Survey of reef fishes in the Coiba National Park, Panama, May 5-22, 2003

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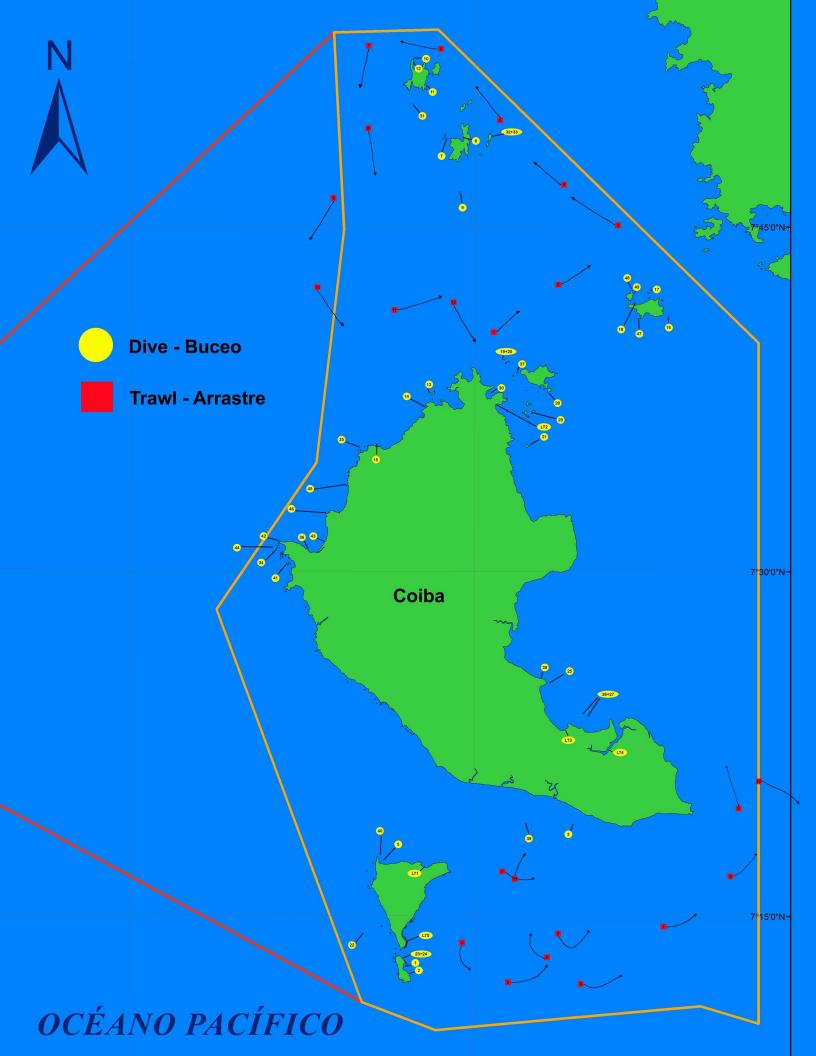
STRI Survey of Fishes in the Coiba National Park May 5-22, 2003 Censo de Peces del Parque Nacional Coiba, Mayo 5-22, 2003

Participants / Participantes:

D Ross Robertson, STRI, Chief Scientist James Van Tassell, Hofstra University John Earle, Bishop Museum Edgardo Ochoa, STRI

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- 2- Table of latitudes / longitudes of census sites / Tabla de latitudes y longitudes de los sitios de censo
- 3- Dive-Low tide censuses table (2 pages) / Tabla de censos de buceos y mareas bajas (2 paginas)
- 4- Trawl collections table / Tabla de colectas por arrastre



Sites and Dates of sampling.

Trawls South of Coiba: May 9, 2003

Lat.07°17'.06 N Long. 081°43'.83 W_Lat.07°16'.93 N Long. 081°42'.58 W Lat.07°14'.382 N Long. 081°41'.488 W_Lat.07°14'.594 N Long. 081°40'.136 W Lat.07°13'.426 N Long. 081°42'.106 W_Lat.07°14'.52 N Long. 081°42'.69 W Lat.07°13'.91 N Long. 081°45'.72 W_Lat.07°12'.77 N Long. 081°45'.39 W 5: Lat.07°12'.263 N Long. 081°43'.62 W_Lat.07°13'.02 N Long. 081°42'.30 W Lat.07°12'.27 N Long. 081°40'.33 W_Lat.07°12'.51 N Long. 081°38'.69 W Lat.07°14'.259 N Long. 081°36'.801 W_Lat.07°15'.268 N Long. 081°35'.464 W Lat.07°16'.92 N Long. 081°33'.78 W_Lat.07°18'.02 N Long. 081°32'.68 W Lat.07°20'.10 N Long. 081°33'.43 W_Lat.07°21'.76 N Long. 081°34'.00 W Lat.07°21'.21 N Long. 081°32'.48 W_Lat.07°20'.07 N Long. 081°30'.87 W 11: Lat.07°16'.98 N Long. 081°43'.41 W_Lat.07°18'.04 N Long. 081°42'.90 W

Trawls North of Coiba: May 15 2003

1:

Lat.07°40.613' N Long. 081°44'.15'5 W_ Lat.07°41.530' N Long. 081°43. 20' W 2:

