

Przemysław RAJEWSKI, Cezary BEHRENDT
Maritime Academy, Szczecin

THE DISTRIBUTION STRUCTURE OF POLISH FISHING VESSELS OPERATING FROM POLISH PORTS

Key words

Fishing, fishing vessels, fishing boats, fishing vessels structure, polish fishing vessels.

Summary

Scientists of the Institute of Technical Operation of Marine Power Plants, Maritime University of Szczecin, are doing research on “Fishing Craft Modernisation Program for the Reduction of Power Consumption and the Minimisation of Environmental Impact” funded by an EU grant OR 16-61535-OR 1600006/06.

The first step to reach the final aim – the reduction of the adverse effects of fishing craft on the marine environment – was to identify the age/size characteristics and distribution of Polish fishing vessels. This has enabled the preparation of the range and method of the record keeping of fishing vessels’ power systems.

Introduction

The Maritime University of Szczecin is engaged in research work titled “Fishing Craft Modernisation Program for the Reduction of Power Consumption

and the Minimisation of Environmental Impact” within an EU grant. The ultimate aim of the research – the modernisation of the Polish fishing fleet is to be executed during further steps with the financial support of the EU. Polish fishing vessels based in ports located on the Polish coast make up a group of 881 craft registered as actively engaged in fishing. The craft are varied in terms of age, size and technological advancement. An indispensable condition to examine the possibilities of reducing the adverse effect of Polish fishing vessels based in Polish ports on the environment is the knowledge of the fishing fleet structure, including the age distribution structure.

The factors affecting the marine environment can be divided into two groups, i.e. those affecting:

- marine environment,
- atmosphere.

The former includes all types of discharges from fishing craft, getting directly or indirectly into the sea. The quantity and kind of discharged substances depend on a number of factors, such as the following:

- crew size,
- ”pro-ecological” education of the crew,
- vessel size,
- vessel fishing gear and domestic facilities,
- vessel technical equipment.

The emission of harmful substances to the atmosphere mainly depends on the craft technological equipment, such as design and the technical condition of:

- main propulsion system,
- auxiliary power systems,
- fishing gear and equipment, fish processing and refrigerating facilities.

While searching for methods aimed at the minimisation of the impact of the fishing vessels based in Polish ports on the marine environment, the researchers have examined the distribution of fishing vessels along the Polish coast as well as their characteristics by age and the power output of main propulsion engines.

1. Distribution of Polish fishing vessels

Polish fishing craft are not uniformly distributed along the country’s coast.

Table 1 specifies the numbers of fishing vessels registered in Poland’s fishing ports on July 2007.

The above data provide a basis for the determination of those ports where detailed information is collected on the vessels’ technical equipment and the state of their power producing units.

Table 1. Number of fishing vessels registered in Poland's fishing ports on July 2007 [1, 3]

No	Home harbour	Sign.	Nnumbers of vessels	No	Home harbour	Sign	Nnumbers of vessels
1	Chałupy	CHA	8	33	Niechorze	NIE	5
2	Chłapowo	CHL	4	34	Obłuże	OBŁ	6
3	Chłopy	CHY	12	35	Oksywie	OKS	5
4	Darłowo	DAR	44	36	Orłowo	ORŁ	4
5	Dąbie	DĄB	11	37	Nowa Pasłęka	PAS	13
6	Dąbki	DBK	8	38	Piaski	PIA	28
7	Dębki-Karwia	DĘB	5	39	Przytór	PRZ	5
8	Dźwirzyno	DWI	3	40	Puck	PUC	4
9	Dziwnów	DZI	30	41	Rewa	REW	5
10	Frombork	FRO	9	42	Rowy	ROW	7
11	Gdańsk	GDA	5	43	Rewal	RWL	7
12	Gdynia	GDY	15	44	Sarbinowo	SAR	1
13	Hel	HEL	23	45	Sopot	SOP	6
14	Jantar	JAN	7	46	Stegna	STE	3
15	Jarosławiec	JAR	21	47	Stołczyn	STŁ	8
16	Jastarnia	JAS	52	48	Stepnica	STP	10
17	Jelitkowo	JEL	1	49	Suchacz	SUC	6
18	Kamień Pomorski	KAM	7	50	Swarzewo	SWA	5
19	Kąty Rybackie	KĄT	21	51	Świbno	SWB	10
20	Kamienica Elbl.	KMN	1	52	Stutowo	SZT	1
21	Kołobrzeg	KOŁ	62	53	Szczecin	SZN	1
22	Krynica Morska	KRM	16	54	Świnoujście	ŚWI	31
23	Karsibór	KRS	10	55	Tolknicko	TOL	9
24	Kuźnica Morska	KUŻ	30	56	Trzebież Szcz.	TRB	36
25	Lubczyna	LBC	1	57	Unieście	UNI	11
26	Lubin	LBN	11	58	Ustronie Morsk.	USM	2
27	Łeba	ŁEB	36	59	Ustka	UST	79
28	Mechelinki	MEC	8	60	Warnołęka	WAR	4
29	Mikoszewo	MIK	2	61	Władysławowo	WŁA	74
30	Międzywodzie	MIW	2	62	Wolin	WOL	13
31	Międzyzdroje	MIZ	5	63	Górki Wschodn.	WSG	5
32	Mrzeżyno	MRZ	5	64	Górki Zachodn.	ZAG	5

