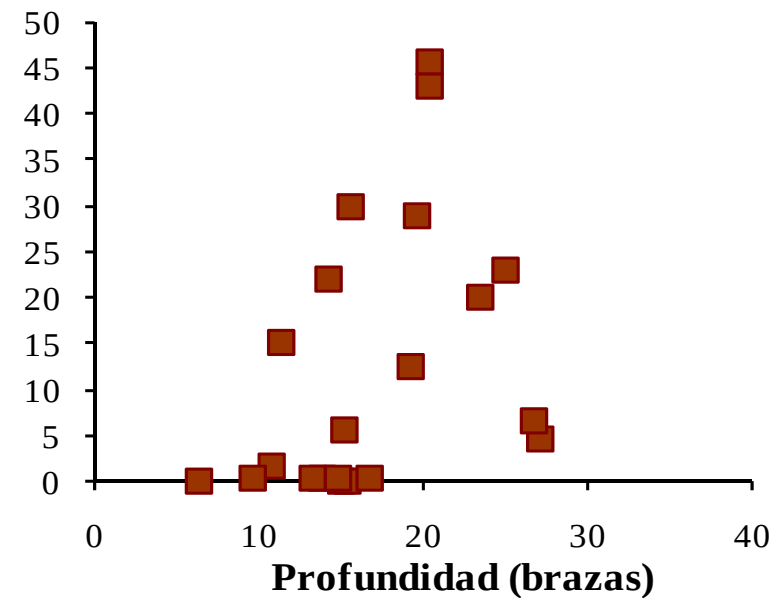
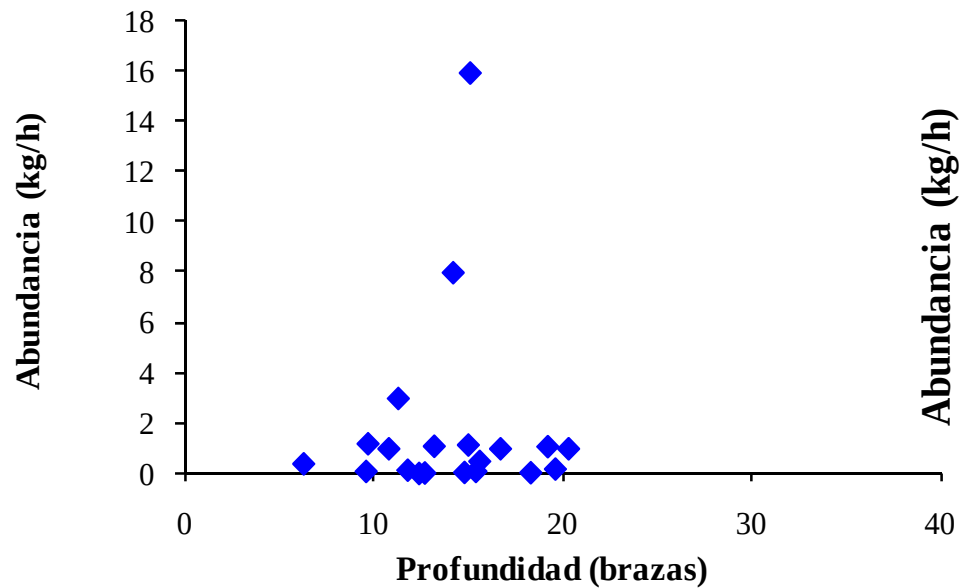
Bahia de Kino

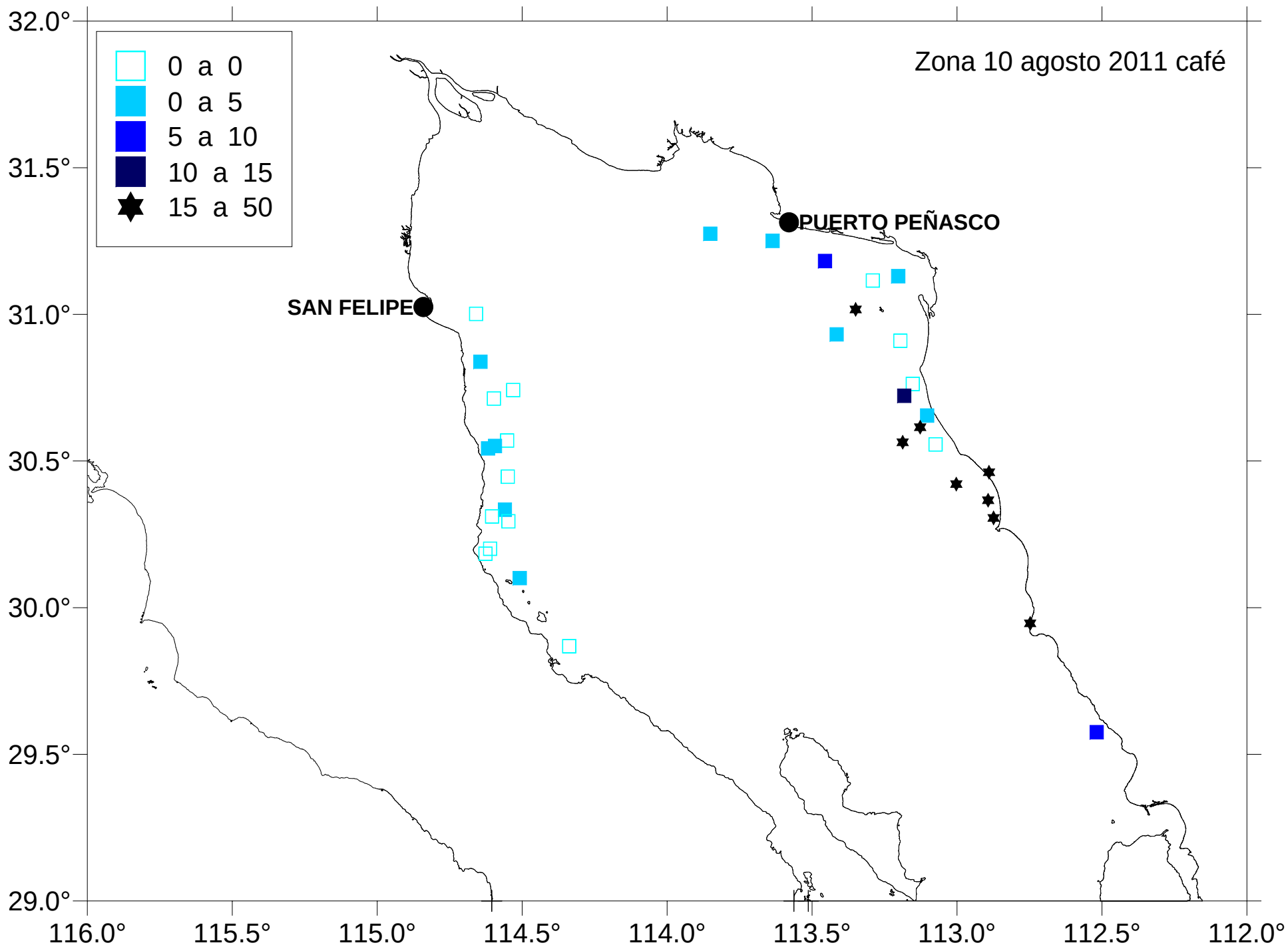
Estructura de tallas. Z10



Distribución batimétrica Z10

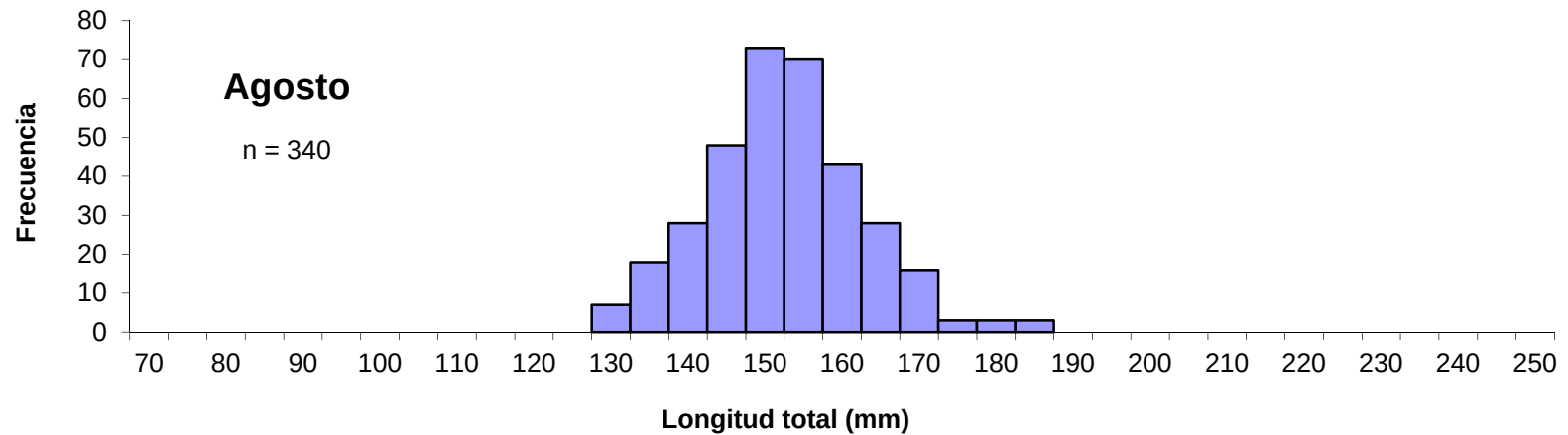
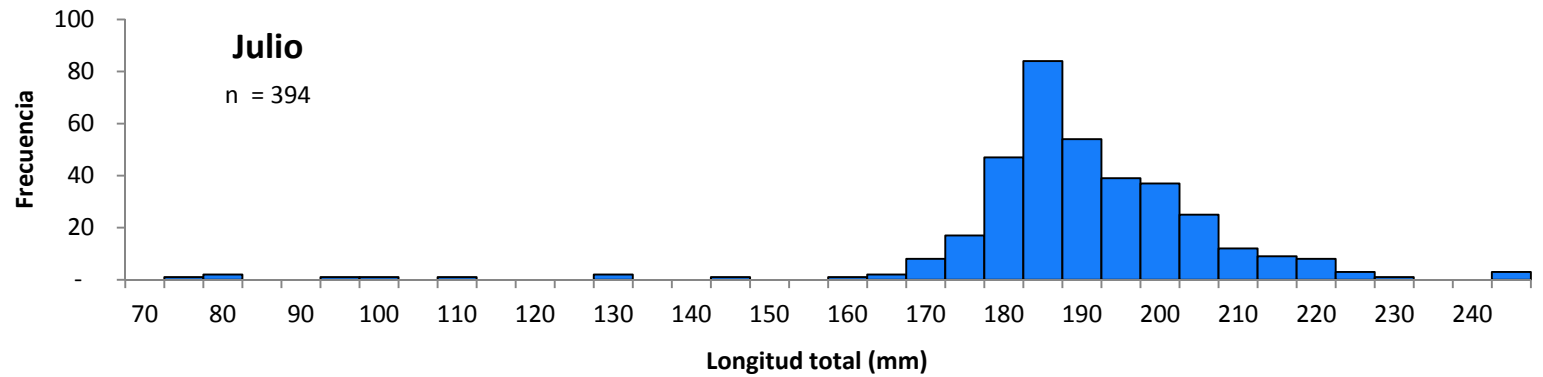
Agosto