Lat.07°42.76' N Long. 081°41.41' W_Lat.07°43.57' N Long. 081°40.16' W

Lat.07°45.34' N Long. 081°39.02° W_Lat.07°46.58' N Long. 081°40.99 W

Lat.07°47.13' N Long. 081°41.47' W_Lat.07°48.14' N Long. 081°42.62' W

Lat.07°50.04' N Long. 081°44.14' W_Lat.07°51.34' N Long. 081°45.25' W

Lat.07°52.99' N Long. 081°46.89' W_Lat.07°53.02' N Long. 081°48.44' W

Lat.07°52.99' N Long. 081°49.86' W_Lat.07°51.27' N Long. 081°50.22' W Lat.07°49.37' N Long. 081°49.89' W _ Lat.07°47.45' N Long. 081°49.68' W

Lat.07°46.24' N Long. 081°51.42' W_Lat.07°44.63' N Long. 081°52.40' W

10:

Lat.07°42.34' N Long. 081°52.07' W_Lat.07°40.82' N Long. 081°50.98' W Lat.07°41.61' N Long. 081°48.61' W_Lat.07°42.22' N Long. 081°46.66' W

Lat.07°41.74' N Long. 081°46.07' W_Lat.07°40.06' N Long. 081°45.08' W

Dive sites:

Isla Brincanco:

10, 11, 12	May 5
31	
Isla Uva:	
7, 8, 9	May 4
32, 33	•
-,,	
Isla Afuerita:	
48, 49	May 22
,	·····
Isla Canal de Afue	era
16, 17, 18	
47	May 22
Isla Coiba:	
3	May 3
13, 14, 15	
21	
25, 26, 27	
30	
34, 35, 36	
LT2	
LT3, 38	May I /

