

The Traditional Fishing in Parana Coast- Brazil, Implications, potentialities and Socioeconomics Aspects

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Abstract—Paraná, a South Brazilian state, has a spectacular coast with coves, bays and islands. From the state coast, 90 kilometers are bathed by the Atlantic Ocean and along the coast, 60 communities with a population of 4256 fishermen practice a traditional fishing activity in the bays and open sea. Canoe is the most used boat in this small-scale trade. The question that aimed the research was the importance of the canoe fishing activity by the fishermen perception, then trace an elaborated understanding view about the social and economic effects and finally observe the potential development of the activity in the region and the management and helpful actions by the fishing associations. An exploratory and descriptive field research were conducted by Interviews specially targeted to 30 canoe fisherworkers from Paraná coast cities between July and October 2018 for the study. The research exposed that male fisherworkers are in the 44 age group and still use low technology in the fishing activity. The main potential observed was the good quality of the fish that are sold fresh without being frozed to be sold, the possibility of a production improvement and the exploit and development of an active participation from the female local labour helping. Sale instability, low price out of the summer season and lack of organization by the fisherworkers class and fishing local association were the negative aspects observed. Micro management and micro industrialization could be the solution for the excess of winter production in relation to low production in the summer season, when occurs massive consumers presence. Collective organization could result in a strengthening trade and bargain involved in the fishing Paraná coast activity.

Keywords— *caiçara culture, fish, seafood, micron industry, small-scale trade transformation.*

I. INTRODUCTION

Fishing is probably one of the oldest activities practiced by the humankind. At the beginning it was a non-profit activity, the activity aim was the group subsistence and the production was to own consumption. However, along the years, beyond the subsistence exploration, it was observed a chance of a beginning trading as well as a wealth generation through it. In the context it is worth noting an excellent proeminence due the marine fishing. (Clauzet et al., 2005; Fields et al., 2017).

Fishing, in accordance with the Brazilian Ministry of Fisheries (2018), can be considered the extration, removal, capture and caught of fish, crustaceans, clams and aquatic plants from their natural marine ecosystem, for purposes such as: nutrition, recreation and trade.

According to FAO (2010), there are about 39 million fish workers in the whole world, and 156 million people who depend indirectly on fisheries. In Brazil, the Ministry of Fisheries (2018), certifies the existence of 1,084 million fish workers, that corresponds to an annual production of 765 thousand tons of fish.

About 7,4 thousand Kilometers of Brazilian coast is bathed by the Atlantic Ocean, 1.3% of them belong to the State mentioned before. Paraná coast has 90 kilometers of coast, and with the addition of Guaraqueçaba, Paranaguá and Guaratuba bays, it has more than 400 kilometers of coves or bays. In these areas, approximately 60 communities, with a population of approximately 4.256 traditional fish workers who practice activity in the bays and open sea (Hiss et al., 2007).

Marine fishing in the coast of Paraná can be divided in two kinds of fishing activity based on the type of boat used by the fisherworkers. Industrial fishing and non-industrial traditional fishing. Industrial fishing is characterized for being a professional activity, with more technological resources giving favorable conditions to

the activity as the engine power, places with bigger capacity of fish conservation and the possibility of sailing for more than 15 days (Silva et al., 2007; Fields et al., 2017).

Non-industrial traditional fishing according to Clauzet et al., (2005), in turn, is that one practiced by fishing the aquatic species, working alone or using familiar labour force or not wage-earning workmanship and exploring surrounding ecological sea next to the coast using boats and equipment with little autonomy.

Non-industrial traditional fishing, basically uses small boats with low engine power, fishing in a reduced area next to the coast, and between the small boat kinds, canoes are the most used in Paraná coast.

The canoes, according to Chaves and Robert, (2003), is traditionally wooden, made from 6 to 10 length meters with engine of center with the 24 force of 11 hp, being constructed from excavated only log (wooden trunk), with deep keel, in form of V. There are also the fibre glass canoes from 8 to 9 hp. In the last few decades, Paraná coast has presented a strong reduction of the fishing capacity, according to Silva (2010); one of the main reasons for this fact is the irrational use of the natural resources, with the capture of fish by great boats from other regions and the lack of effective monitoring of fish stocks.