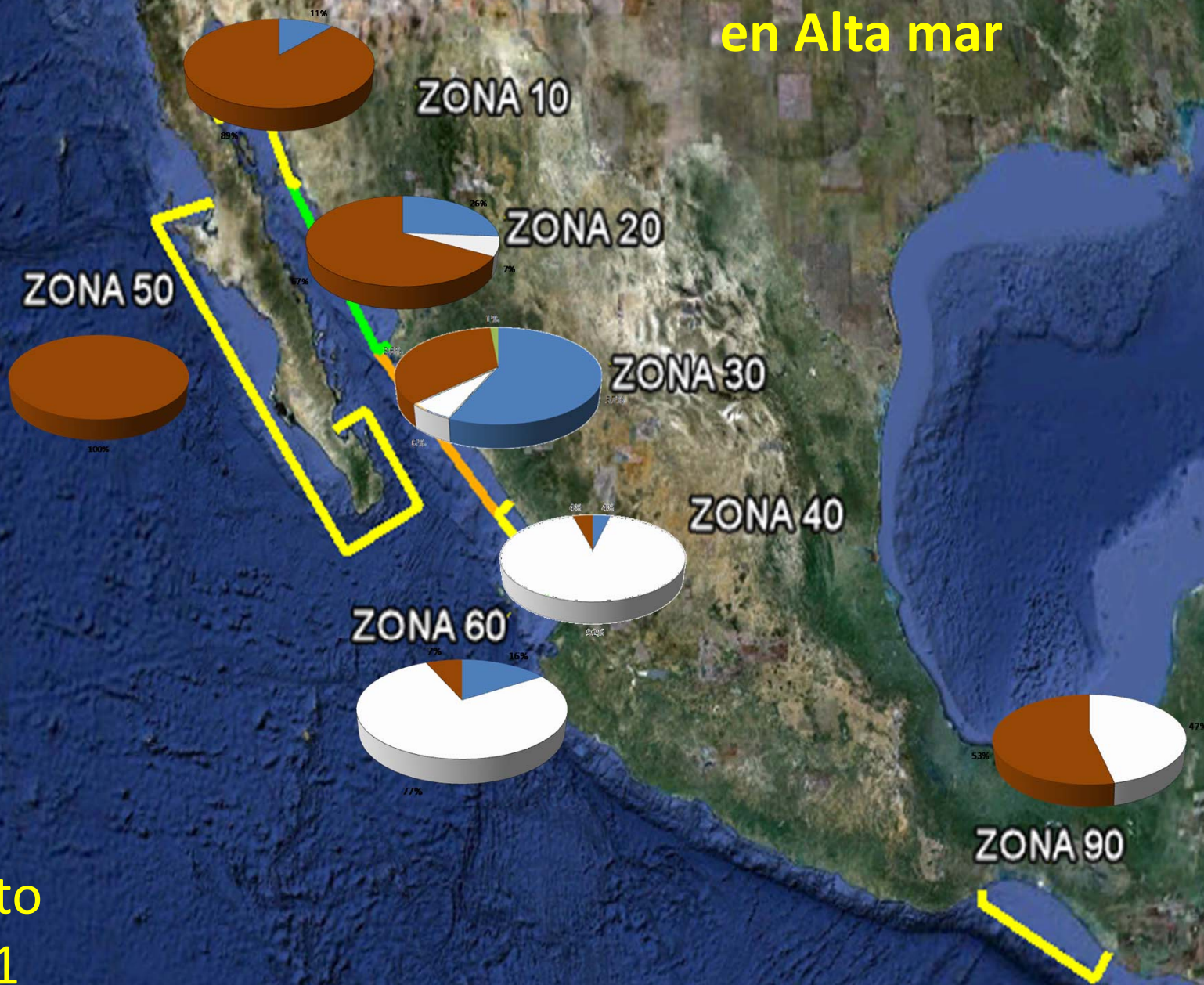
Tallas Azul. Z10





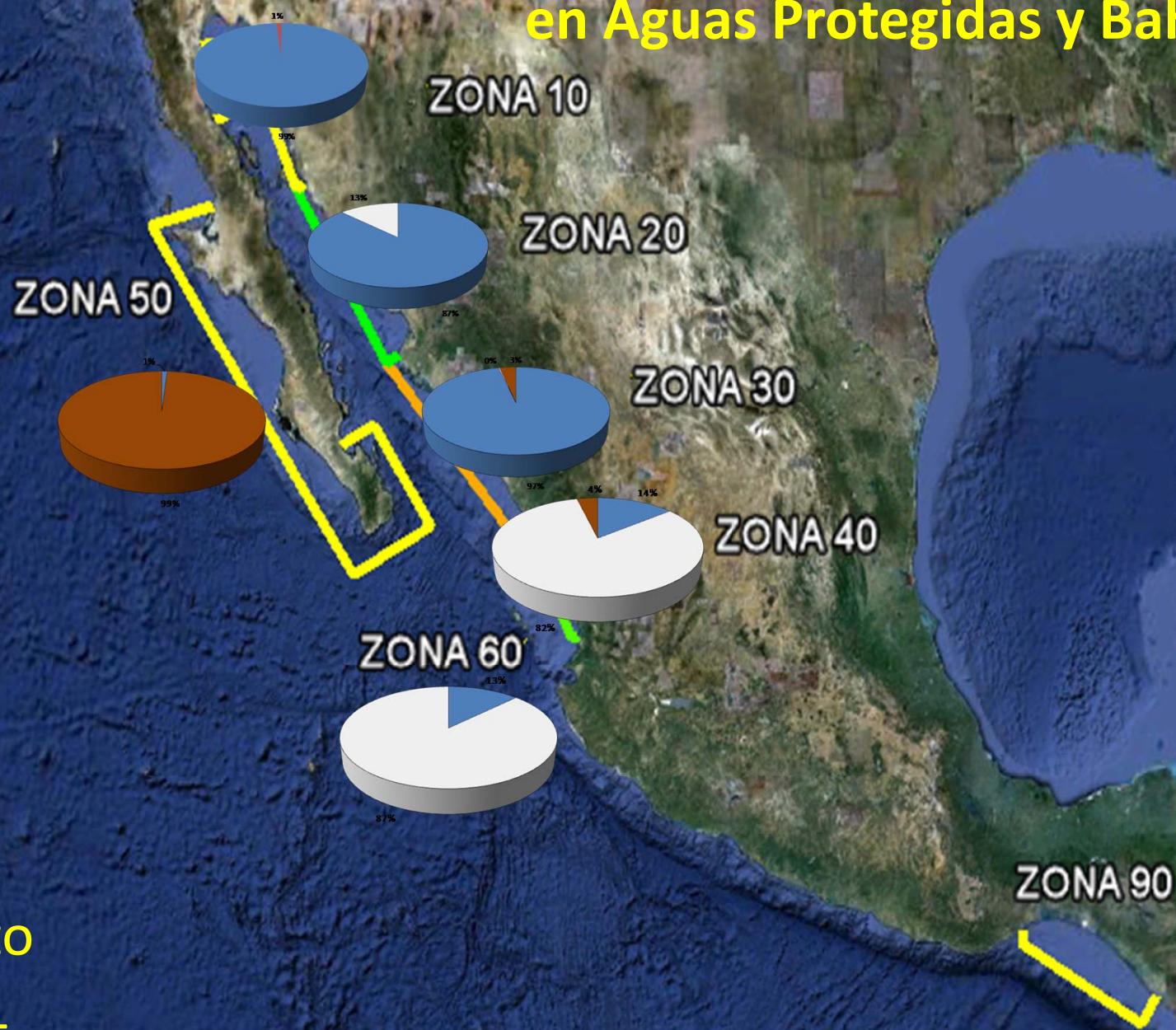
Proporción de especies por zonas

Proporción de Especies por Zonas en Alta mar



Agosto
2011

Proporción de Especies por Zonas en Aguas Protegidas y Bahías



Agosto
2011



Tendencia y abundancia de 2011 con respecto al promedio histórico



Tendencia de la abundancia de 2011 con respecto al promedio histórico.



ALTA MAR

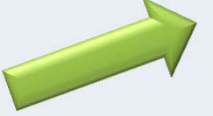
Región	Especie		
	Café	Azul	Blanco
Oaxaca			
B.C.S.			
Nayarit			
Sinaloa			
Sonora			
A.G.C.			



Tendencia de la abundancia de 2011
con respecto al promedio histórico.



AGUAS PROTEGIDAS

Región	Especie		
	Café	Azul	Blanco
Oaxaca			
B.C.S.			
Nayarit			
Sinaloa			
Sonora			
A.G.C.			