44, 45, 46..... May 21

Isla Coibita

Isla Jicarita

LT4..... May18 41, 42, 43..... May 20

19, 20	May 8
Isla Rancheria	

37		 	May	16
Tel	a Cocos			

28...... May 12

Isla Jicaron	
IT1 5	Mov. 2

29...... May12

LT1, 5	May 3
22	May 10
LT5, 40	May 19

1, 2..... May 2 23, 24..... May 10

	DE CENSUSES TABLE page 1/2 proportion of sites at which each species was		C= C				e, A= A		nt hur	dreds o	more /div					I						<u> </u>			ı	 	$\overline{}$		1 1			\top
Family Ginglymostomatidae	Species Name	1 2	_	4 5	7	8	9 1	0 11	12 1	3 14 1	5 16 17	7 18	19_ 20	21 22	23_24 25	26_27	28 2	29 30	31 32_3 nuc		35	36 LT2	37 L	ТЗ 38	LT4	39 LT5 40	41 42	2 43	44 45 r	46	47 4	, 4
Carcharhinidae	Carcharhinus limbatus Triaenodon obesus	nuc							r	r			С	nuc r		r				r	r nuc	r	r			r	r	r	r			
Narcinidae	Diplobatis ommata Narcine entemedor				r						r				r				r													
Dasyatidae	Dasyatis longa						r							r	r												\pm	\coprod				$oxed{\perp}$
Myliobatidae Urotrygonidae	Aetobatus narinari Manta birostris Urobatis halleri	lr l				iur nu	IC r		-						r				r		nuc						\pm	#				十
Elopidae	Urotrygon chilensis Elops affinis					iui iii		C															C				\mp	+				r
Muraenidae	Anarchias galapagensis Echidna nebulosa		nuc c				c r	С	r	С	r	nuc	c nuc	r	r	r r	С	c nuc	r		С		r	nuc		r	\mp	#	r		r	Ħ
	Echidna nocturna Enchelycore lichenosa																						r	r		r	\equiv	$oxed{oxed}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}$	nuc			
	Enchelycore octaviana Gymnomuraena zebra		nuc	r	r		nuc				r		r r	nuc	i i		nu nu	uc nuc r	nuc r							r	r r	\coprod	r	r		
	Gymnothorax buroensis Gymnothorax castaneus	r nuc		r nuc		С		С	r		c r			nuc nuc	nuc		uc nu	uc nuc c	nuc	nuc	nuc r					nuc nuc r		廿		nuc		\perp
	Gymnothorax dovii Gymnothorax flavimarginatus Gymnothorax javanicus			nuc	r	;	nuc		r	nuc r	r r		nuc r		r			C	c r				c n	nc C	r r	r nuc r	iuc	#		r	nuc	
	Gymnothorax panamensis Gymnothorax undulatus				С	r	С	С		С	С	С	c nuc		r C	r	C	c uc c r	C		C				r	r	nuc	#		С	nuc	十
	Gymnothorax verrilli Muraena clepsydra												nao	r			iiu	30 0 1						?nuc	?n	nuc	+	#				—
	Muraena lentiginosa Scuticaria tigrina		С				С	С		С			nuc	nuc r	r nuc	r	nu	ıc	nuc		n	uc				r nuc r	nuc	+	nuc	С		\vdash
	Uropterygius macrocephalus Uropterygius versutus					r r	r		r	С	С	nuc	С	nuc	nuc		nu	ıc nuc	r							nuc r r	nuc	$oxed{oxed}$			nuc	
Ophichthidae	Apterichtus equatorialis Callechelys eristigma							С		С			r																			С
	Letharchus rosenblatti Myrichthys tigrinus						С	С		С	nuc		nuc		nuc	r		nuc			r		С	С	С		\perp	n	nuc	r		上
	Myrophis vafer Ophichthus longipenis																							С	С		\pm	?	?juv			igspace
Congridae	Paraletharchus pacificus Heteroconger klausewitzi Heteroconger pellegrini				n	iuc	r nuc	;		Ü		+	С		a c	r		+			c		##				#	##			nuc	二
Clupeidae	Harengula thrissina Lile stolifera						+	+							-		+						С	c	r.		#	c	;		+	С
Engraulidae	Opisthopterus dovii Anchoa argentivittata							<u> </u>																			<u></u>	C	2spp c			=
Chanidae Synodontidae	Chanos chanos Synodus lacertinus					r nu	ıc r	r		nuc	r r		nuc	nuc		nı	uc c	r	·r								<u></u>		С	С		$oxed{\top}$
Ophidiidae	Ophidion galeoides Petrotyx hopkinsi																\pm		nuc									n	nuc			
Carapidae Bythitidae	Encheliophis new species Ogilbia species A							$+ \overline{1}$		sp	sp	+ +	nuc sp		sp		nu	ıc	nuc		n	uc	\prod		?n	nuc nuc		+		sp B	r	$\pm \overline{}$
Antennariidae	Antennarius avalonis Antennarius coccineus		nuc					$+ \overline{1}$				\coprod						$+ \overline{1}$			n	uc				r		\coprod				上
