

## SYSTEM OF VERIFICATION OF THE CODE OF GOOD PRACTICES IN ANABAC & OPAGAC TUNA FLEET – PRELIMINARY RESULTS FOR THE ATLANTIC OCEAN

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### SUMMARY

*Spanish tuna purse-seiner organizations ANABAC and OPAGAC established in 2012 a common agreement for the application of good practices for responsible tuna purse-seine fisheries. The aim of this agreement is to reduce the mortality by entangling or by incidental catch of FAD-associated sensible species (sharks, rays/mantas whale sharks and sea turtles). The good practices defined in this agreement comprise the use of non-entangling FADs as well as the application of release operations for FAD-associated sensible fauna. In order to monitorize and assess the actual level of application of these good practices, a system of verification is being implanted in all the vessels of the ANABAC and OPAGAC fleets – i.e. 59 purse seiners and 19 supply vessels in April 2015, including both Spanish flags and other flags – operating in the 3 Oceans, in areas corresponding to 4 tuna RFMOs (ICCAT, IOTC, WCPFC and IATTC). This verification is based on in-situ registration of the good practices by observers. This document presents the initial situation (October 2014) in terms of application of good practices, the training for crew and observers, and the first data of good practices observed in the Atlantic Ocean (9 vessels surveyed since December 2014). These first results are overall encouraging, with a majority of vessels displaying a level of compliance superior to 80% for non-entangling FADs and reaching 100% for fauna release operations.*

### RÉSUMÉ

*En 2012, les organisations des senneurs thoniers espagnols ANABAC et OPAGAC ont conclu un accord commun pour l'application de bonnes pratiques d'une pêche responsable de thon à la senne. L'objectif de cet accord est de réduire la mortalité par enchevêtrement ou par prise accidentelle d'espèces sensibles associées aux DCP (requins, raies / raies mantas, requins baleines et les tortues de mer). Les bonnes pratiques définies dans cet accord comprennent l'utilisation de DCP non emmêlants ainsi que l'application d'opérations de remise à l'eau de la faune sensible associée aux DCP. Afin de contrôler et d'évaluer le niveau réel d'application de ces bonnes pratiques, un système de vérification est mis en œuvre à bord de tous les navires des flottilles de ANABAC et OPAGAC, à savoir 59 senneurs et 19 navires d'approvisionnement en avril 2015, y compris les navires sous pavillon espagnol et d'autres pavillons - opérant dans les trois océans, dans les zones correspondant aux quatre ORGP thonières (ICCAT, CTOI, WCPFC et IATTC). Cette vérification est fondée sur l'enregistrement in situ des bonnes pratiques par des observateurs. Le présent document fait état de la situation initiale (octobre 2014) en termes d'application des bonnes pratiques, de la formation des membres de l'équipage et des observateurs ainsi que des premières données des bonnes pratiques observées dans l'océan Atlantique (9 navires observés depuis décembre 2014). Ces premiers résultats sont globalement encourageants, la majorité des navires affichant un niveau d'application supérieur à 80% pour les DCP non emmêlants et un niveau de 100 % en termes de remise à l'eau de la faune.*

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## RESUMEN

*En 2012, las organizaciones españolas de cerqueros atuneros ANABAC y OPAGAC establecieron un acuerdo común para la aplicación de buenas prácticas para la pesca responsable de atún al cerco. El objetivo de este acuerdo radica en reducir la mortalidad por enmallamiento o por captura incidental de especies sensibles asociadas con DCP (tiburones, rayas/manta, tiburones ballena y tortugas marinas). Las buenas prácticas definidas en este acuerdo incluyen el uso de DCP no enmallantes, así como la aplicación de las operaciones de liberación para la fauna sensible asociada con los DCP. Para hacer un seguimiento y evaluar el nivel real de aplicación de estas buenas prácticas, en abril de 2015 se estableció un sistema de verificación en todos los buques de las flotas de ANABAC y OPAGAC, a saber 59 cerqueros y 19 barcos auxiliares, tanto con pabellón español como con otros pabellones, que operan en los tres océanos, en las áreas correspondientes a cuatro OROP de tñidos (ICCAT, IOTC, WCPFC e IATTC). Esta verificación se basa en el registro in situ por parte de los observadores de las buenas prácticas. Este documento presenta la situación inicial (octubre de 2014) en cuanto a la aplicación de buenas prácticas, la capacitación de la tripulación y los observadores, y los primeros datos de buenas prácticas observados en el océano Atlántico (nueve buques objeto de observación desde diciembre de 2014). Estos primeros resultados son alentadores en general, ya que la mayoría de los buques tuvo un nivel de cumplimiento superior al 80% en cuanto a DCP que no producen enmallamientos y del 100% en cuanto a las operaciones de liberación de la fauna.*

## KEYWORDS

*Non entangling FADs, bycatch mitigation, sharks, rays, turtles, observers, purse-seine*

### 1. Introduction

Spanish tuna purse seiners organizations ANABAC and OPAGAC established in February 2012 a common agreement for the application of good practices in the tropical tuna fleet (purse seiners and supply vessels). The goal of this self-imposed initiative is to reduce the mortality by entangling or by incidental catch of FAD-associated sensible species (sharks, rays/mantas whale sharks and sea turtles). The good practices defined comprise the use of non-entangling FADs and the application of release operations for FAD-associated sensible fauna.