2. Age distribution structure of the Polish fleet operating from Polish ports

Gathered data show that more than 50% of Polish fishing vessels are more than 25 years old, while 38% of the craft exceed 30 years (Fig. 1). Most improvement can be achieved in terms of the reduction of the adverse effects on the marine environment in this group of older vessels. The age distribution structure of fishing vessels has indicated which vessel groups should be selected for measurements of the quantities contributing to the reduction of environmental impact. Since fishing craft differ regarding their mode of operation, a similar analysis was performed for vessels divided by their size. To do this, vessels were grouped according to their length overall as follows:

1. craft with length overall to 7 m,
2. craft with length overall 7÷9 m,
3. craft with length overall 9÷10 m,
4. craft with length overall 10÷15 m,
5. craft with length overall 16÷20 m,
6. craft with length overall 20÷30 m,
7. craft with length overall over 30 m.

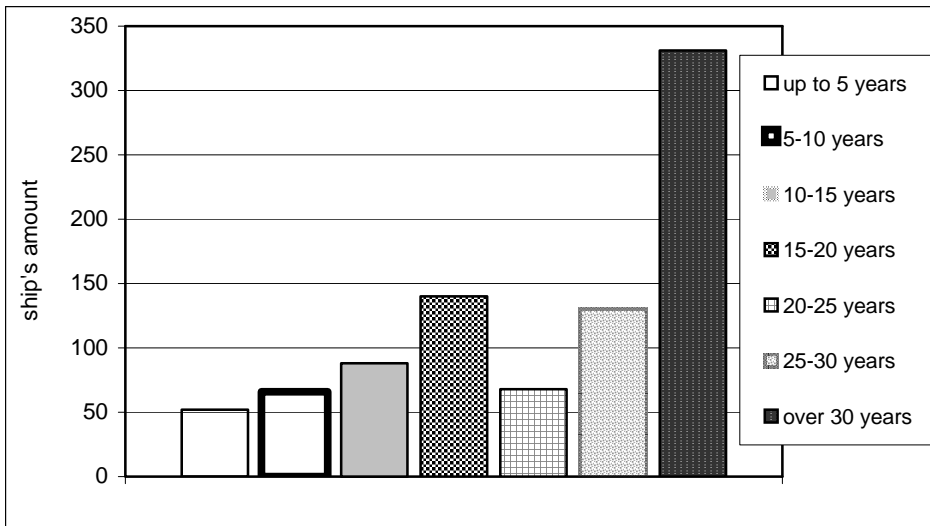


Fig. 1. Age distribution structure of the Polish fleet operating from Polish ports [2, 4]

In the commonly used terminology, the term 'fishing vessel' includes all kinds of craft regardless of their size. However, herein the traditional classification has been preserved, distinguishing fishing boats – both open and closed-deck ones, and fishing cutters. The former include vessels up to 15

metres in overall length; whereas, larger fishing vessels operating in the Baltic have often been referred to as fishing cutters. This commonly used division has been adopted in this study, since it better reflects the extent to which the crafts are fitted with technological equipment. The vessel groups 1 to 4 include (except a few cases) fishing boats that operate close to the shore and make use of passive fishing gear. The vessels belonging to the remaining groups of larger craft operate on fishing grounds using passive and active fishing gear. The age distribution structure of the vessels in the seven length-based groups is given below.