	Antennarius commerson Antennarius sanguineus			nuc	c r		С	nuc		r	nuc	r	nuc		r r	r		uc nuc	nuc								#	##	r	nuc	r	世
Gobiesocidae	Antennatus strigatus Arcos rhodospilus Tomicodon myersi							+			1	+	1		r		nu	ıc r	nuc						r	nuc	+	##				二
Atherinopsidae	Atherinella argentea Atherinella nepenthe							+				+					+						С	?c	c ?c	C	#	#			+	?nuc
Poeciliidae	Atherinella starksi Poeciliopsis elongata																						C	C	C	C	丰	#				C
Anablepidae Belonidae	Oxyzygonectes dovii Tylosurus crocodilus fodiator														nuc				nuc				С	С	С		#	#				#
Exocoetidae	Tylosurus imperialis melanotus Cypselurus callopterus										r r																\mp	+				—
	Fodiator rostratus Parexocoetus brachypterus brachypterus							\blacksquare	r												r						\mp	\Box				\vdash
Holocentridae	Myripristis berndti Myripristis leiognathos	nuc nuc	_	c c	c c	nı c	ıc r	С	c c	nuc c	r C		nuc c	nuc nuc c c	nuc c c	nı c c	uc c	r	nuc c c	nuc r	nuc c c	nuc c	С		С	c nuc nuc	C C	C C	с с с	nuc c	С	
Aulostomidae	Sargocentron suborbitalis Aulostomus chinensis	С	С	С		nι	ıc nuc	;	c r	СС	nuc		С	nuc	nuc				С	nuc	nuc	nuc	n	ıc	nuc r	С	uc	uc	nuc r	uc c		
Fistulariidae	Fistularia commersonii Fistularia corneta					С	nuc	; c	nuc		c nuc	nuc	С	С	С	nı	uc c		С								\pm	廿			С	上
Syngnathidae	Cosmocampus arctus Doryrhamphus excisus			С	c c	nı c	c IC	С	r C	c r	СС	С	С	c r	ССС	c nu	uc c	r r	. с	nuc	r c	r	С		r	r	r	r	nuc r	uc c	nuc	
Scorpaenidae	Hippocampus ingens Scorpaena histrio						-			r	-		r		r						r					r		#			r	上
	Scorpaena plumieri mystes Scorpaena russula Scorpaena sonorae		+	r	c r		C	С		nuc	r nuc	nuc	uc	r	nuc		r	l l'	C		i n	uc			r r			#	r r	r	r	<u> </u>
Centropomidae	Scorpaena sonorae Scorpaenodes xyris Centropomus medius			ncu	c n	iuc	С	С		С	r c	С	С	С	ССС	c c	С	c c	С		С	nuc	С	C	c nu	ıc r	nuc nuc	nuc		C	nuc	十
Остигорогницае	Centropomus nigrescens Centropomus robalito																						?c	c			#	#				#
Serranidae	Centropomus unionensis Alphestes immaculatus		С		nuc	nu	ıc	С																С	r	r	r	\mp			r	\vdash
	Alphestes multiguttatus Cephalopholis panamensis	nuc nuc	С	СС	СС	; c	C C	С	С	r C	СС	С	С	r c r	ССС	ССС	С	СС	C C	С	c c	С	С		С	c r	nuc c	С	c c	С	r C	\vdash
	Dermatolepis dermatolepis Epinephelus itajara			r	r	nι	ıc		nuc	nu			nuc	r nuc	nuc	r	nu	ıc	r	nuc	nuc		n	ıc	nuc r	nuc		$oxed{oxed}$	nuc r	uc	nuc	
	Epinephelus labriformis Mycteroperca xenarcha	c nuc	С	СС	СС	; C	С	С	С	С	СС	С	С	СС	СС	c c	С	c c	С	С	СС	С	nuc c	c r	С	ССС) C	С	c c	С	С	$oxed{oxed}$
	Paranthias colonus Pseudogramma thaumasium	С		С	nuc c		С	С	С	c c	c c	C C	c r	c a	C C	c a	a c	c a	a a c	а	a c	а	a c		c nuc	a c) a	а	a	С	a nuc	
	Rypticus bicolor Rypticus nigripinnis	r		nuc	c n	iuc nu		С	nuc	c nu	ССС	С	С	c nuc	С	СС	С		С	nuc	nuc n	uc r		С	nuc nu		r	r		uc nuc	r	igspace
Opistognathidae	Serranus psittacinus Opistognathus panamaensis	С		nuc	СС	: с	r	С	С	c c	C C	С	С	C C	C C	c c	С	C C	C C		С		С		c r	rr	nuc	#	r	uc c	nuc	C
Anogonidae	Opistognathus punctatus Opistognathus rhomaleus	0 0110	nuc	nuc c	0 0	C	0				0 0	6		o nuo	sp	0 0		0 0	2 6		0 0	-			0 011	10 0 0110 1	nuc c	<u></u>			0	
Apogonidae	Apogon dovii Apogon pacificus Apogon retrosella	IIUC	riuC	nuc c	n	uc c	U	С	C	c c	C	nuc	C	r	nuc c	C	C		C C	С	c	С	c		c nu	.o muc r	nuc c	#		U	nuc	
Malacanthidae Carangidae	Malacanthus brevirostris Caranx caballus	С			C C	nu c	ıc	+	nuc	nu	c r	nuc c		c nuc	c c	nı	uc nu	ıc	nuc c c	С	С	c	n	ıc			nuc nuc	;##			nuc	十
	Caranx caninus Caranx melampygus	c c		с с с	r		<u> </u>	_	c	c c		H	С	r c	С	c	Ť	_	r nuc r	r	С		l n	nc	r nuc	c	С	r c		_	С	F
