

TRANSFORMING OCEANS: INNOVATION and naval architecture for a CONNECTED and SUSTAINABLE world

ESTIMATION OF FISHING DISCARDS IN THE ANDALUSIAN TRAWLING FLEET AND PROPOSALS FOR THEIR MANAGEMENT AND USE WITHIN THE FRAMEWORK OF THE ANDALUSIAN SUSTAINABLE BLUE ECONOMY STRATEGY

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INTRODUCTION

FISHING DISCARDS: unwanted catches (live or dead)

Size restrictions, quotas, specific regulations or economic reasons

NEGATIVE IMPACT: fishery resources and the environment

Particularly in trawl fisheries

Depends on: area & vessels

TYPES OF DISCARDS

Total Allowable Catches (TACs) and quotas:

- Species with maximum catch limits or size restrictions.
- Obligation to land all catches.
- Commercialization is prohibited.

NOT Total Allowable Catches (TACs) and **quotas**:

- Species caught accidentally.
- Obligation to land some of these species.
- Not commercially interesting.



INTRODUCTION

OBJECTIVE OF THE NEW COMMON FISHERIES POLICY (CFP):

Gradually **eliminate** the practice of **discards**... ...by introducing the **obligation to land** all catches... ...including those that were **previously discarded**.

I.e.: all catches of species with size restriction, ______ TACs & quotas

Retained on board and landed

STUDY FOCUS:

Integrated management of discards in Andalusian trawling fleet... ...aligning with the Andalusian Strategy for Sustainable Blue Economy.



ANDALUSIAN TRAWLING FLEET

Characteristics of the trawling fleet in the Andalusian fishing areas (Source: AGAPA).

	Gulf de Cadiz	Mediterranean	Total
No. Vessels	126	101	227
Average Size (Gt)	43	51	46
Average Power (kW)	152	128	141
Average Lenght (m)	19	19	19
Average Age	22	27	24



ANDALUSIAN TRAWLING FLEET

Distribution of the Andalusian trawling fleet by home port (Source: AGAPA).



ESTIMATION OF FISHING DISCARDS

Estimated* total catch, retained & discarded by set. Port: Sanlúcar de Bda, Cádiz.

		Total C	atch (kg)	Retained Catch (kg)				Discarded Catch (kg)			
	Min.	Max.	Mean	± SD	Min.	Max.	Mean	± SD	Min.	Max.	Mean	± SD
D1	100	300	210	65,83	40	200	95	54,82	60	200	115	42,23
D2	100	150	116,67	28,87	40	50	43,33	5,77	60	100	72,33	23,09
D3	57	200	126,31	37,60	34	110	70,28	21,20	20	130	56,11	27,07
D4	80	200	140	84,85	50	130	90	56,57	30	70	50	28,28
D5	135	145	140	5,00	85	90	88,33	2,89	50	55	51,67	2,89
D6	150	400	233,33	144,34	75	200	116,67	72,17	75	200	116,67	72,17
D7	350	350	350		250	250	250		100	100	100	
D8	200	200	200		100	100	100		100	100	100	
D9	150	150	150		75	75	75		75	75	75	