Abundancia relativa en peso (kg/h) en el Pacífico mexicano en agosto de 2011 ALTA MAR

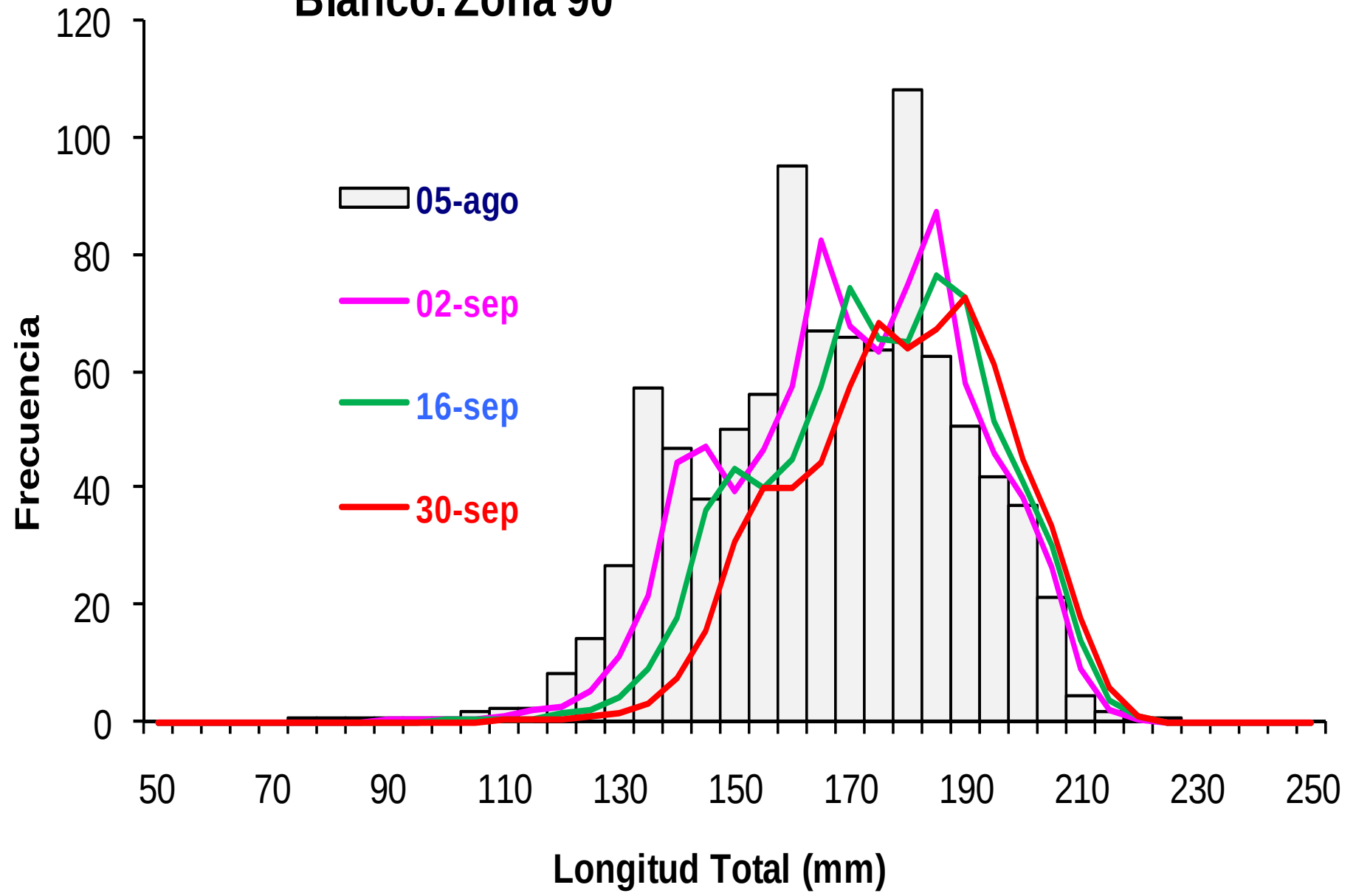


ALTA MAR	Sonora	B.C.S.	Centro- Norte Sinaloa	Sur de Sinaloa	Nayarit	Tehuán- tepec
Azul	5		17	2	2	
Blanco			2	19	8	0.4
Café	13	28	11	2	0.7	0.5