	Caranx sexfasciatus Caranx speciosus	С		С		С	\pm		C C	C	С	С	С	с с с	с с с	c nu	uc	С		c nuc	c nuc		c r	С	c nuc	c nuc	\pm		c nuc		c nuc	_
	Caranx vinctus Decapterus macarellus							ootnotesize = 1	sp	$+ \overline{\pm}$	sp							s	sp		sp		s						nuc			nuc
	Elagatis bipinnulata Seriola rivoliana				$oxed{\Box}$	С		$+ \overline{1}$	C C	$+ \overline{\Gamma}$		\Box		c c nuc	r			C	nuc nuc	nuc	nuc		r			С	c r	orall T	С		С	巨
Lutjanidae	Trachinotus rhodopus Hoplopagrus guentherii	nuc		С	C	: nu	ıc	С	c nuc	c c	nuc c r		nuc		nuc			r	c c		nuc		c n	uc nuc	r nu	nuc lic r	nuc	+	nuc c		nuc	С
	Lutjanus aratus Lutjanus argentiventris	C C	С	C C	c c	С	С	С	С	c c	c r	С	nuc c	a c	C C	c c	С	r	C C	C	+-+	uc c	c c	C	C C	c r	nuc c	c	r c r	uc c	С	ļ
	Lutjanus guttatus Lutjanus inermis Lutjanus novemfasciatus	C	<u> </u>	C DUC C		С	+	+	С	C	C		nuc	nuc nuc	nuc	U			r nuc nuc	nuc c			DUG -		nuc r	C	#	##	0	nuc		nuc
Gerreidae	Lutjanus novemfasciatus Lutjanus viridis Diapterus peruvianus	c c	U	nuc c		С	+	С	c	c c		+	C	nuc nuc	r c nuc	r	+	l c	nuc nuc	C	nuc c	С	nuc n	uc C	ı C	c nuc	nuc c	nuc	nuc c	nuc	+	二
Contoluate	Eucinostomus californiensis Eucinostomus currani		С				+	+										+			H		c	c	C		#	C			+	nuc
	Eucinostomus entomelas Gerres cinereus				H		+	\mp		##		+		С				#			Ħ			7		+++	#	#				nuc
Haemulidae	Anisotremus caesius Anisotremus interruptus	nuc		С	_ n	iuc nu	ıc	_	nuc	nu			nuc	nuc nuc	nuc	nı	uc				nuc	_	<u> </u>					 	nuc	nuc	_	$oxed{\top}$
	Anisotremus taeniatus Haemulon flaviguttatum			С		C		1	С		r				nuc						nuc						<u></u>	\coprod		С	r	F
	Haemulon maculicauda Haemulon scudderi			c c	СС	С	$oldsymbol{\perp}$		С	С	c r	С	а С	а	СС	c nu	uc	c n	nuc c	С	С	С	С	С	c nu	C IC	С	С		С	С	nuc
	Haemulon sexfasciatum Haemulon steindachneri	nuc		С		1					С			r nuc			\pm				日		r		nu	IC		\boxminus				$oxed{-}$
	Haemulopsis leuciscus Microlepidotus brevipinnis							oxdot										$+ \overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{\overline{$										n	nuc			n
	Pomadasys bayanus Pomadasys branickii		<u> </u>				\pm	$+ \overline{1}$		$+\overline{\Box}$		$oxed{\Box}$						$+\overline{1}$			H		c r	С	nu	ıc	$\pm $	orall T			\pm	$\pm $
Oci-	Pomadasys macracanthus Xenichthys xanti						+	\coprod																С			#	r	nuc			上
Sciaenidae	Odontoscion xanthops Umbrina dorsalis							\coprod				\coprod																\coprod		nuc		nuc
Polynemidae Mullidae	Polydactylus approximans Mulloidichthys dentatus	nuc		СС	c c	C C		С	С	c c	С	С	С	c nuc	ССС	c c							n	nc	nuc	С	nuc		nuc	С	nuc	<u></u>
Kyphosidae	Mulloidichthys vanicolensis Kyphosus analogus	c c					+								nuc		+		nuc nuc	c nuc			n	ıc		r	n	#		uc	nuc	
Charter	Kyphosus elegans Sectator ocyurus Chaetedon humosolia	C		C C	c c	C C		С	c c	C C	C C	C C	C C	c c	C	С		C	C C	С	С		C C		nuc	С	nuc nuc		c c	С	c c	十
Chaetodontidae	Chaetodon humeralis Johnrandallia nigrirostris Holacapthus passer	nuc nuc	_	nuc c c	c c	c		c	C C	nuc c	С	C C		C C	nuc c c c	C C	С		C C	C C	C	c c	С	ıc	nuc c		nuc c	nuc	C C	C	C	十
Pomacanthidae Cirrhitidae	Holacanthus passer Pomacanthus zonipectus Cirrhitichthys pyycenhalus	o nuc	nuc	C C	СС	ทเ	ıc	С	nuc	c C	c c	c nuc		nuc c	c c	+	С		nuc		r n	uc a		ıc	nuc	r	nuc c r	10	c c	uc	nuc a	十
Cirrhitidae	Cirrhitus rivulatus Oxygirrhitus typus	c c nuc nuc		c c	C C	C C	_	С	C	C C	C C	С	C	C C	nuc	c a	С	C	,	a nuc	a a	a nuc	n	ıc	r r	c nuc c		a nuc	a a	nuc	a c	<u></u>
ī	Oxycirrhites typus Agonostomus monticola	+ +	_	\vdash	+		+		-	+	+ +	+		 	nuc	1		n	nuc	-	<u> </u> '	_	+			\longrightarrow	$\overline{}$	++		+	+	+-