In order to assess the actual level of application of these good practices in the fleet, a system of verification is being implanted in all the vessels of the ANABAC and OPAGAC fleets – i.e. 59 purse seiners and 19 supply vessels in April 2015, including both Spanish flags and other flags – operating in the 3 Oceans, in areas corresponding to 4 tuna RFMOs (ICCAT, IOTC, WCPFC and IATTC). This verification is based on in-situ registration of the good practices by observers. This implies a 100% coverage of the fleet by observers.

This document presents the initial situation (October 2014) in terms of application of good practices, the training for crew and observers, and the first data of good practices observed in the Atlantic Ocean.

### 2. Materials and method

#### 2.1 Analysis of initial situation

The initial situation was assessed through questionnaires distributed to all skippers in October 2014. The goal of the questionnaires was to know the level of use of non-entangling FADs (both raft and submersed part) and of application of fauna release operations. The questionnaire was composed of 38 detailed questions regarding the observer coverage, the structure of the raft and of the submersed part of the FADs used, and the different possible release operations for sharks, rays/mantas, whale sharks and sea turtles. The answers of the skippers are presented in section 3.1.

## **2.2 Training**

To help skippers to identify the correct way of designing FADs as well as safety measures and fauna release operations, a short guide has been designed and is being distributed. Details of correct handling of fauna are given, focusing both on crew safety and on avoidance of damages to the animals.

For the observers, training sessions are being done in the different structures taking part into the observation. These training sessions comprise (1) a general overview of the use of FADs in tuna purse-seine fishery, the related impact on non-targeted fauna and the mitigation measures, (2) instructions on how to identify and describe fauna release operations and FADs through ad-hoc forms, and (3) exercises to train the observers for filling the corresponding forms.

## **2.3 Associated cost**

The observation of the good practices implies 100% coverage of the fleet. The global cost of this coverage is over 2.5 million euros per year (**Table 1**).

In addition, specific equipment for fauna release (such as hoppers, lateral doors, specific conveyor belt) are fitted on the boats, their cost ranges from 1000 to 2500 euros per vessel.

Finally, the use of non-entangling FADs also has an additional cost. The price per FAD is around 4-7 times the cost of old entangling FADs (**Table 2**).

## **2.4 In-situ observation**

The release of sharks, rays, whale sharks and sea turtles is registered through specific forms named B2 (for sharks) and B3 (for whale sharks, rays and turtles), see **Figure 1** and **Figure 2**.

These forms refer to the current form B used to describe the characteristics of the fishing set. A specific form (B2) was prepared for sharks only, because they can occur in important amounts in a fishing set. Whale sharks, rays and turtles appear usually in smaller amounts, so they were associated in a same form B3. The forms B2 and B3 register the characteristics of each individual release, through four fields:

- A general field regarding individual characteristics (species, size, and sex if identifiable).
- A field in which the release mode is registered. Five release modes are accepted for sharks in the code of good practices: (1) using the brailer, (2) using light equipment such as stretcher, fabric, sarria or cargo net, (3) using specific equipment such as a hopper or lateral doors, (4) manually from deck or (5) after disentangling. In case of observing a non-conform release (e.g. handling a shark with a rope), the observer ticks the corresponding case and describes the non-conformity in notes.
- A field to register the time at which an animal is detected and the time at which it is released, so as to measure the amount of time required to release each animal.
- A field to estimate the state of the animal when it is released at sea. If they can be observed, the eyes, the head, the fins, the skin and the gill slits of each released animal are scored P ("perfect", no damage), M ("moderate", moderate damages), S ("severe", important damage with a risk for the animal's survival) or U ("unknown", could not be observed). These elements, together with the release mode and the release time, give an indication on the animal's ability to survive after release.

The form B3 has a similar structure (**Figure 2**), only the release modes and the body parts differ, as they correspond to each group of animals (whale sharks, rays, turtles).

The FADs detailed characteristics are also registered through a specific form named D2 (**Figure 3**) and referring to the actual form D relative to FAD general characteristics.

This form D2 registers:

- The material of the FAD, so as to discriminate objects made of wood and vegetable elements from plastic or metallic objects.