2.1. Fishing boats

Among small fishing boats up to seven metres in length, 51% have operated for more than 25 years and as many as 36,5% are over 30 years old. Only 13% of all craft are boats less than 10 years old (Fig. 2).

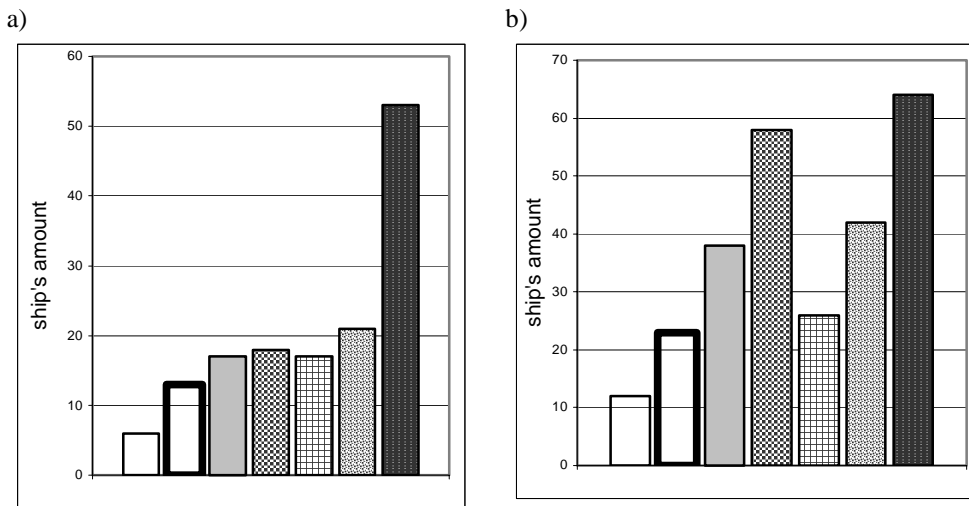


Fig. 2. Age distribution structure of the Polish fishing boats up to 7 m and 7÷9 m overall length (see descriptions in Fig. 1) [2, 4]

The age distribution structure looks better in the 7÷9 meter fishing boats. More than half of these boats are under 20 years of age. The highest percentage of relatively new boats (up to 10 years) can be found among the longest boats. These make up 25,3% in the 9÷10 metre group, with as much as 37% in the longest range of 10÷15 metres (Fig. 3).

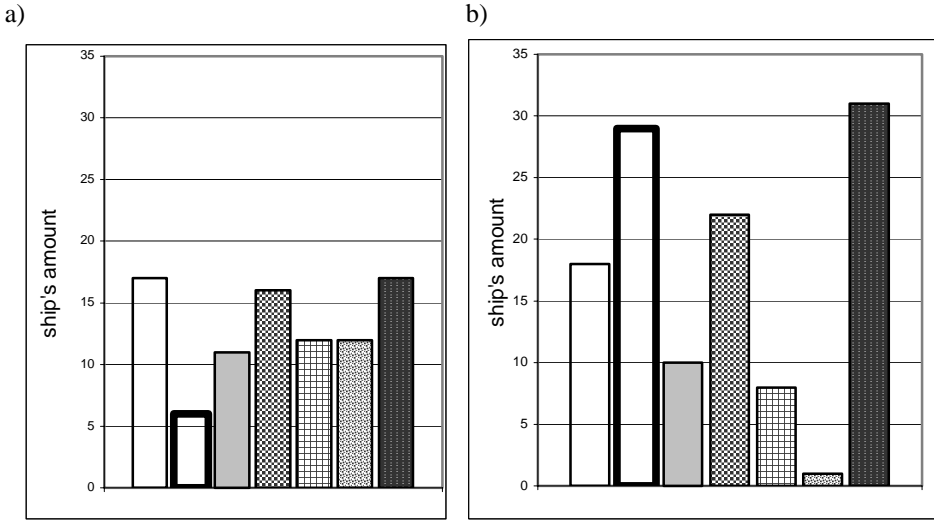


Fig. 3. Age distribution structure of the Polish fishing boats: a) 9÷10 m, b) 10÷15 m in overall length (see descriptions in Fig. 1) [2, 4]

2.2. Fishing cutters

Fishing cutters 16 to 20 metres in length make up the oldest group. Out of 119 vessels of this size, 118 were built before the year 1970 (Fig. 4). Only one cutter was launched in 1990. Due to their age, most of the vessels have outdated main engines emitting significant amounts of harmful substances into the atmosphere.