* ECOFISH PROJECT DATA



	D1	D2	D3	D4	D5	D6	D7	D8	D9	kg/set	
B1	140,1	128,0	101,8	91,8	91,6	62,7	64,5	54,2	30,2	75,0	
B2	112,8	98,1	77,4	66,3	66,0	39,1	43,6	35,1	8,4	75,0	
B3	60,5	54,3	22,2	11,8	11,8	17,4	18,0	27,2	51,8	51,7	
B4	87,7	80,3	48,0	39,0	39,0	11,3	12,2	0,0	29,3	100,0	
B5	89,2	81,2	49,7	40,5	40,5	12,1	13,1	2,8	27,0	100,0	
B6	77,5	73,0	36,8	29,5	29,7	11,8	8,6	12,6	41,7	100,0	
B7	62,8	56,0	24,6	14,2	14,0	15,0	15,9	25,1	49,4	51,7	
B 8	77,7	69,1	39,3	29,1	29,0	0,0	7,9	11,3	34,9	116,7	
B9	67,1	62,8	26,8	19,0	19,2	14,2	12,6	21,3	48,7	100,0	
B10	102,6	93,6	63,2	53,9	53,8	25,0	26,1	15,4	17,4	100,0	
B11	51,2	44,8	15,6	3,9	3,2	26,6	27,2	36,9	60,2	51,7	
B12	8,2	31,7	36,0	45,0	45,1	74,1	73,4	83,6	107,9	115,0	
B13	115,0	104,2	76,5	66,6	66,5	37,5	39,5	29,0	10,7	75,0	
B14	48,8	43,9	12,4	0,9	0,0	29,0	29,2	39,0	63,0	51,7	
B15	110,1	97,9	72,6	62,1	61,9	33,4	36,4	26,9	3,6	75,0	
B16	102,5	93,7	63,2	53,9	53,8	25,0	26,0	15,3	17,7	100,0	
B17	0,0	27,3	41,0	48,7	48,8	77,7	77,3	87,7	110,8	115,0	
B18	27,8	55,0	55,2	66,1	66,4	94,4	92,4	102,8	129,1	115,0	
B19	77,9	100,5	112,9	123,2	123,5	152,0	150,5	160,6	186,5	115,0	
B20	45,1	37,5	15,3	7,7	7,0	33,1	34,1	43,8	65,7	51,7	
B21	85,4	75,6	47,4	37,0	36,9	8,2	12,7	8,8	26,7	116,7	
B22	133,8	122,2	95,3	85,4	85,3	56,3	58,0	47,6	24,7	75,0	
B23	61,2	58,4	20,9	14,3	14,6	19,9	17,3	27,6	54,6	50,0	
B24	77,3	71,0	38,0	29,2	29,2	7,9	0,0	12,2	38,2	100,0	
B25	110,6	105,2	69,9	62,6	62,7	36,4	34,6	25,3	31,4	100,0	
B26	24,0	9,7	33,7	35,6	35,2	61,8	63,1	72,8	92,1	73,3	
B27	49,3	45,9	11,3	2,8	3,1	28,8	28,2	38,4	63,2	50,0	
B28	77,8	68,8	39,8	29,4	29,2	1,4	8,9	12,0	34,2	116,7	
B29	27,3	0,0	43,3	44,3	43,9	69,1	71,0	80,3	97,8	73,3	
B30	12,1	19,7	47,3	52,9	52,8	81,0	81,6	91,6	112,5	115,0	
B31	77,7	69,1	39,3	29,1	29,0	0,2	8,1	11,4	34,8	116,7	
B32	126,7	112,1	90,8	79,8	79,5	51,8	55,4	46,1	17,2	75,0	
B33	74,4	67.3	35.3	25.8	25.8	5.1	5.0	13.6	39.3	100.0	
B34	50,8	47,2	13,2	5,2	5,1	27,6	26,5	37,2	61,8	51,7	
B35	48.3	42.0	14.2	3.6	2,9	29.5	30.2	39.8	62.9	51,7	
Т	DTAL	, -	,	- , -	,-	- / -	/	,-	- ,-	3000.0	



ESTIMATION OF FISHING DISCARDS



	D1	D2	D 3	D4	D5	D6	D7	D8	D 9	kg/set
B4	87,7	80,3	48,0	39,0	39,0	11,3	12,2	0,0	29,3	100,0