- The superior coverage of the FAD, for which three possibilities are allowed by the code of good practices (non-covered, covered with net whose mesh size is < 3cm, covered with non-meshed material), and one considered entangling (covered with net whose mesh size is > 3cm).
- The inferior coverage of the net (same features).
- the subsurface structure, for which three types are allowed by the code of good practices (net gathered in sausages, open net with mesh size is < 3cm, ropes or other non-meshed material) and one considered entangling (open net with mesh size > 3cm).
- The presence of single pieces of net in the subsurface part and their mesh size are also registered.
- The presence of other components (plastic containers, corks...).
- The fact of modifying or replacing the raft or the subsurface structure.

### 3. Results and discussion

#### 3.1 Initial situation (skippers' declarations)

All the skippers use at least one of the non-entangling FAD types defined in the code (raft and submersed part). According to skippers' replies, FAD structure is non-entangling for 98.5% of rafts and 100% of subsurface structures. The most frequent raft coverage used is a non-entangling material such as fabric or sisal canvas (96%) and the second most used is net with mesh size < 3cm (57%) – see **Figure 4**.

Regarding the subsurface structure, the most frequent types used are old nets rolled in sausages (77%) and small meshed nets (65.2%).

Fauna release operations are applied by 93.7% to 100% of the skippers, depending on the species; 100% were reached in the case of turtles.

In the case of sharks, 93.7% of skippers declared they are released manually from deck. In the case of rays, 87% of skippers declared they are usually released manually from deck, 68% can use the brailer to extract them directly from the purse seine, 56% use light equipment such as stretchers, “sarria” round nets, cargo nets or tarpaulins. For whale sharks most skippers (97%) drown the cork line of the net when they detect a whale shark, so as to let it swim out of the purse seine.

#### 3.2 In-situ observation in the Atlantic Ocean

We present here preliminary results corresponding to data from nine boats operating in the Atlantic Ocean. FADs structure and fauna release operations were observed on these boats between December 2014 and April 2015. Among these nine boats, the use of FADs with non-entangling raft ranged from 65% to 100% (**Figure 5**), and the use of FADs with non-entangling submersed part ranged from 68% to 100% (**Figure 6**).

The cases of non-conformity were due to partial information of skippers. As a matter of example one of the skippers believed that the subsurface part should be non-entangling from the surface to 20m depth, and considered that large meshed open nets below 20m were harmless. This situation was easily solved through providing more detailed information and advice on FAD design.

In the case of by-catch release, the rate of conform release for sharks and rays was superior to 90% for most vessels (**Figure 7** and **8**). The operations were 100% conform in four of the vessels in the case of sharks and in five of them in the case of rays (**Figure 7** and **8**).

In the case of rays, we need to take into account that the overall number of rays released in the totality of the surveyed vessels was low (n=30) and that correct release rates when considered by individual vessel are based on a very low number on individual. The overall rate of correct release for rays is 83.33%.

For turtles, the operations observed so far were 100% conform for turtles for all vessels (**Figure 7**). Most rays released directly from the purse seine using the brailer, most sharks and turtles were released manually from deck.


The registered release time was overall short (**Figure 9**). 75% of sharks were released in the first five minutes after detection (59% after three minutes); more than 65% of rays were released in the first five minutes after detection and 87% of turtles were released in the first four minutes (34% in the first minute).

**Table 1.** Cost of the observation onboard ANABAC and OPAGAC vessels in the three oceans.

	<i>Atlantic</i>	<i>Indian</i>	<i>Pacific</i>
Year, all vessels	1.209 M€	882 000€	485 000€

**Table 2.** Cost of the entangling and non-entangling FADs.

	<i>Atlantic</i>	<i>Indian</i>	<i>Pacific</i>
Old, entangling FADs, unit	27.50€	27.50€	27.50€
Non-entangling FADs, unit	122-191€	122-191€	160-170€
% of initial cost	444-695%	444-695%	582-618%



Verification of Good Practices ANABAC/OPAGAC

**RELEASE OF ASSOCIATED FAUNA**

**Form B2**

version 2014

fishing set n°:

route form n°:

fauna liberation form n°:

Date:

route line n°:

fishing trip code

strapping start time  

h	h	m	m
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Released fauna - sharks (1 line by individual, see example)**

	individual			release mode							time		(4) state of the animal				
	(1) species	(2) size	(3) sex	using brailer	by stretcher, fabric, sarria, cargo net	with specific equipment	manual from deck	after disentangling	non conform	animal detected	animal released	eyes	head	fins	skin	gill slits	
0	FAL	140	2				1			7:35	7:47	P	P	M	M	P	
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
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29																	
30																	

Notes (5):

(1) put species code - see usual observers handbook.

(2) in centimeters

(3) sex: 1 male; 2 female; 3 undetermined


(4) score: P ("perfect") intact, no damage; M ("moderate") superficial damages; S ("severe") damages with important risk for survival; U ("unknown") cannot be observed.