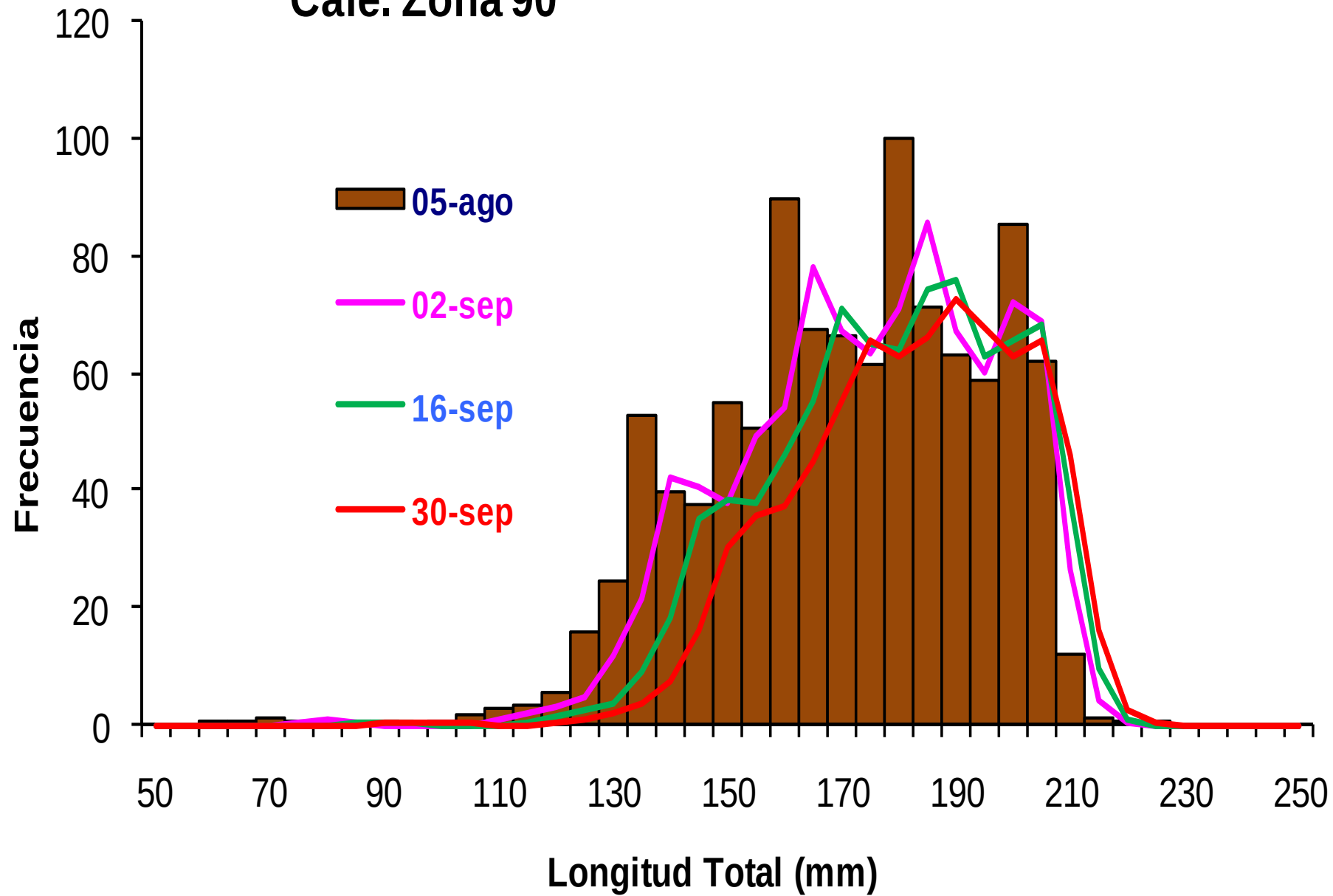


Proyecciones de Crecimiento Alta mar

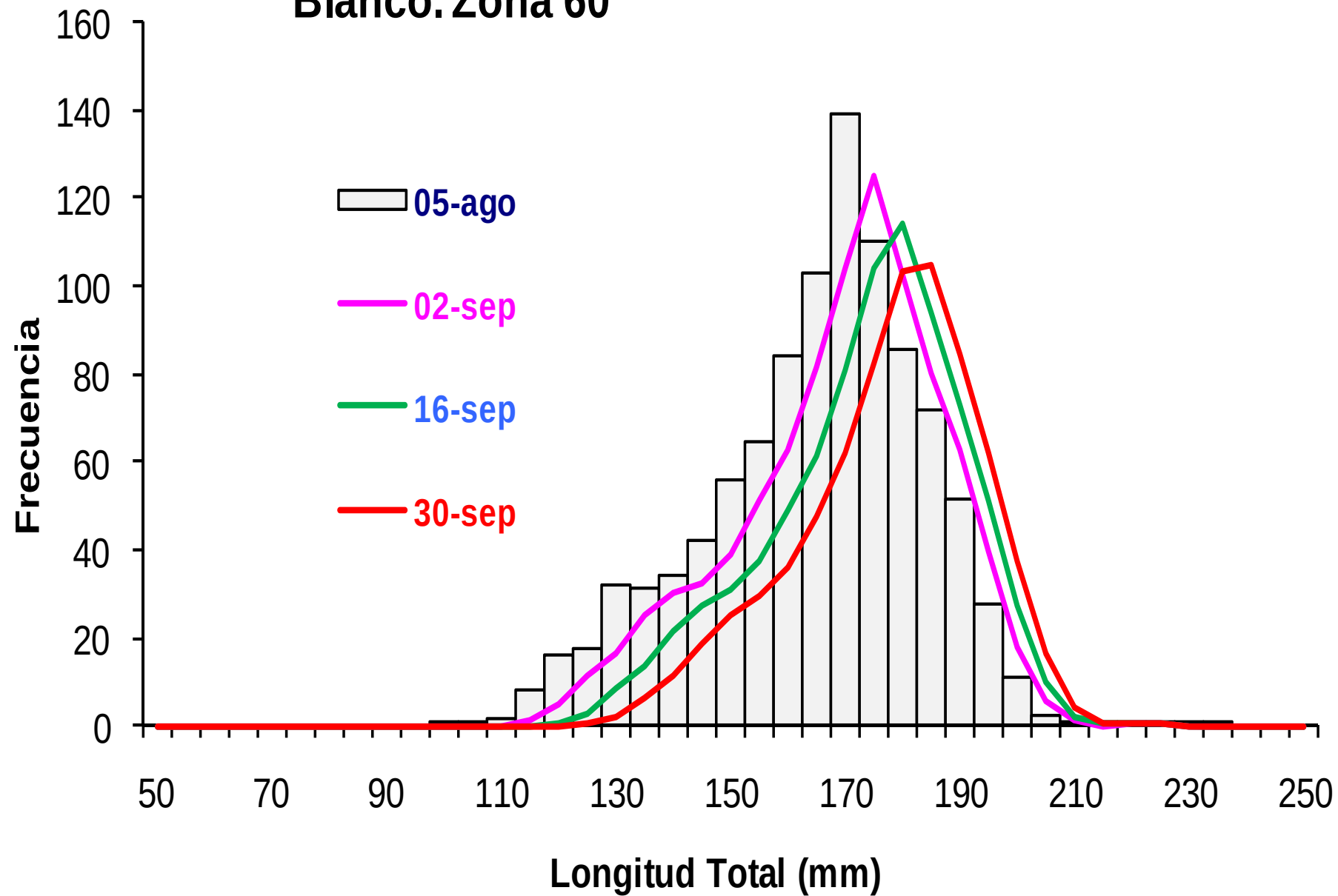
Blanco. Zona 90



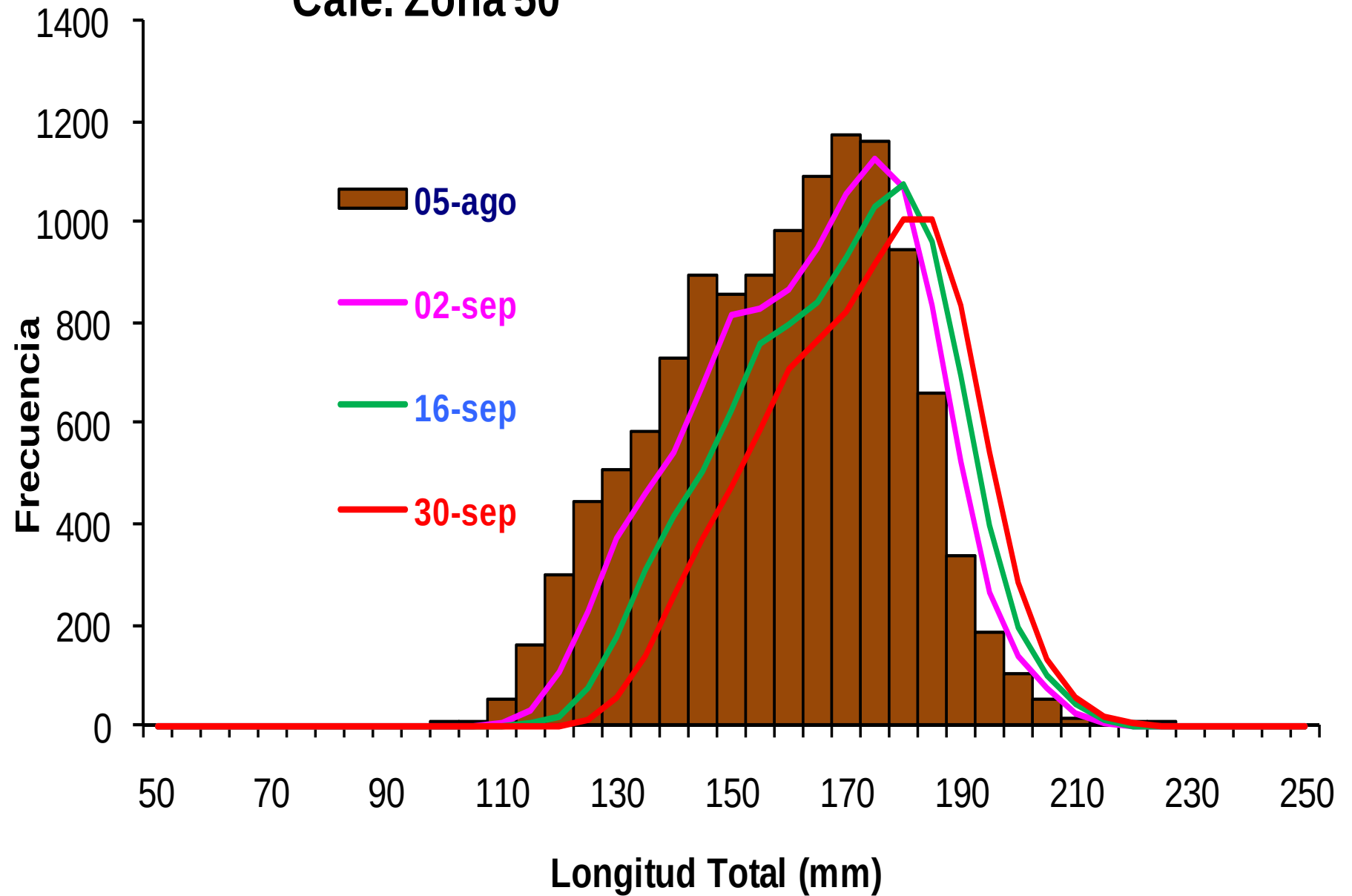
Café. Zona 90



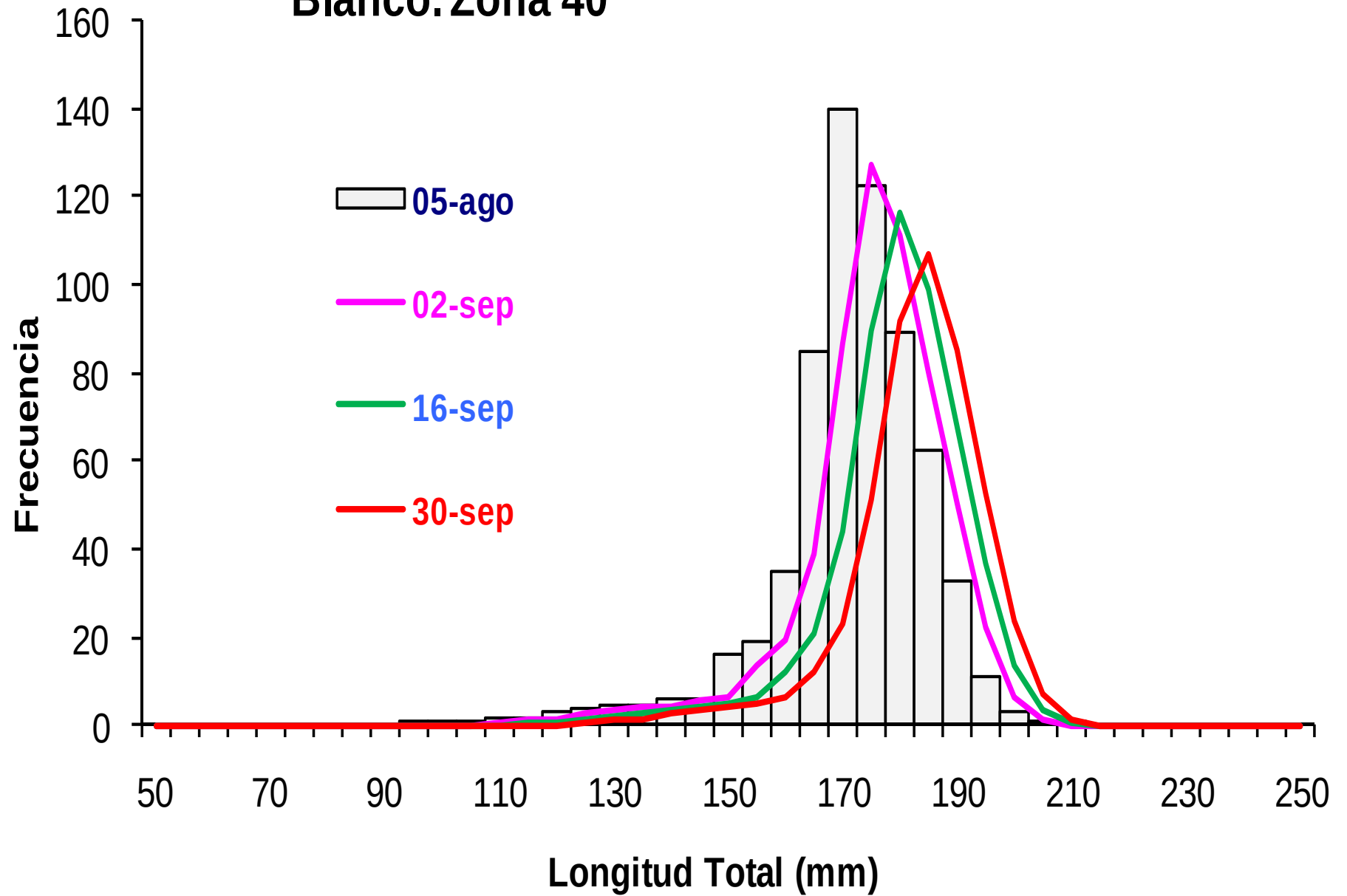
Blanco. Zona 60



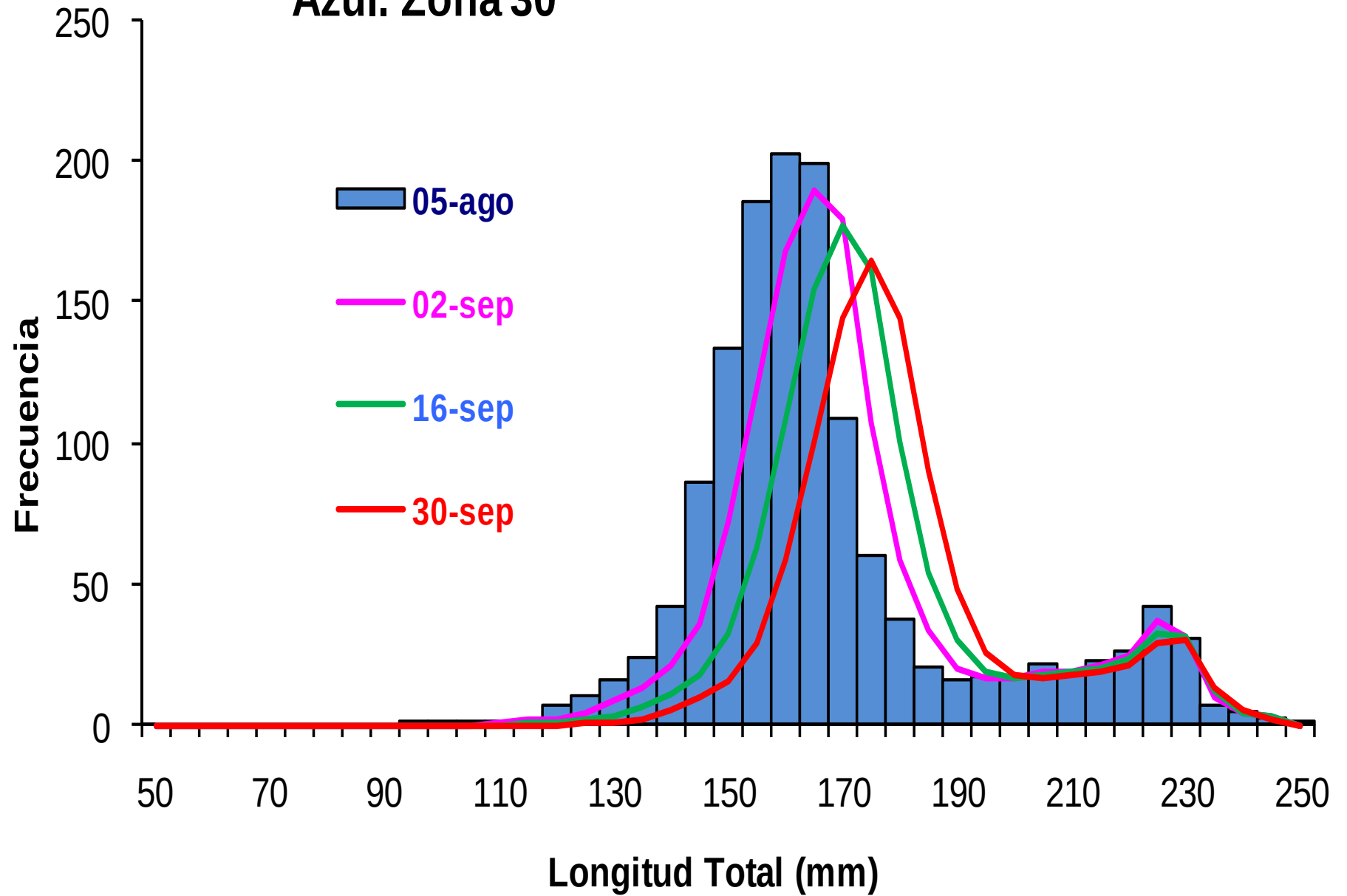
Café. Zona 50



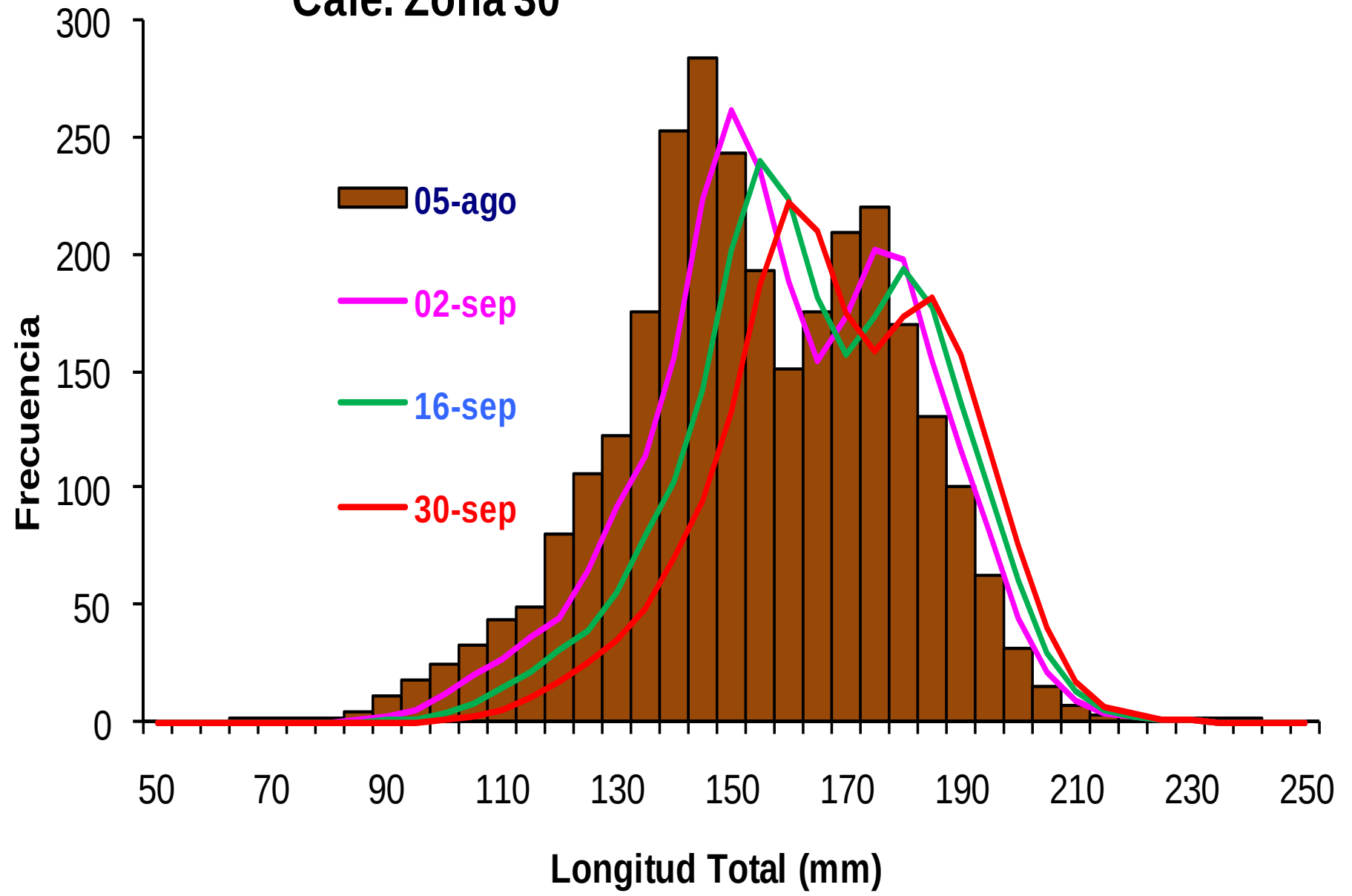
Blanco. Zona 40



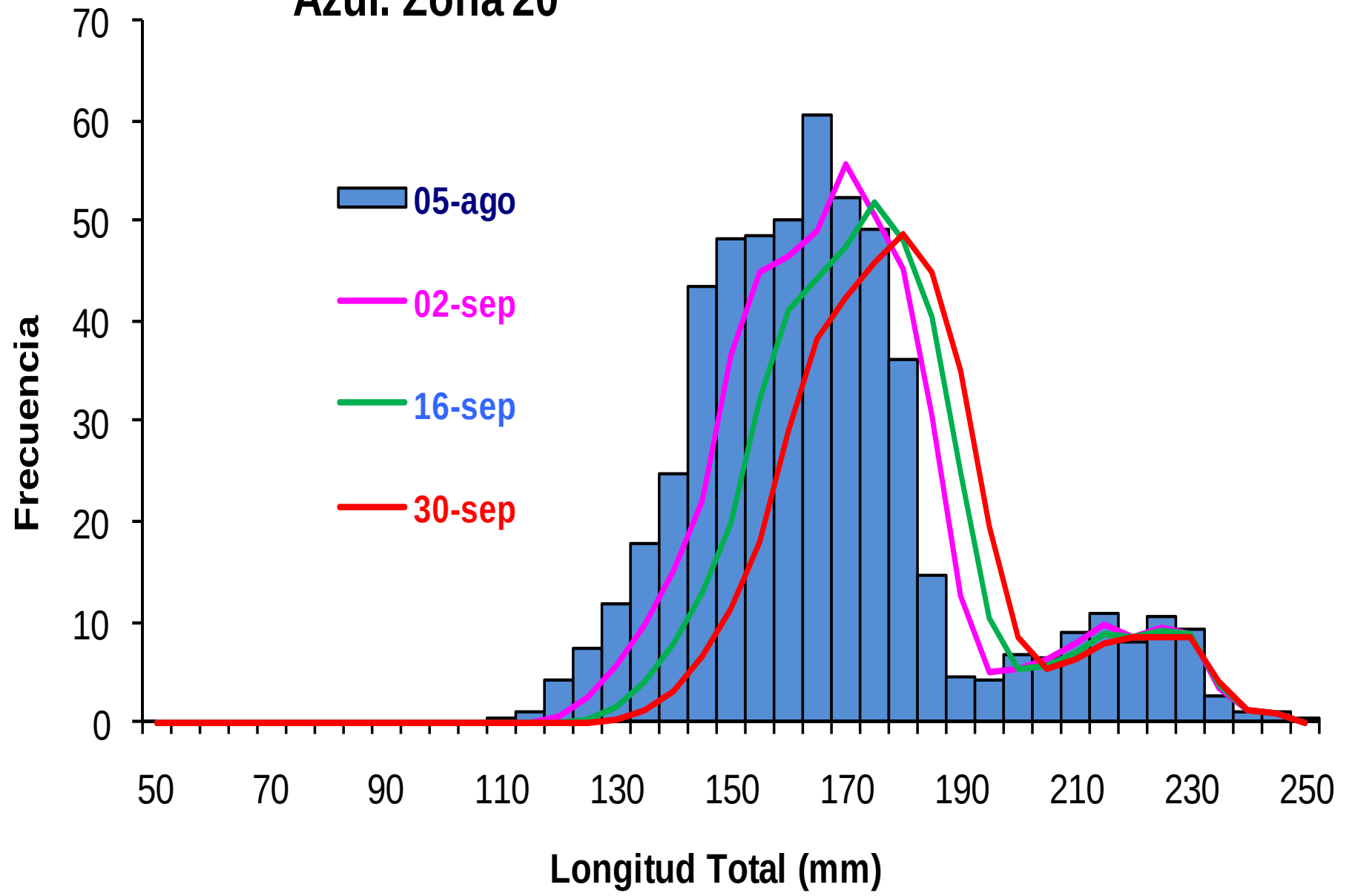
Azul. Zona 30



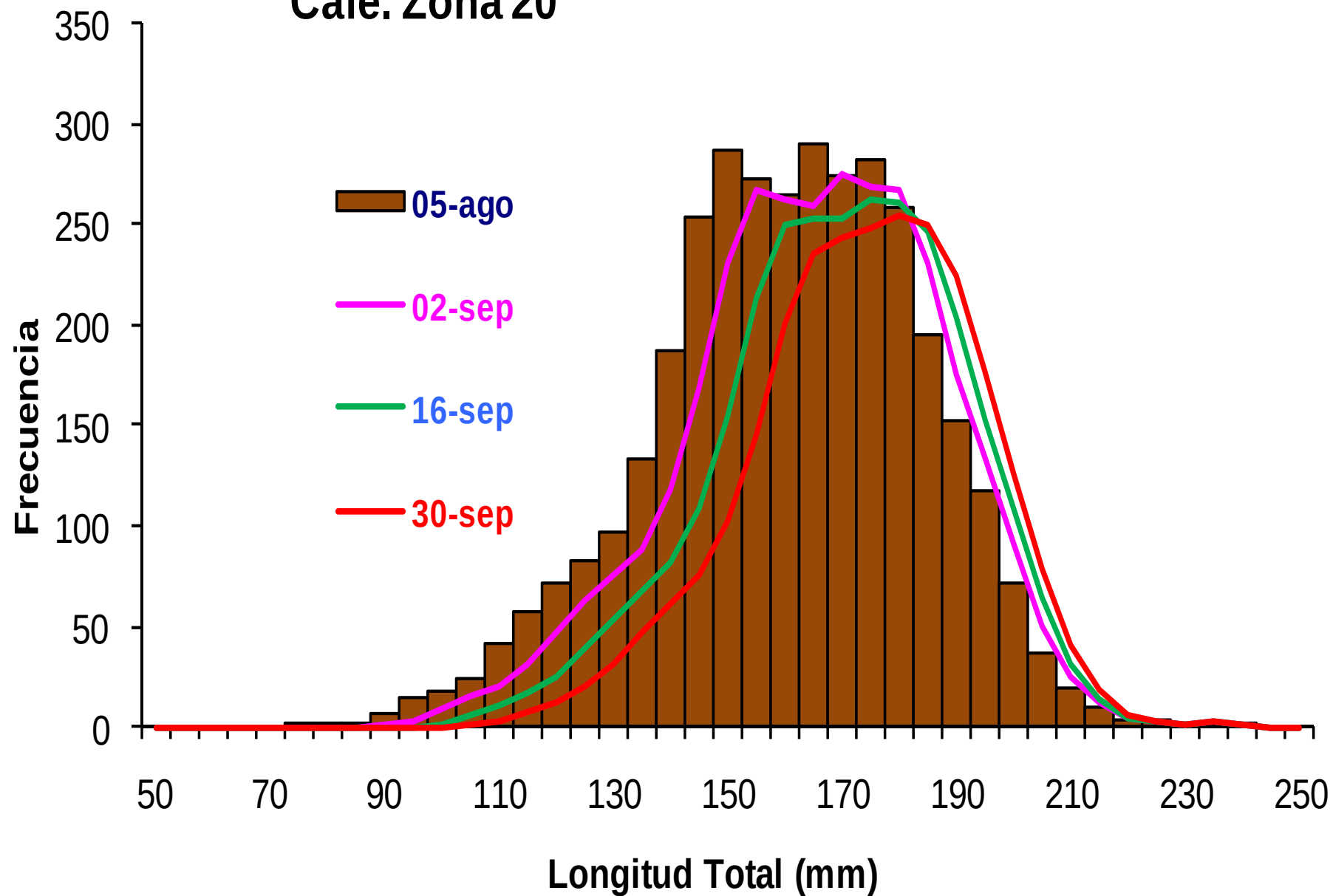
Café. Zona 30



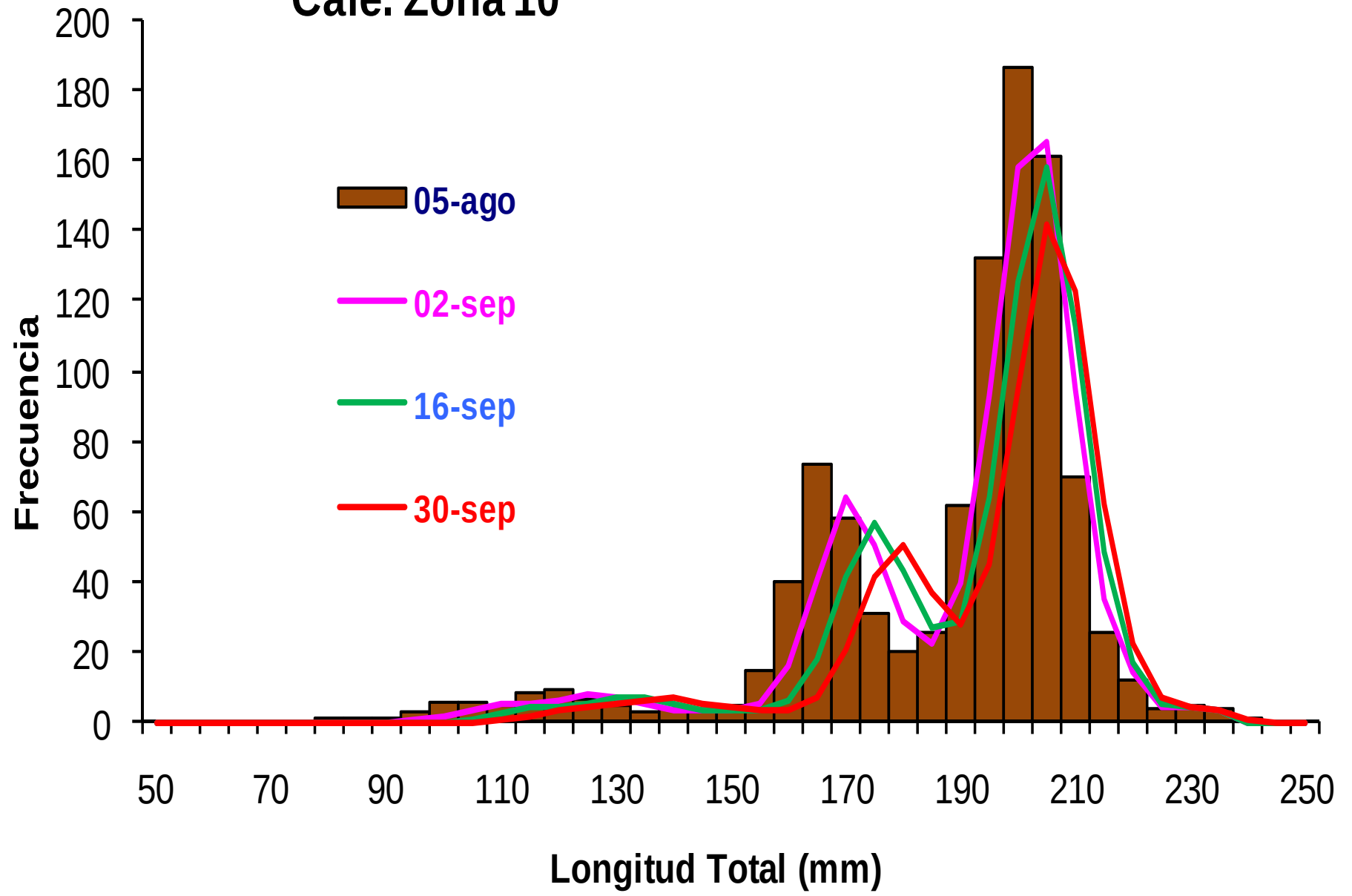
Azul. Zona 20



Café. Zona 20



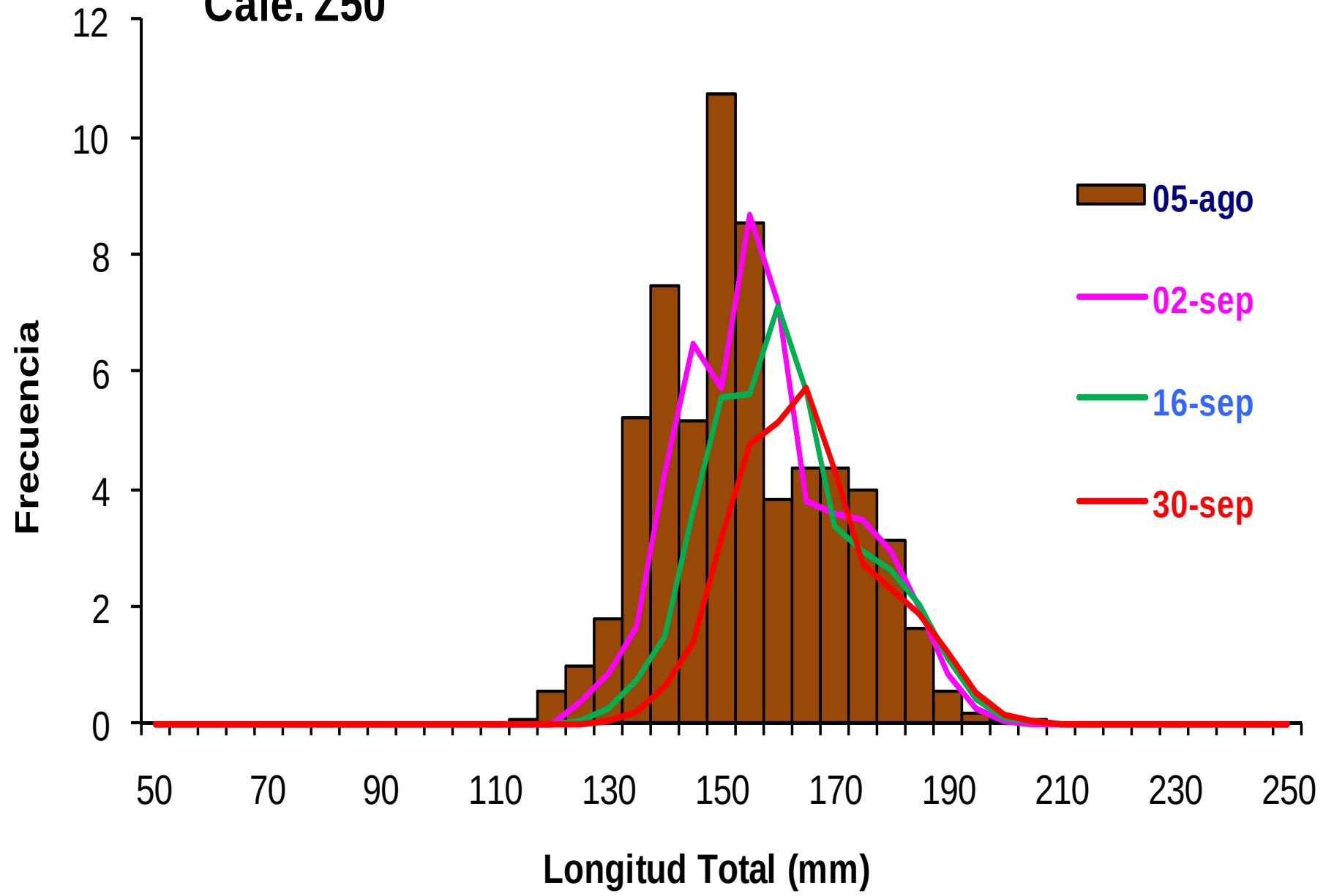
Café. Zona 10



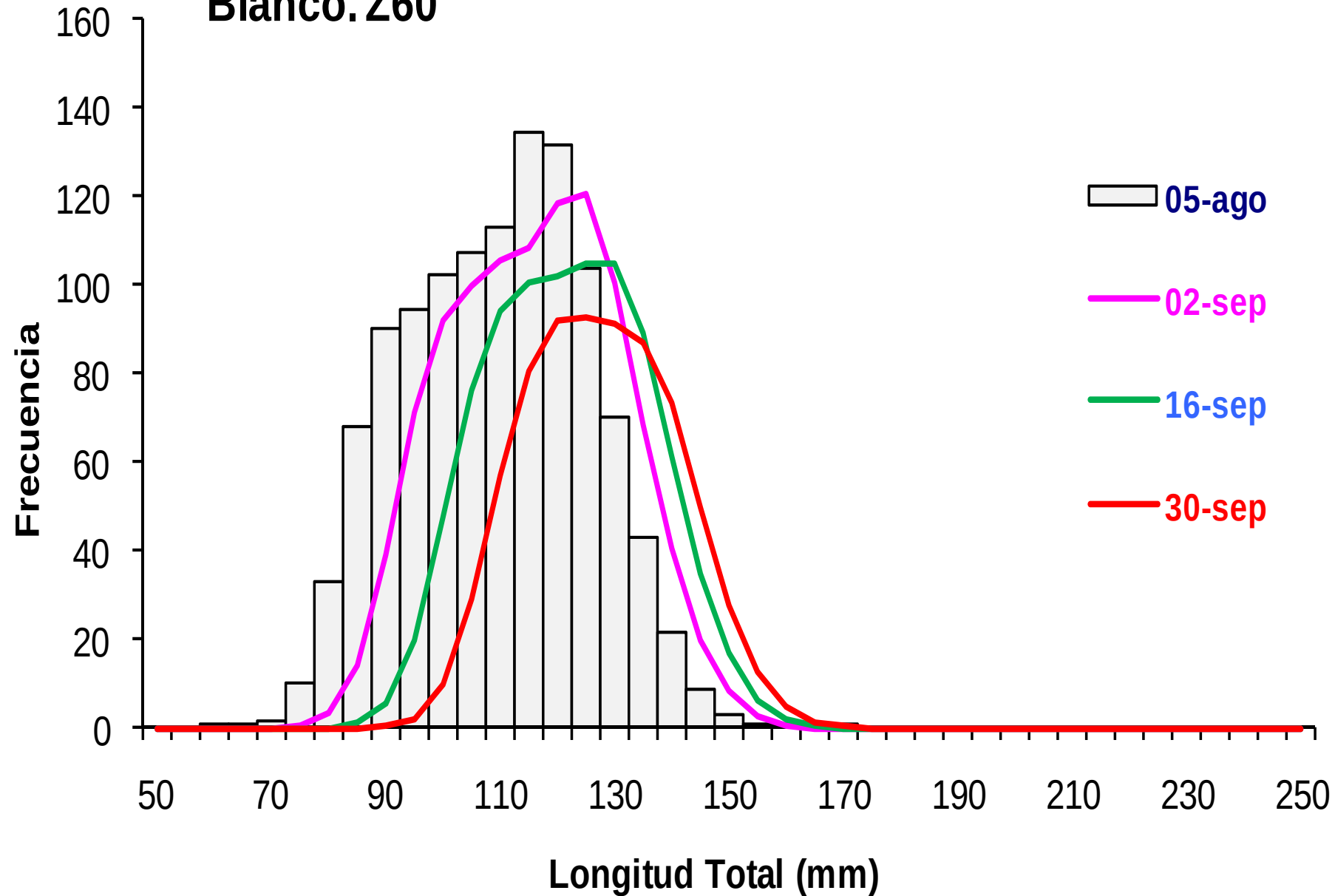


Proyecciones de Crecimiento Aguas Protegidas