ESTIMATION OF FISHING DISCARDS

DISCARDS (kg) IN A SET





			kg/jornada	Nº bandejas	V total bandejas (m³)	% Ocupación bodeg	ga		
		B1	300.0	41	0.861	9.10	-		
		B2	300.0	41	0.861	15.77			
		B3	206,7	29	0,609	3,58	_		
		B4	400,0	55	1,155	6,66			
		B5	400,0	55	1,155	6,96			
		B6	400,0	55	1,155	5,70			
		B7	206,7	29	0,609	3,67			
		B 8	466,7	64	1,344	8,70			
		B9	400,0	55	1,155	5,94			
		B10	400,0	55	1,155	7,81			
		B11	206,7	29	0,609	3,75			
		B12	460,0	63	1,323	6,28			
		B13	300,0	41	0,861	6,92			
<u> </u>		D4A	206 7		0 600	2 5 4			
	kg/jornada	Nº k	andej	jas V	total bande	ejas (m³)	% Ocu	ipación	bodega
B1	300,0		41		0,861			9,10	
B1	300,0	B21	41 400,/	64	0,861	9,01		9,10	
B1	300,0	B21 B22	41 400,7 300,0 200,0	41	0,861	9,61 7,98		9,10	
B1	300,0	821 822 823	41 400,7 300,0 200,0 400,0	64 41 28	0,861 0,588	9,61 7,98 2,94		9,10	
B1	300,0	821 822 823 824 825	41 <u>400,7</u> <u>300,0</u> <u>200,0</u> <u>400,0</u> <u>400,0</u>	04 41 28 55 55	0,861 0,588 1,155	9,01 7,98 2,94 6,53		9,10	
B1	300,0	821 822 823 824 825 826	41 400,7 300,0 200,0 400,0 400,0 203,3 	04 41 28 55 55 55 41	0,861 0,588 1,155 1,155	9,01 7,98 2,94 6,53 5,44 7,55		9,10	
B1	300,0	В21 В22 В23 В24 В25 В26 В27	4 00,7 300,0 200,0 400,0 400,0 293,3 200,0	04 41 28 55 55 41 28	0,861 0,588 1,155 1,155 0,861 0,588	9,01 7,98 2,94 6,53 5,44 7,55 3,23		9,10	
B1	300,0	В21 В22 В23 В24 В25 В26 В27 В28	41 400,7 300,0 200,0 400,0 400,0 293,3 200,0 466,7 	04 41 28 55 55 41 28 64	0,861 0,861 0,588 1,155 1,155 0,861 0,588 1,344	9,01 7,98 2,94 6,53 5,44 7,55 3,23 9,05		9,10	
B1	300,0	В21 В22 В23 В24 В25 В26 В27 В28 В29	41 400,7 300,0 200,0 400,0 293,3 200,0 466,7 293,3 	64 41 28 55 55 41 28 64 41	0,861 0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861	9,61 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31		9,10	
B1	300,0	821 822 823 824 825 826 827 828 829 830	41 400,7 300,0 200,0 400,0 293,3 200,0 466,7 293,3 460,0 	64 41 28 55 55 41 28 64 41 63	0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323	9,61 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42		9,10	
B1	300,0	B21 B22 B23 B24 B25 B26 B27 B28 B29 B30 B31	41 406,7 300,0 200,0 400,0 293,3 200,0 466,7 293,3 460,0 466,7 	64 41 28 55 55 41 28 64 41 63 64	0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323 1,344	9,61 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42 8,73		9,10	
B1	300,0	821 822 823 824 825 826 827 828 829 830 831 832	4 1 <u>466,7</u> <u>200,0</u> <u>400,0</u> <u>400,0</u> <u>293,3</u> <u>200,0</u> <u>466,7</u> <u>293,3</u> <u>460,0</u> <u>466,7</u> <u>300,0</u>	64 41 28 55 55 41 28 64 41 63 64 41	0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323 1,344 0,861	9,01 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42 8,73 19,04		9,10	
B1	300,0	B21 B22 B23 B24 B25 B26 B27 B28 B29 B30 B31 B32 B33	4 00,7 300,0 200,0 400,0 293,3 200,0 466,7 293,3 460,0 466,7 300,0 400,0	b4 41 28 55 55 41 28 64 41 63 64 41 55	0,861 0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323 1,344 0,861 1,323 1,344 0,861 1,155	9,01 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42 8,73 19,04 6,84		9,10	
B1	300,0	В21 В22 В23 В24 В25 В26 В27 В28 В29 В30 В31 В32 В33 В34	4 1 <u>400,7</u> <u>300,0</u> <u>200,0</u> <u>400,0</u> <u>293,3</u> <u>200,0</u> <u>466,7</u> <u>293,3</u> <u>460,0</u> <u>466,7</u> <u>300,0</u> <u>466,7</u> <u>300,0</u> <u>400,0</u> <u>200,0</u> <u>400,0</u> <u>200,0</u> <u>400,0</u> <u>200,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>400,0</u> <u>206,7</u>	b4 41 28 55 41 28 64 41 63 64 41 55	0,861 0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323 1,344 0,861 1,323 1,344 0,861 1,155 0,609	9,01 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42 8,73 19,04 6,84 3,38		9,10	
B1	300,0	B21 B22 B23 B24 B25 B26 B27 B28 B29 B30 B31 B31 B32 B33 B34 B35	41 400,7 300,0 200,0 400,0 293,3 200,0 466,7 293,3 460,0 466,7 300,0 400,0 206,7 206,7 	b4 41 28 55 55 41 28 64 41 63 64 41 55	0,861 0,588 1,155 1,155 0,861 0,588 1,344 0,861 1,323 1,344 0,861 1,323 1,344 0,861 1,155 0,609 0,609	9,61 7,98 2,94 6,53 5,44 7,55 3,23 9,05 10,31 9,42 8,73 19,04 6,84 3,38 3,79		9,10	

MANAGEMENT AND USE

EFFICIENT MANAGEMENT OF DISCARDS

Crucial to ensure product quality



SOLUTIONS are proposed to:

- Utilize discards.
- •Add value to the unwanted catch.



MANAGEMENT AND USE

A POSSIBLE OPTION:











- Additional space
- € vessel modernization



MANAGEMENT AND USE

ANOTHER OPTION:

"Processing plant near the fish markets"

Reduction of **logistical costs**.



• Immediate processing of discards.

• Maximises the **commercial value** of discards.

• Minimises **transport damage**.

Efficient Management



Sustainability & Profitability of the fishing activity in the region.



CONCLUSIONS

- Importance of the CFP for fisheries sustainability...
- ...with **adaptations** to **fleets**.
- Need for specific strategies...
- ...to manage different types of discards.
- **Opportunities** for **utilization** through...
- ...**on board silage** production...
- ...or installation of **processing plants**.



CONCLUSIONS

- Challenges such as...
- ... additional space on board...
- ... and economic **investment** to **modernize** vessels.
- Importance of efficient and responsible management...
- ...to promote the **Sustainable Blue Economy** in Andalusia.



ACKNOWLEDGEMENT

Project **funded** by the

Campus of International Excellence of the Sea (**CEIMAR**) through the

"Call for Grants for Knowledge Transfer and Business Innovation

Projects in the Blue Economy Field- CEIMAR - 2022"

and **co-funded** by **GRAFINTA S.A.**

(Project 18CEIPRO42).











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THANKS FOR YOUR ATTENTION



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