(5) if photos of the individuals were taken, mention code of the corresponding photos

If more than 30 individuals are released, continue on a new form

Data verified

**Figure 1.** Form B2 used to register the information of shark releases.

		Verification of Good Practices ANABAC/OPAGAC <b>RELEASE OF ASSOCIATED FAUNA</b>		<b>Form B3</b> version 2014	
fishing set n°:		Date:		fishing trip code	
route form n°:		route line n°:			
fauna release form n°:				strapping start time h h m m	

**Released fauna - whale sharks, rays (1 line/individual, see example)**

individual			release mode								time		(4) state of the animal					
	(1) species	(2) size	(3) sex	drowning the corks	notch in the net	using the brailer (small shark)	using the brailer	by stretcher, fabric, sarria, cargo net	with specific equipment	manual from deck	non conform	animal detected	animal released	eyes	head	fins	skin	gill slits
0	RHN	520	3	1								7:49	8:36	P	P	M	M	P
1																		
2																		
3																		
0	RMB	120	2							1		8:44	8:49	P	P	M	M	P
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

**Released fauna - turtles (1 line/individual, see example)**

individual			release mode					time		(4) state of the animal					
	(1) species	(2) size	(3) sex	after disentang.	manual from deck	through removing net/plastic remains or hook	non conform	onboard 1d	animal detected	animal released	eyes	head	legs	skin	shell
0	TTL	90	1		1				9:04	9:21	P	P	P	M	P
1															
2															
3															
4															
5															
6															
7															

Notes (5):

(1) put species code - see usual observers handbook.  
 (2) in centimeters  
 (3) sex: 1 male; 2 female; 3 undetermined  
 (4) score: P ("perfect") intact, no damage; M ("moderate") superficial damages;  
       S ("severe") damages with important risk for survival; U ("unknown") cannot be observed.  
 (5) if photos of the individuals were taken, mention code of the corresponding photos

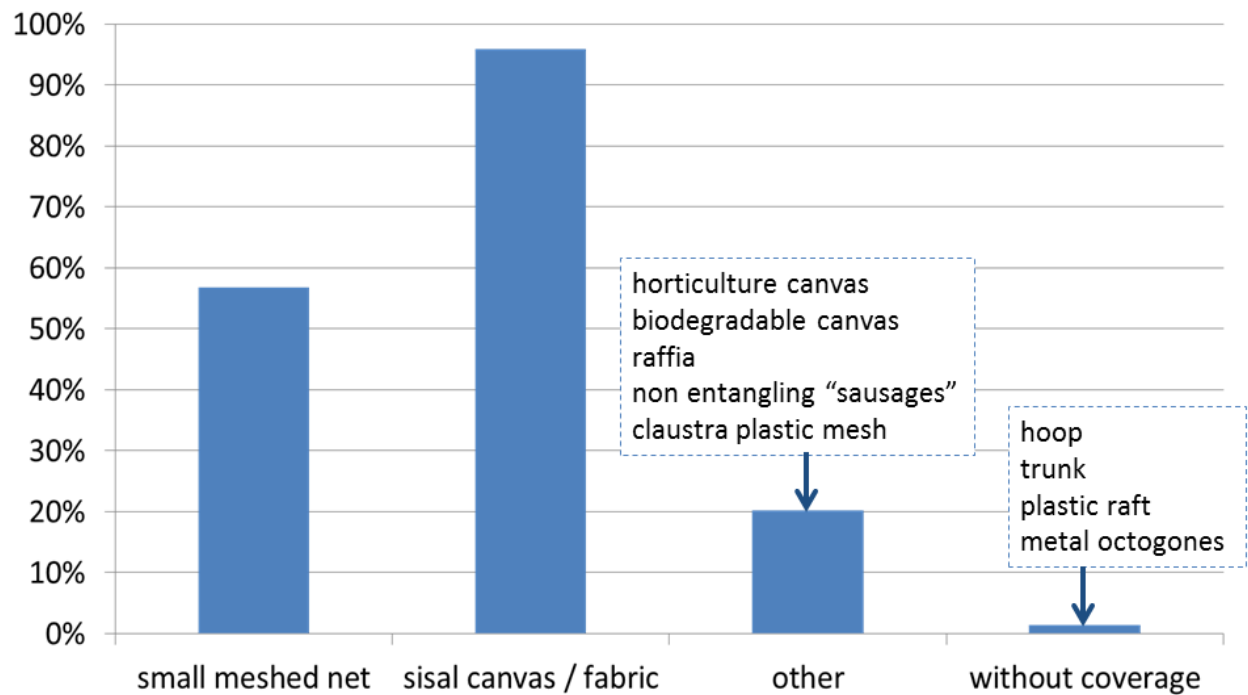
Data verified:

**Figure 2.** Form B3 used to register the information of whale sharks, rays and turtle releases.

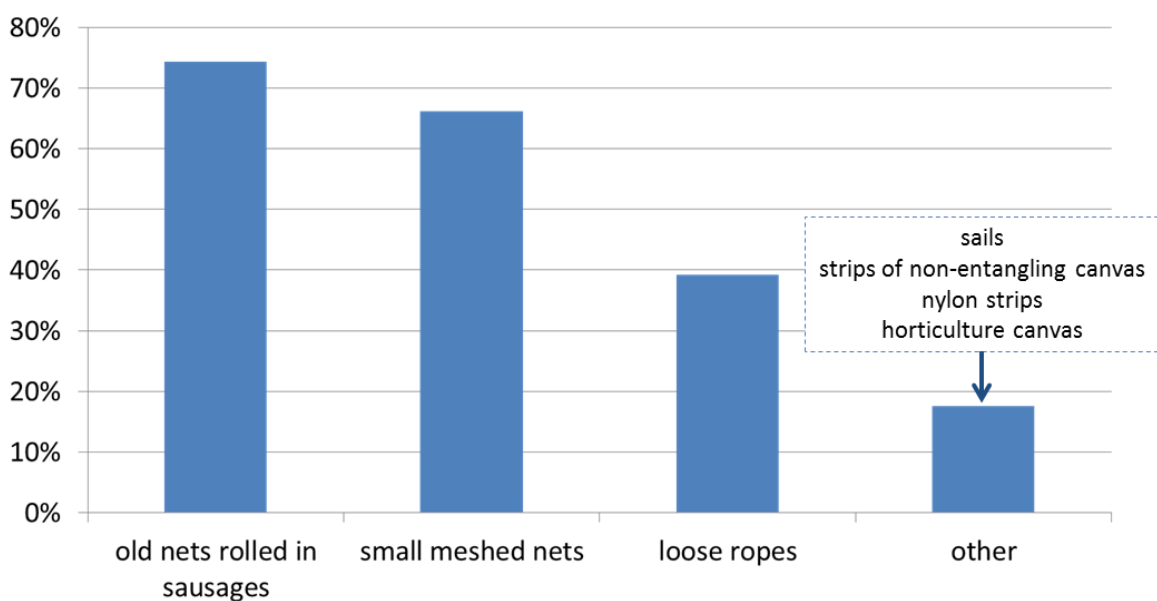
Verification of Good Practices ANABAC/OPAGAC															Form D2																			
1 line by FAD if no modification, 2 lines by FAD if modification (state when arriving and state when leaving)																																		
BOAT name:																																		
OBSERVER:																																		
		Fishing trip start date:		Fishing trip code:																														
Nº Form D	when arriving	when leaving	DATE	TIME	RAFT									SUBSURFACE STRUCTURE				OTHER COMPONENTS																
					Canes / Vegetal		Metallic or PVC		Superior coverage			Inferior coverage			net in sausage		open net		single net pieces		rope / no mesh		plastic containers		Corks		Bags		Palms, canes...		Color belts		weights	
45	X	X	14/03/2014	13:22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
45	X	X	14/03/2014	13:22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**Figure 3.** Form D2 used to register the characteristics of FADs and to determine their entangling or non-entangling nature.

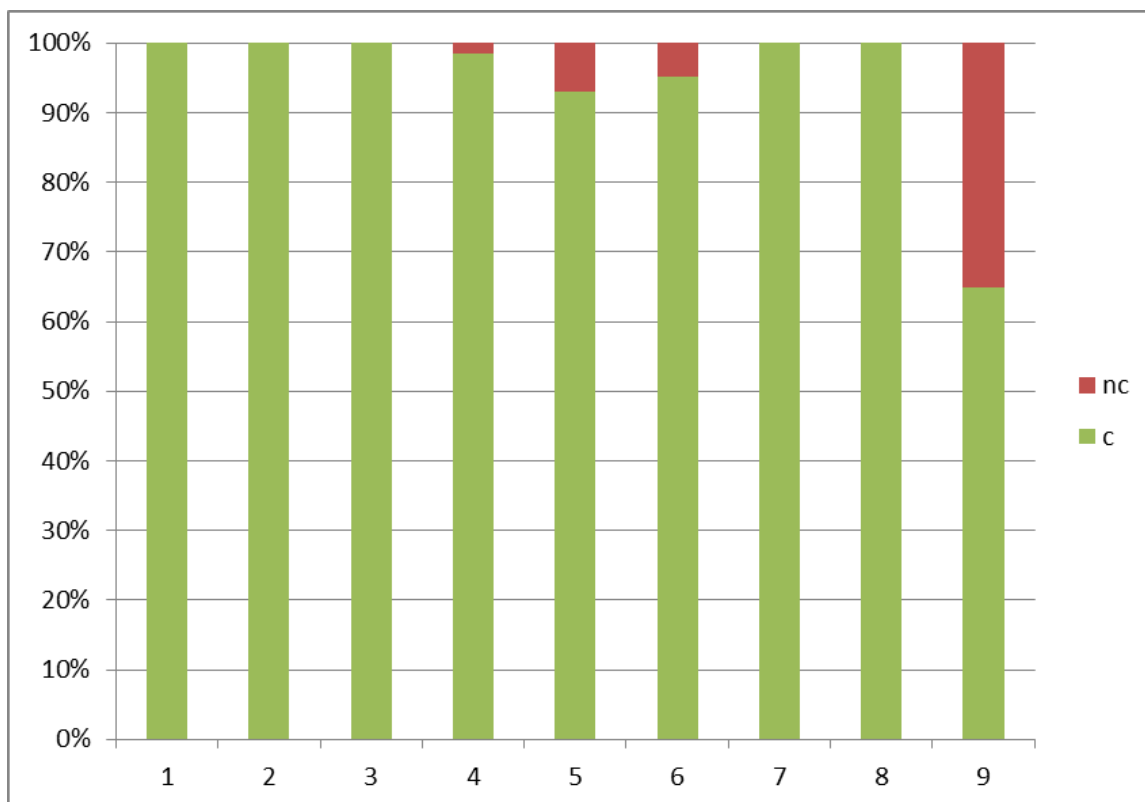
## Initial situation – Type of FAD coverage used