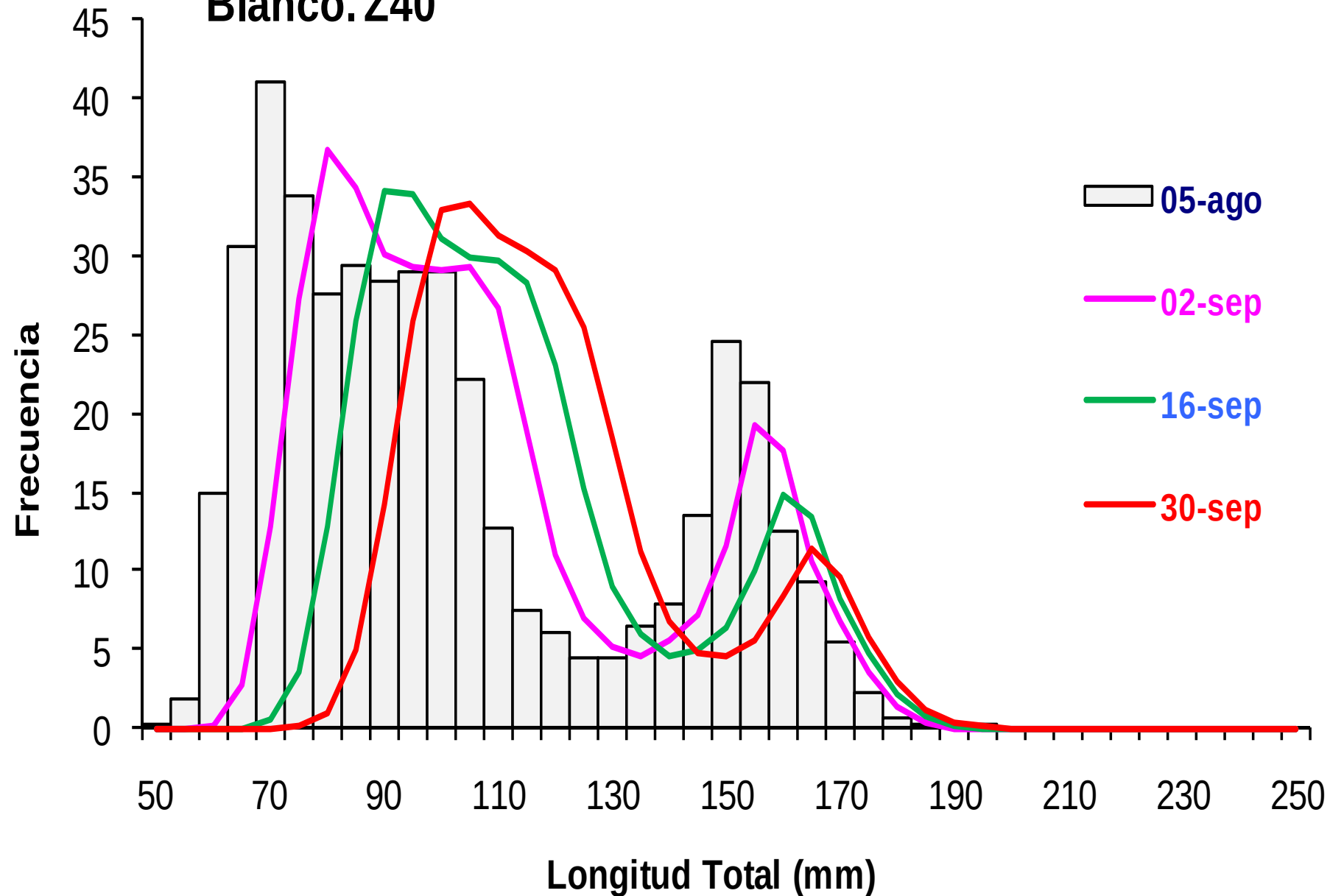
Café. Z50



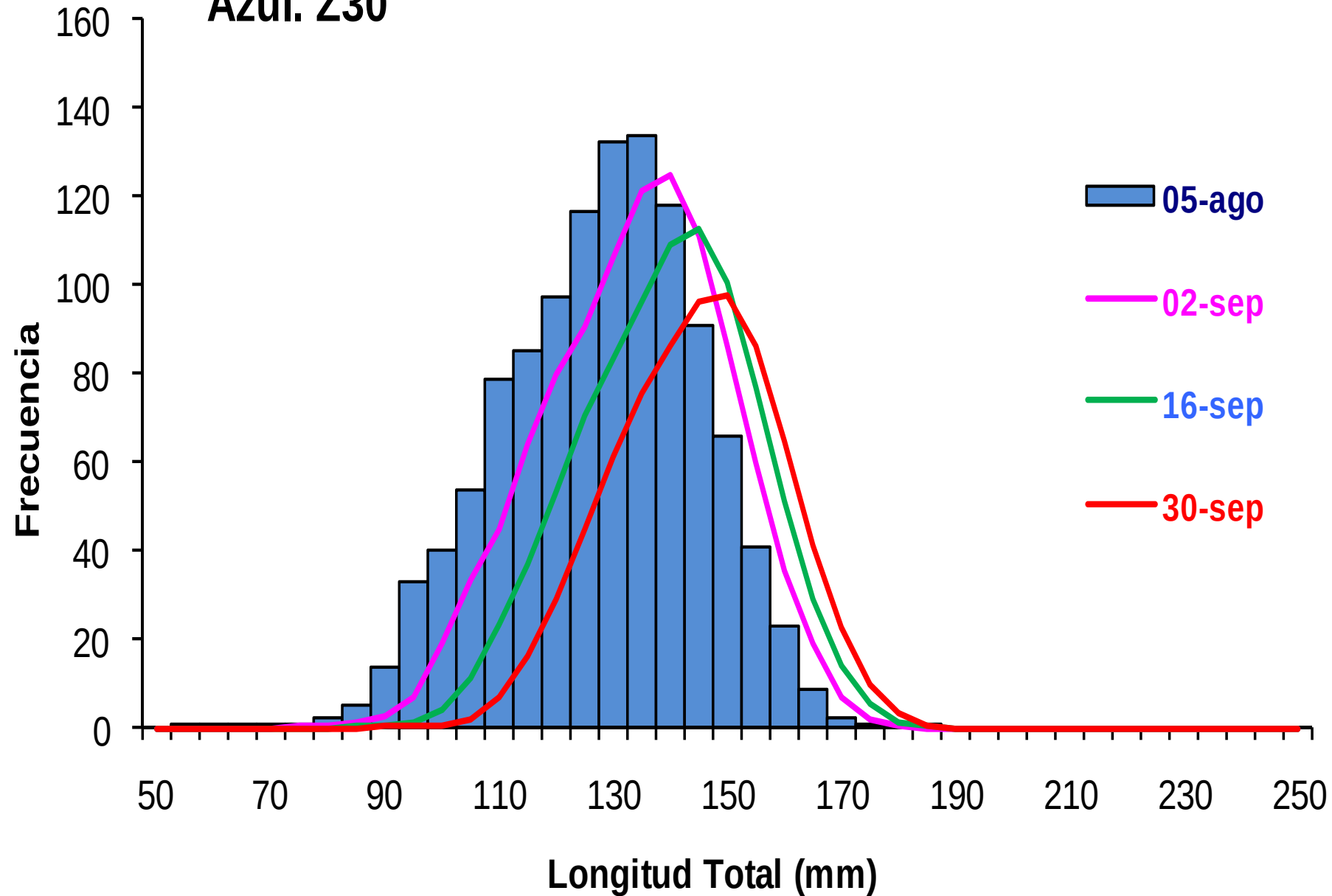
Blanco. Z60



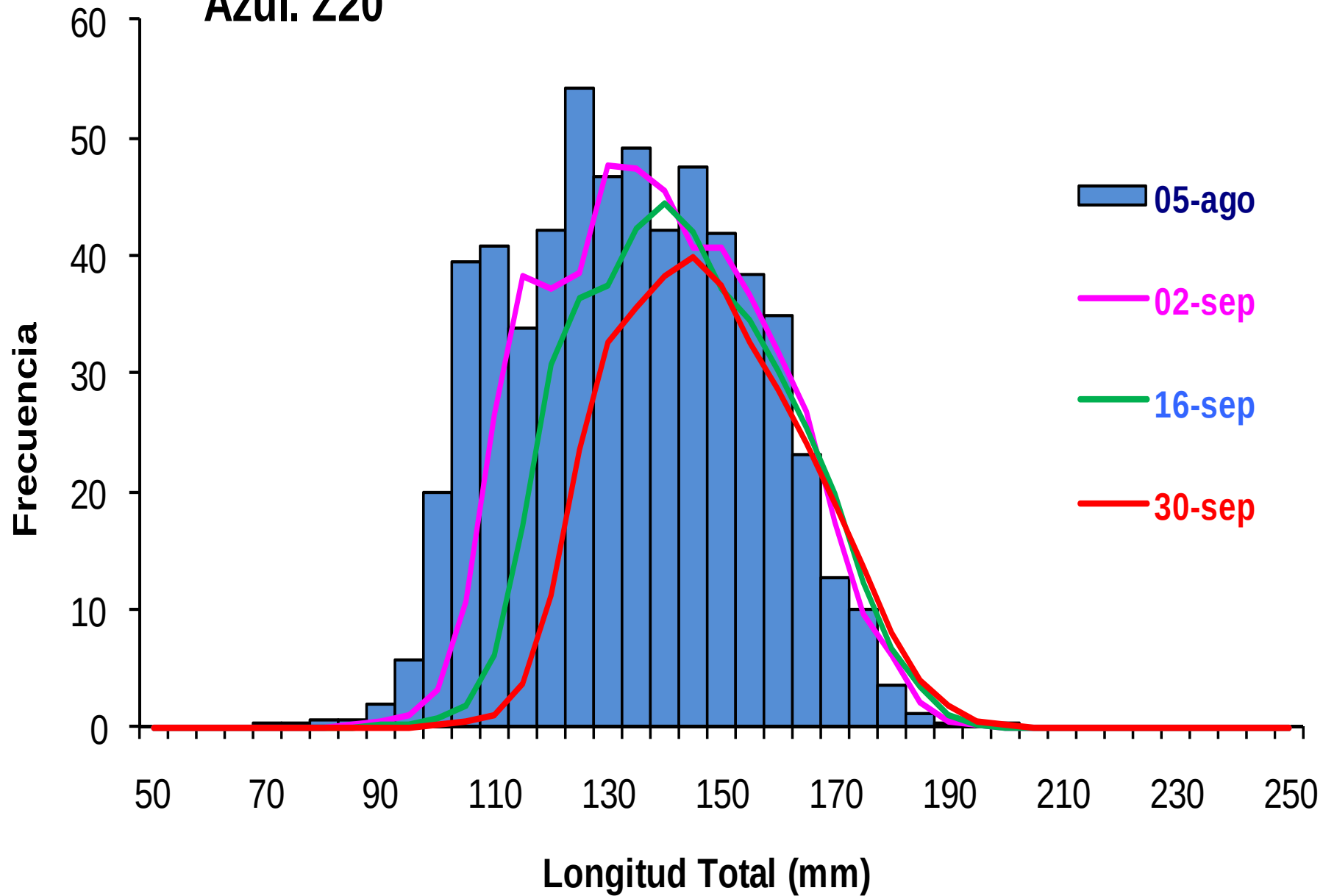
Blanco. Z40



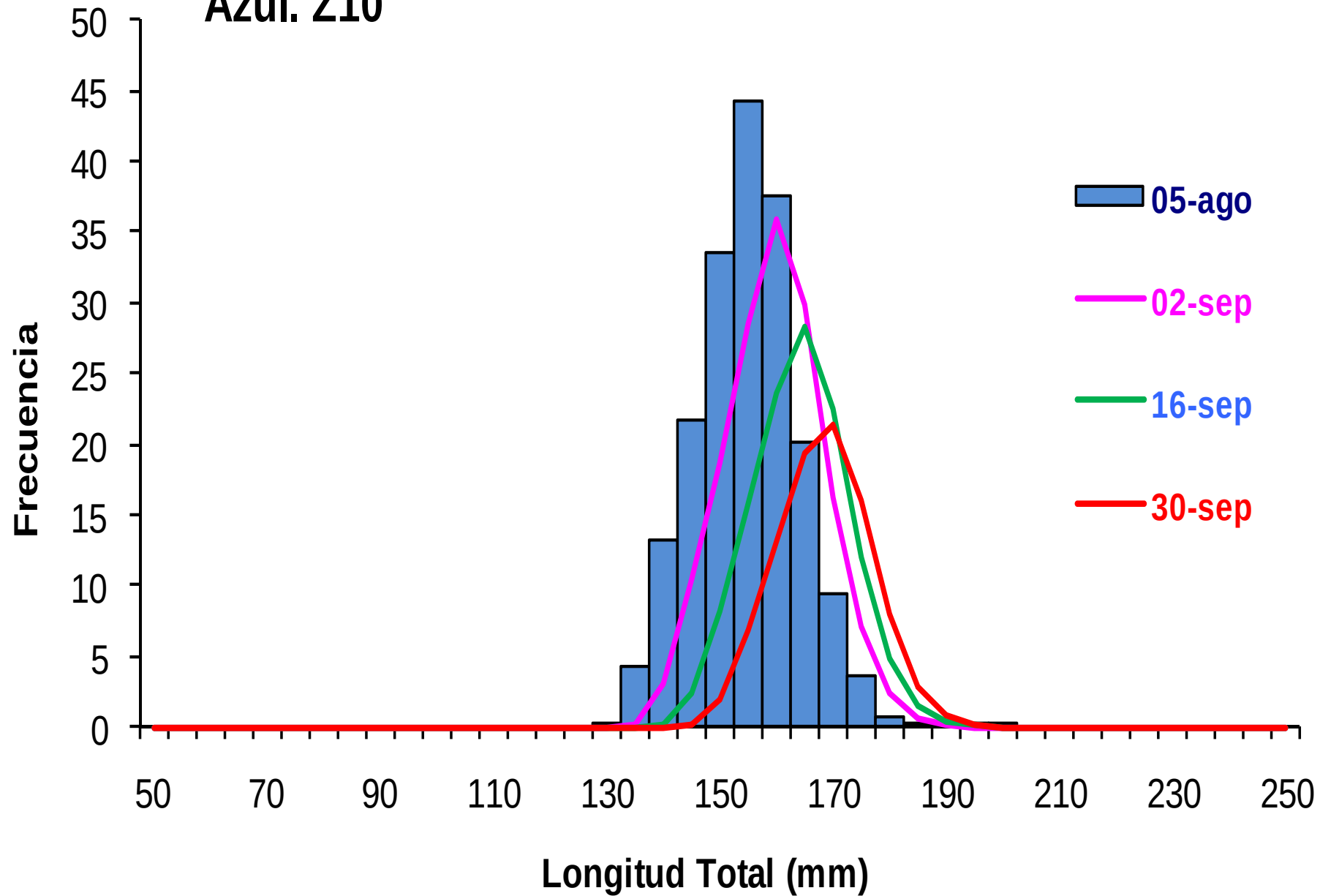
Azul. Z30



Azul. Z20



Azul. Z10





PARTICIPACIÓN EN CIFRAS



Barcos participantes



Zona Mes	10 BC	20 Sonora	30 Sinaloa	40 Sinaloa	50 BCS	60 Nayarit	90 Golfo de Tehuantepec	No. de cruceros
Julio	"Pangas" "San Felipe"	"Talismán"	"Almirante Nelson"	"BIP XI"	"Santa Margarita" (Z. norte) y "Lic. Sergio Cevallos Huerta" (Z. sur)	"BIP XI"	"Treboli"	6
Agosto	"Casamar" Y "Pangas"	"Talismán"	"Santa Margarita" y "David's"	"BIP XI"	"Victoria X" (Z. norte y sur)	"BIP XI"	"Gosamar"	7
Total de Cruceros	1	2	3	2	3		2	13