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Family	Species Name	1 2	2 3 4	4 5 7	8	9 10	11 1	2 13	14 1	5 16 17	18 19_	20 21	22 23_24	25 26_27	28 29	30 31	32_33	34 35	36 LT2 37	LT3	38 LT4 39	LT5	40 41	42 43	44	45 46	47	48 49
Pomacentridae	Abudefduf concolor Abudefduf troschelii	СС	С	СС	С	6	С	C	0 0	6	nuc	C	0 (0	6	C		С	C (c c nuc		С				ССС	
	Chromis atrilobata	c c	C	a c	a c	С	С	a	a a	c c	c a	a	a a a	a a	a c	c a	a	a a	a a	c	a a	а	С	a a		a a	c a	
	Microspathodon bairdii Microspathodon dorsalis	c nuc	c	c nuc		С	c c	С	СС	r c c	nuc c	С	c c		nuc	С	nuc c	СС	nuc	С		С		c nuc		С	c c	
	Stegastes acapulcoensis	c nuc	СС	nuc c	с с	С	С	С	СС	СС	СС	С	С	С	СС	c r	С	ССС	С	С	c nuc	С	С			r	c r	
Labridae	Stegastes flavilatus Bodianus diplotaenia	c nuc	C C	c c	c c	С	С	С	c c	c c	c c	C	c c c	; C	c c	c c	С	c c	c c	С	c nuc	С	c c	c c		c c	c c	I .
	Halichoeres aestuaricola Halichoeres chierchiae	СС	С	c	СС	С	С	С	СС	СС	СС	С	c	: C	СС	СС	С	СС	С	C	nuc	C	C	СС		nuc c	СС	
	Halichoeres dispilus	nuc	С	c c	c c	С	С	С	c c	c c	c c	С	c c	c c	СС	c c	С	c c	СС	С	a		С	nuc c		nuc c	c c	
	Halichoeres melanotis Halichoeres nicholsi	nuc nuc	C C	c c	c c	С	C C	C C	nuc c	c nuc	c c	С	C C	c nuc	c c	uc	C C	nuc nuc	nuc	c nuc	c nuc	nuc	nuc	nuc nuc			c nu	
	Halichoeres notospilus Iniistius pavo	nuc nuc	С	С	c c			c nuc	nuc c		c nuc	c nuc	nuc				С		r		С		r			nuc	c nu	
	Novaculichthys taeniourus			r c	c nuc	С	nuc	r	nuc		nuc		C	nuc	СС		С		nuc	nuc		r		r			С	
	Thalassoma grammaticum Thalassoma lucasanum	a c	c c	a c	СС	С	С	а	r a a	a c	c c	С	a a a	nuc ı a	a a	a a	а	a a	c a	а	a nuc	а	СС	a a		a a	a a	
O - mid	Xyrichtys perlas												nuc															
Scaridae	Scarus compressus Scarus ghobban	nuc	C C	nuc c	C C	С	С	С	nuc	C	nuc c	nuc c	nuc	; C	C C	c nuc	nuc c	nuc		С	С		nuc	nuc		СС	nı c	
	Scarus perrico Scarus rubroviolaceus	С	С	C C	ССС	C C	С	С	СС	C	СС	С	nuc c	: C	СС	СС	nuc c	СС	С	С	c	nuc	C	r c c		СС	r c c	
Tripterygiidae	Axoclinus lucillae	С	c	c c	c c	С	С	С	c c	С	С		nuc nuc r	iuc nuc	СС	c	С	nuc nuc	С		, i	nuc		СС		nuc	c c	
	Enneanectes carminalis Lepidonectes clarkhubbsi			nuc r	С	С	С		nuc nuc	С	С		nuc		СС	nuc	С	СС	nuc c	С				С		r	nuc nu	ıc
Labrisomidae	Dialommus macrocephalus Labrisomus multiporosus		r																				С					
	Malacoctenus ebisui	СС	С С	СС	СС	С	С	С	с с	С	СС	nuc	nuc c	r	С	С		nuc nuc	С	nuc		nuc	nuc	с с		СС		С
	Malacoctenus margaritae Malacoctenus tetranemus		 	r	С	_	 		С	nuc			nuc r	iuc	nuc	С	С	СС	c r	С			r	r		nuc nuc	СС	_
	Malacoctenus zonifer	iido	С	nuc	с с			С	С	С			С						nuc				C	nuc			nuc c	
	Paraclinus mexicanus Paraclinus monophthalmus		nuc																		,		nuc r				nuc	
Chaenopsidae	Starksia fulva Acanthemblemaria exilispinus			nuc c	C	c c	c c	С	nuc c c	r c	r c	c	nuc r	uc nuc	c c c	c c	c c	c c	c c	nuc c	nuc c	nuc	r	r c			C C	
	Acanthemblemaria hancocki	с с	С	C C	c c	С	С	С	СС	С	c c	c	с с с	c c	СС	c	С	c c	r c	С	r	nuc		С		СС	c c	
	Chaenopsis species A Coralliozetus springeri				С	_							nuc r	iuc nuc													c	
	Ekemblemaria myersi Emblemaria piratica	r				-			r										c nuc								nuc	
	Mccoskerichthys sandae			С	С	С		С	с с	С	nuc c		С		СС	С		с с	С	С		С	С	СС			С	
Dactyloscopidae	Protemblemaria bicirris Dactyloscopus byersi	 				+		+ -	- -						+ + -				nuc		c							
, ,	Dactyloscopus metoecus																										20	
	Dactyloscopus minutus Dactyloscopus pectoralis																										?c	
	Gillellus semicinctus Heteristius cinctus														+ + -				C						r			
	Myxodagnus opercularis																								-			
	Platygillellus altivelis Platygillellus bussingi					r			r								r										С	
Blenniidae	Entomacrodus chiostictus Hypsoblennius brevipinnis	nuc	С	C	nuc			C	C	C	С					nuc	nuc									nuc		
	Hypsoblennius striatus			Ŭ				Ů	Ü	Ŭ	Ů.						Tiuc			,	?nuc							