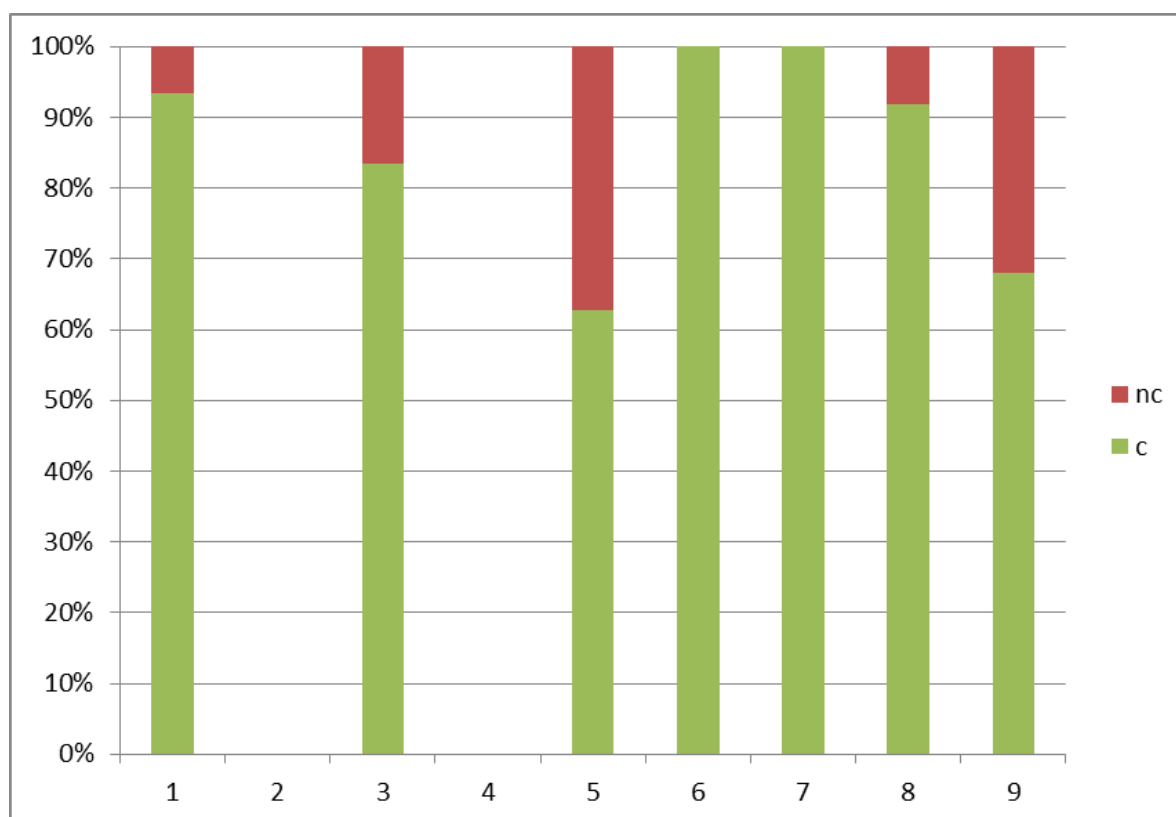
## Initial situation – Type of FAD submerged part used