B/M "San Felipe" Se desistió de participar



Ámbito de cobertura de Alta mar



Lances por zona	Julio	Agosto	Total
10 (BC)		35	35
20 (Sonora.)	48	48	96
30 (Sinaloa.)	46	58	104
40 (Sinaloa.)	17	17	34
50 (BCS)	31 (Norte) 42 (Sur)	60	133
60 (Nayarit.)	15	17	32
90 (Golfo de Tehuantepec)	65	66	131
Total de lances	264	301	565



Cobertura y Fechas de Muestreos de Aguas Protegidas



Actividad	M	A	M	J	J	A
Postlarvas						
AGC			20-23	13-17	12-16	9-14
Sinaloa		19-23	1-6	1-6 13-17	13-17	11-15
Nayarit	14-18	19-23	16-20	13-17	11-16	8-13
Juveniles y adultos						
AGC					14-17	9-14
Sonora			17-22	1-6 13-18	11-16	8-13
Sinaloa	15-19	1-6	1-6	1-6 13-17	1-6 13-17	1-6 11-16
Nayarit	15-19	19-23	17-21	14-18	12-16	9-14
B.C.S.			1-6	1-6	1-6	11-16
Migración y reclutamiento en la ribera						
Sinaloa	15-19	1-6	1-6	1-6 13-17	1-6 13-17	1-6 13-17



Propuesta de fechas para inicio de temporada





Zona	Fecha
En los sistemas lagunarios estuarinos de Sonora y Sinaloa hasta el límite norte de Bahía Ceuta, y los sistemas lagunarios estuarinos de Escuinapa, Nayarit, Jalisco, Colima y Baja California Sur.	7 de septiembre.
En el Sistema Lagunar Huizache-Caimanero y en Chametla, Municipio de El Rosario, Sinaloa.	15 de septiembre.



Zona	Fecha
En las aguas marinas del litoral del Océano Pacífico incluyendo el Golfo de California, desde su límite al norte en la frontera con los Estados Unidos de América, hasta el límite Sur del Estado de Nayarit, excepto de las cinco a las trece brazas desde el puerto de Mazatlán hasta el límite sur del Estado de Nayarit incluyendo las aguas marinas de la Zona de Amortiguamiento de la Reserva de la Biosfera del Alto Golfo de California y Delta del Río Colorado.	20 de septiembre.



Zona	Fecha
En aguas marinas del litoral del Océano Pacífico a partir de límite sur del Estado de Nayarit, hasta el límite con la República de Guatemala, incluyendo la zona de las cinco a las trece brazas desde el puerto de Mazatlán hasta el límite sur del Estado de Nayarit.	27 de septiembre.

Análisis de los Muestreos de Camarón del Pacífico Mexicano durante la Veda de 2011

*Dirección General de Investigación Pesquera en el Pacífico Norte y Sur.
Programa Camarón*