	Ophioblennius steindachneri Plagiotremus azaleus	c c	C C	СС	c c	С	С	C C	c c	С	C C	С		nuc	c c	c c	C C	0 0	c c nuc	С	nuc	nuc	С	r r			nuc c	
Eleotridae	Dormitator latifrons Eleotris picta		С																0									
	Erotelis armiger		C																C		С							
Gobiidae	Bathygobius andrei Bathygobius ramosus	 	С			+		+		+ + -					+ +				С	1	C C		nuc					_
	Coryphopterus urospilus Elacatinus inornatus		nuc	c nuc	СС	c nuc	С	С	c nuc nuc	С	С	С	c c c	c iuc	c c	c nuc	С	C C	C C	С	С	nuc	nuc	C C		С	c c r nu	
	Elacatinus punticulatus			c nuc		C	C	C	C C	C	c c	С	C C	iuc	c c	C	С	C C	С	а	nuc	nuc	nuc	c nuc		nuc nuc	C	
	Evorthodus minutus Gobionellus microdon	 	nuc c			+																						
	Gobiosoma paradoxum																			(r							
	Gobulus hancocki Lythrypnus rhizophora			?				nuc			С		r		С	r nuc		nuc										
Microdesmidae	Microgobius crocatus Cerdale ionthas	$+\overline{+}$					$+ \overline{+}$	-	$ \overline{\Gamma}$	$+ \overline{+}$					+ -				r ?r		nuc c							
	Clarkichthys bilineatus					1													r		V							
	Microdesmus dorsipunctatus Ptereleotris carinata													; <u>C</u>					?r						<u> </u>			
Ephippididae Zanclidae	Chaetodipterus zonatus Zanclus cornutus	nuc	С	С	c c			C		С		С	nuc nuc d	- C	nuc c	nuc c	С		C	C	C	С		C C		c c	СС	
Acanthuridae	Acanthurus nigricans	c nux	c	nuc					nuc c	nuc	nuc		nuc nuc r	iuc	nuc		c	nuc	nuc	C	Ţ,	nuc	r	c nuc		nuc c	nuc nu	ıc
	Acanthurus triostegus triostegus Acanthurus xanthopterus	r c c a	c c	a c	с с с	Ť	C C	C C	nuc c c c	С	c c	C	nuc c c c	c c	c c	c c	С	c c	c nuc r	a ı	nuc c r	r c	<u>r_</u>	c nuc		<u>c</u> c	c c c	
	<u> </u>	nuc	СС	СС		-			C C	C	C C	nuc	c c c		nuc c	С	С	nuc c c		C	nuc	nuc		С		nuc nuc	nuc c	
Sphyraenidae	Sphyraena ensis			ŭ ŭ	C						0 0	Ů		, 0	nuo 0		С			_	nuc	U		<u> </u>		nuo nuc	rido C	
Scombridae	Sphyraena qenie Thunnus albacares	\vdash	 	С		+	++	+ +	$\overline{}$	++			c r		+ +			С										-
Paralichthyidae	Citharichthys gilberti					1														ı	nuc							
Bothidae	Cyclopsetta panamensis Bothus leopardinus																		nuc									
Cynoglossidae	Symphurus callopterus Symphurus melanurus	 				<u> </u>	$+ \overline{+}$	$+\overline{1}$	<u> </u>						+ + -				r						nuc			
	Symphurus undecimplerus								\perp										r									
Balistidae	Symphurus new species Balistes polylepis				r			С	nuc	; c			nuc nuc			С	С								<u> </u>			
	Melichthys niger Melichthys vidua	С						11	r		nuc		nuc									nuc						
	Pseudobalistes naufragium	nuc nuc	nuc	nuc nuc	nuc			С	nuc c	С	c c	С	nuc c	nuc	nuc	С	С	c c	nuc	c '	?r r	nuc	r	nuc nuc		nuc nuc		
Managarathida	Sufflamen verres Aluterus scriptus	СС	С	c c	C r	С	$+ \overline{+}$	С	СС	C r	СС	C r	a a a	ı a	c nuc	a r	a	а а	СС	а	С	a r	С	СС		аа	С	
IMUNACAUTUIGGE	Ostracion meleagris meleagris	nuc		nuc	r			nuc		nuc c	c nuc	nuc	nuc		nuc		r	nuc c	r nuc	r		nuc		nuc nuc		nuc nuc		ıc
Ostraciidae	Arothron hispidus	nuc	r	r c c	nuc nuc	С	++	C C	nuc c c	nuc c	C C	c c	r nuc c	c c	c c	c c c	c c	с с с с	nuc c	C C	c c nuc	C C	nuc	nuc nuc		nuc c	nuc c c r	-
Monacanthidae Ostraciidae Tetraodontidae	Arothron meleagris	C																		+		-						-
Ostraciidae	Arothron meleagris Canthigaster janthinopterus	С	С						_						2	2 -	2							2 -		2 -		
Ostraciidae	Arothron meleagris Canthigaster janthinopterus Canthigaster punctatissima Sphoeroides annulatus		C C	c a	c a	С	С	С	C C	c c	C C	a	c a a	ı a	a a	a a	а	a a	a a c	a	a nuc	а	C	a a		аа	a a	
Ostraciidae Tetraodontidae	Arothron meleagris Canthigaster janthinopterus Canthigaster punctatissima Sphoeroides annulatus Sphoeroides rosenblatti	С	· ·	c a	c a	С	C	С	C C	c c	СС	a	c a a	a a	a a	a a	a	a a	a a c	a	a nuc	а	C	a a		a a	a a	
Ostraciidae	Arothron meleagris Canthigaster janthinopterus Canthigaster punctatissima Sphoeroides annulatus	С	· ·	c a	c a	c nuc	c c	C	c c	C C	C C	a	c a a	a a	a a	a a c nuc		a a	a a c c c	a (a nuc	a nuc	c c nuc	a a		a a	a a c	r