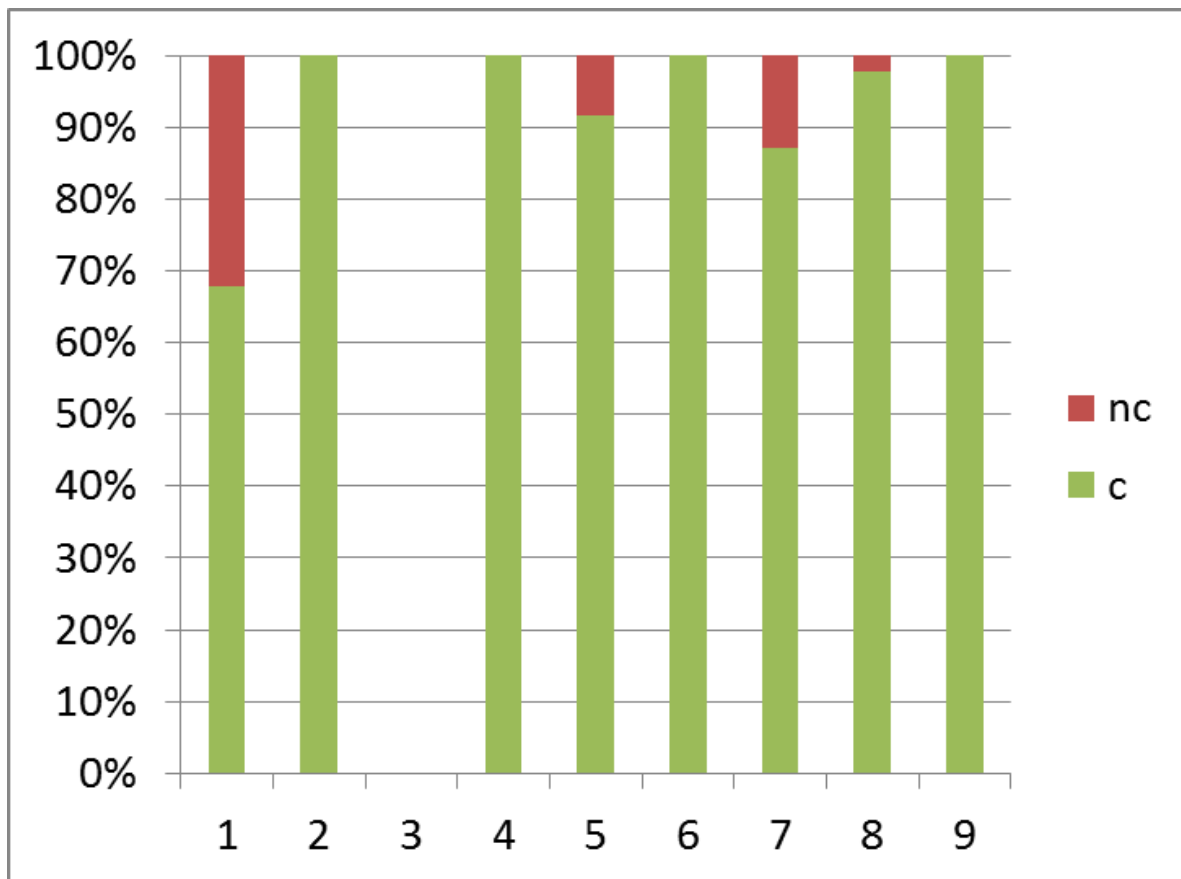
**Figure 4.** Types of FAD coverage used by the ANABAC/OPAGAC skippers.



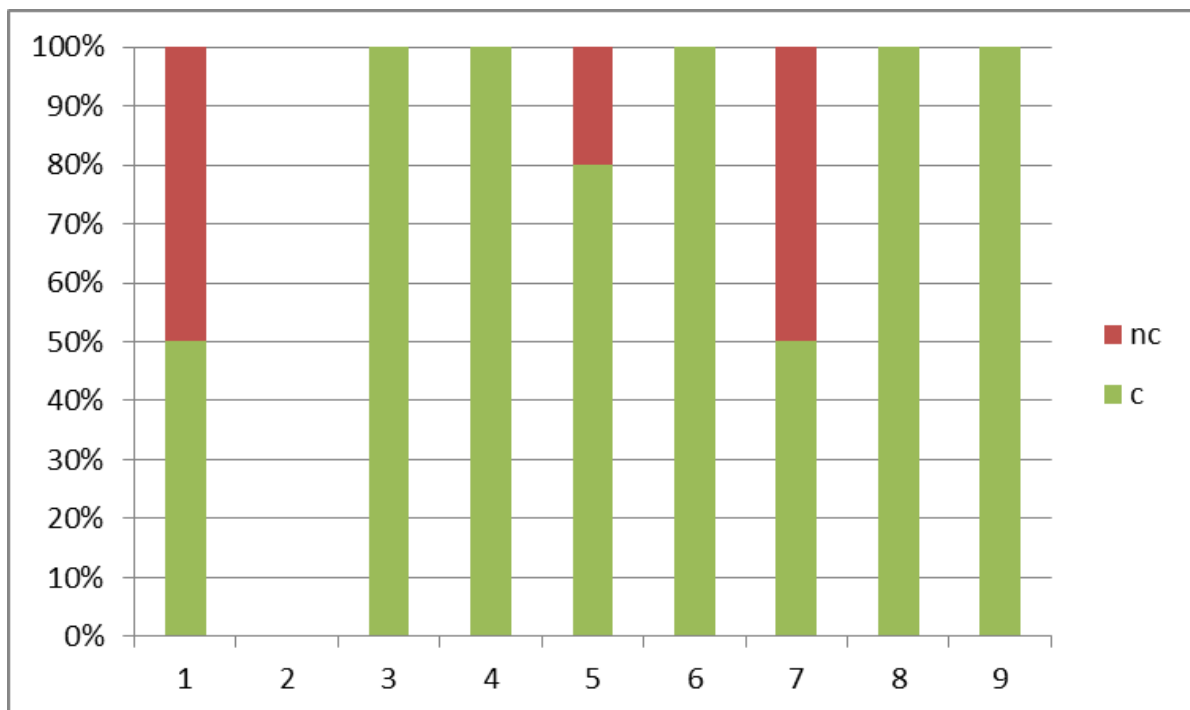
**Figure 5.** Percent of conform vs non-conform rafts observed on FADs used by each of the nine vessels surveyed.