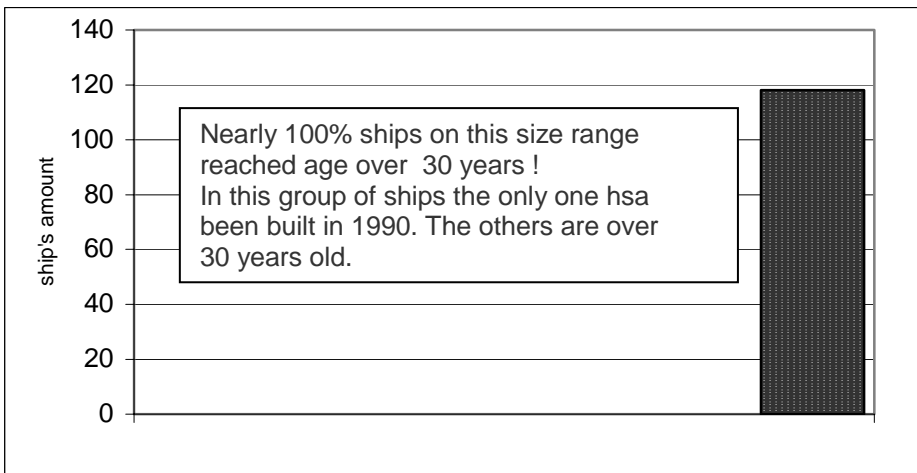


Fig. 4. Age distribution structure of the Polish fish cutters 16+20 m overall length [2, 4]

Furthermore, the largest Polish fishing vessels operating in the Baltic, more than 70%, are over 20 years old, and 50% have been in service for 25 years or more (Fig. 5).

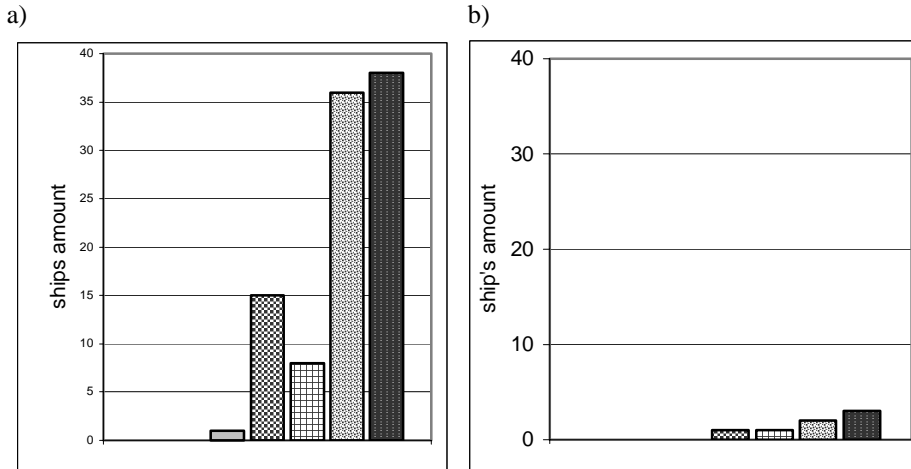


Fig. 5. Age distribution structure of the Polish fish cutters: a) 20+30 m and b) over 30 m overall length (see descriptions in Fig. 1) [2, 4]

Conclusions

No wonder that the main engines and auxiliary machines of these outdated vessels are far from economical. It is presumed that vessels fitted with engines of older design and high power have the greatest share in the emission of harmful substances into the atmosphere. Older vessels, therefore, when modernised, will yield larger emission reductions.

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Reviewer:
Zbigniew MATUSZAK

Struktura polskich jednostek rybackich łowiących w oparciu o polskie porty

Słowa kluczowe

Połowy, statki rybackie, łodzie rybackie, struktura statków rybackich, polskie statki rybackie.

Streszczenie

Pracownicy Instytutu Technicznej Eksploatacji Siłowni Okrętowych Akademii Morskiej w Szczecinie wykonują pracę badawczą „Program modernizacji jednostek rybackich w aspekcie zmniejszenia nakładów energetycznych i oddziaływania na środowisko” w ramach grantu UE. W artykule przedstawiono zebrane i opracowane materiały dotyczące struktury polskich jednostek rybackich, eksploatowanych w oparciu o polskie porty. Analiza była podstawą do opracowania „Karty ewidencji jednostki”.