TRAWL	CAPTURES TABLE	South of Coiba												North of Coiba												
Family	Species Name	1	2								10	11	1	2		North of Coiba 3 4 5 6 7 8 9 10 11 12										
Narcinidae	Diplobatis ommata	+	_	<u> </u>	4	J	0	1	9	9	10	11	4	_	NO Data	4	J	O	'	P	9	10		<u> </u>		
Rhinobatidae		Х						·	Н,	_			-		NO Data			·	1	\ <u></u>						
	Zapteryx xyster	1		_	-		1	Х	H	X			_			_		Х	Ͱ	Х				-		
Rajidae	Raja velezi								Н	4			Х							-						
Moringuidae	Neoconger vermiformis												4				Х		L							
Chlopsidae	Chlopsis apterus									4				Χ									Х	Х		
Muraenidae	Gymnothorax equatorialis					Х				X)	Χ		Х			Х	Х	Х	Х	Х	Х	Х		Х		
	Gymnothorax phalarus																	Х		Х						
Ophichthidae	Myrichthys aspetocheiros											Х	х									х				
	Ophichthus frontalis																						Х	Х		
	Ophichthus longipenis													х				Х						Х		
Congridae	Rhynchoconger nitens											Х		Х						х	Х	Х	Х			
Synodontidae	Synodus evermanni	х			Х	х			x :	x			-+	х		х	Х	х		Х		х	х			
	Synodus lacertinus				Ħ			Х	Ħ	Ť			Ħ						H	Ħ				H		
	Synodus scituliceps	Х							H	1			1			x	х	х	х							
	Synodus sechurae				l				H	1			+			^	_	^	c	х						
Bregmacerotidae	Bregmaceros bathymaster						~		H	H			+						۲	+^	Х		х			
	T i						X		H	+			. 						1	-	^		^	<u></u>		
Moridae	Physiculus nematopus						Х		H	4		-	Х						H					Х		
	Physiculus talarae												X 2	X		Х			L		Х	Х	Х	Х		
Ophidiidae	Brotula clarkae																Х	Х	Х	Х				L		
	Lepophidium microlepis											Х						Х								
	Ophidion imitator											Χ														
Batrachoididae	Porichthys margaritatus					х	х	Х		х				Х		х	х	х	х	Х	Х			х		
Holocentridae	Pristigenys serrula	Х								1			T					Х								
Lophiidae	Lophiodes caulinaris				Х	х			х	1	x		X 2	Х		х	х			Х	х	Х	Х	х		
Antennariidae	Antennarius avalonis				^	Ĥ				ť	`	-	<u>^</u>	^		Ĥ	ı^			\(^	^	^	^	T .		
					v	v	v		 	,	_	-	_			~			H	H		v		H		
Ogcocephalidae	Zalieutes elater	ļ			Х	Х	Х		— 2	x 2	X	Х	Х			Х			H	H		Х		H		
Syngnathidae	Hippocampus ingens	Х							Н	4			4						H	F				L		
Scorpaenidae	Pontinus furcirhinus		Х		Х			Х					4						L					L		
	Pontinus species A		Х										Х					Χ					Х	Х		
	Scorpaena russula	Х	Х		Х			Х	X Z	X 2	Χ	Х	х				Х									
Triglidae	Bellator gymnostethus					Х	х																			
	Bellator loxias	х			Х		Х		х	T									T					T		
	Bellator xenisma		х			Х	Ĥ		Ĥ	٦,	Х		X 2	v		v	Х	v		х				Х		
	Prionotus albirostris		X		1	^	~		H	_	x X		^	^		^	^	^	H	Ĥ				X		
	Prionotus horrens		^		X		X		H	ť	^		-						1	-				 ^		
					Х		Х		H	4			+						H					H		
	Prionotus teaguei	1			<u> </u>				Ш	4			X 2	Χ												
Peristediidae	Peristedion barbiger					Х	Х	Х											L				Х	L		
Serranidae	Cephalopholis acanthistius																Χ									
	Diplectrum eumelum		х	Х	Х								x	Х		Х	Х			Х	Х					
	Diplectrum euryplectrum	Х				Х	х		X Z	x)	Χ		X Z	Х		Х					Х	Х	Х			
	Epinephelus niphobles										_	Х														
	Hemanthias peruanus						Х				х						х	х	T	Х	х	х	Х	х		
	Paralabrax loro						Ť		H	Ť			1				Х			<u> </u>				Ť		
	Pronotogrammus eos				Х	Х	х		H	۲,	X		X 2	_		х	^		H	1				H		
	T T T T T T T T T T T T T T T T T T T				^	^	-		H	ť	^		^	^		^			1	-				1		
	Serranus aequidens				-		Х		H	4			+						H					H		
	Serranus psittacinus	Х			<u> </u>			Х	Ш				4													
Carangidae	Gnathanodon speciosus																		L			Х		L		
	Selene peruviana															Χ										
Labridae	Decodon melasma			Ĺ	Х					X 2	Χ															
Chaetodontidae	Chaetodon humeralis											Х														
Callionymidae	Synchiropus atrilabiatus				Х		х	Х	H		x		х													
Gobiidae	Bollmannia chlamydes						Ė		H	Ť		_	Х				х	х	х	х	х	х		х		
	Bollmannia species A						х		H	1							ı,	,	î	Ť.	^	,,		Ĺ		
Stromateidae	Peprilus medius						^		H	+								v	F	H						
									H	+								X	H	H						
Trichiuridae	Trichiurus lepturus								\square	4								Х	H	F				H		
Paralichthyidae	Citharichthys gilberti				Х				Ш	4																
	Citharichthys platophrys					Х	+		Ш				X Z	Χ		Х		Х	Х	Х	Х		Х	Х		
	Cyclopsetta querna				L		Х	L									Х							L		
	Etropus ectenes	х?																								
	Etropus peruvianus)	X		T													
	Hippoglossina macrops				Х					1				Ī												
	Hippoglossina tetrophthalmus								$ \uparrow $	٦,	x					х		х		х	х					
	Syacium latifrons							v	X Z	x	`			Х		^	Х	^	Х	^	^			F		
		v	V/		·			^		+			Ŧ	^		H	^	F	^	\vdash				H		
Doth:-I	Syacium ovale	X	X		Х				Х	+			\blacksquare						H					F		
Bothidae	Bothus leopardinus	Х	Х						Х	4										L						
	Engyophrys sanctilaurenti		Χ		Χ				X 2	X)	Χ	Χ	X Z	Χ		Х	Х		Х	Х	Х	Χ	Х	Х		
	Monolene dubiosa			L	L	Х	L													Ĺ						
	Monolene maculipinna						Х			T			T													
	Perissias taeniopterus				Х						x			Í										ſ		
Cynoglossidae	Symphurus callopterus				Ė		х	У	 ,	χ			X 2	Х		x	У	У	Y	х	У	х	х	х		
_ ,9.0001000	Symphurus gorgonae					v	X	^	H	\exists							,	Ĥ	Ŷ	r	^		~	f		
	Symphurus leei					^	^		\forall	+			-						H	H						
							L	-	H	+			4						F	H				Х		
D 11 22 2	Symphurus oligomerus		Χ		Х	Х	Х	Х	X 2	X		_	Х				Х				Х	Х		Х		
Balistidae	Sufflamen verres					1		1				Х						1						П		
Tetraodontidae	Sphoeroides lobatus		Х		_	_	_	_	x :	_		_	_	_			_	_	_	_	_		_			