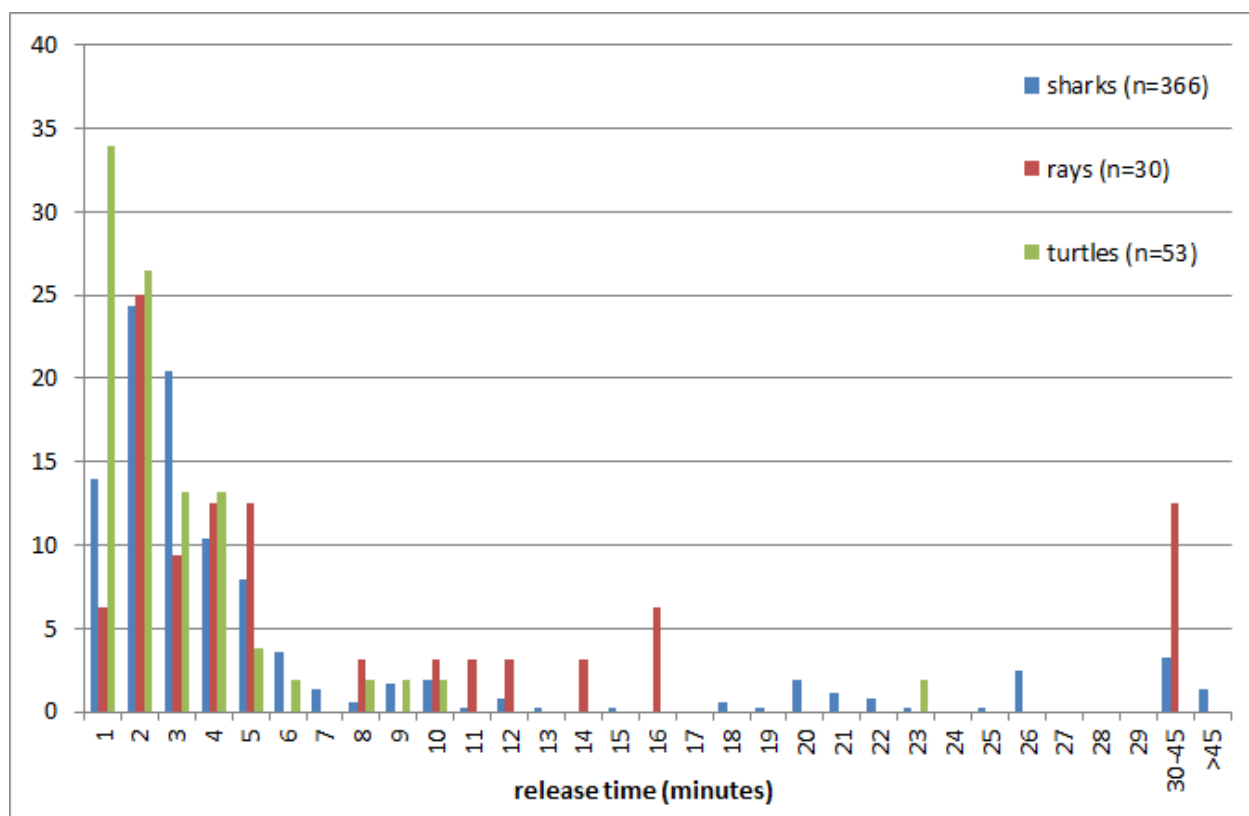
**Figure 6.** Percent of conform vs non-conform subsurface structures observed on FADs used by each of the nine vessels surveyed.



**Figure 7.** Percentage of conform shark releases on each of the nine vessels surveyed.



**Figure 8.** Percentage of conform ray/manta releases from each of the nine vessels surveyed.



**Figure 9.** Distribution of the release time of sharks (blue bars), rays (red bars) and turtles (green bars) from 9 purse seiners in the Atlantic Ocean between December 2014 and March 2015.