The reduction in the fishing production, according to Lucena et al. (2017), also provoked in the last decades, a reduction of the fish workers number. According to Silva et al. (2007), the importance of this activity for Paraná coast cities, demonstrated an urgency to understand the real reasons to the fact studied, and few studies with a reasonable explanation, have been found by the fish workers perception.

In this context, this study aimed to elaborate an actual and real perception by the traditional canoe fish worker, giving an overview of the canoe use in the coast, as well as its social economic implications and potential effects in the region context.

II. MATERIAL AND METHOD

An exploratory and descriptive research was applied between July and October 2018, by interviews directed to 30 canoe fisherworkers, native coast inhabitants in Pontal do Paraná, Matinhos, Guaratuba and Paranaguá.

Aiming to verify the fish workers perception on the implications and the potential effects of the fishing activity with canoe, questionnaires surveys to the fish workers had been applied to those ones who had agreed to answer the field research, in search of fish workers view on the implications and potentialities of the fishing activity in the region, through qualitative boarding, which at the beginning had an individual point of view.

After the previous phase, five fish workers, with recognized strong leadership and knowledge in the fishing art, similarly to considered for Fields et al (2017), was organized a matrix of crossed impact, following the proposals of Anacleto et al. (2018), that describes the matrix as being the crossing of the implications between itself, and later of the chances between itself. The matrix uses percentile values from 0 to 100 to each opinion displayed for collective form interviews in relation to expressed opinions, comparing each item analyzed in the relation to administered influence and and suffered influence in traditional canoe fishing, the bigger is the index, the greater is the relevance and attention for the solution to the problem suffered or the chances to development.

The impact matrix generates a relevant index (importance for the development) that can be gotten by the equation:

$$IR = \frac{FA \times FB \times 100}{\sum SF}$$

IR= Relevance Index of the evaluated situation;

FA = Influence received indexes;

FB = Influence suffered indexes;

$\sum SF$ = Indexes sum (FA x FB) of all the issues analyzed.

Also according to Anacleto et al. (2018), after the end of the primary data collection, was adopted an interpretative and descriptive analyses about the obtained contents from interviews, carried out by means of the technique of triangulation between the observation and the similar commentaries and answers obtained from fish workers who are used to the traditional canoe fishing.

III. RESULTS AND DISCUSSION

Non-industrialized traditional fishing activity has diverse types of boats, one of them is identified in the present study: canoe. Canoe fishing is characterized by the fishing system called for the fish workers of this modality, as from dawn to dusk, that means that the fishworker leaves with the first rays of the sunrise, throw his capture net on the sea coast and at the end of the day when is the sunset period, collects the nets and returns to his residence, or throw his nets at dusk and collects them on the following day.

The canoes, according to Keys and Robert (2003), when used to fish shrimp, use trawl nets with timber planks (or wooden doors, when bigger and made by leaked boards); meshes vary from 1 to 6 cm between opposite knots; pulled for the poop or the boat side, always from the back. Still according to authors, when for capture of fish these types of boats use driftnets; meshes vary from 5 to 40 cm between opposite knots, operating by some particular

forms: "caceio", when the net is thrown in a way that forms a kind of cage, of surface or deep; a variation of caceio of deep is the snail caceio fishing, when the net is forced in half-circumference through one of net edges is attached to the boat; and the other edge touches the deep seafloor forced to the bottom by iron buoys. The fact is that in the cases of dawn to dusk fishing or dusk to dawn fishing, fresh fish is offered to consumers.

This model of fishing is the most traditional in Paraná coast, being characterized by men developing the activities in the sea, and on land women clean, store and sell the production. (Silva et al., 2007; Fields et al., 2017).

The castnet use was also observed in Guaratuba, Paranaguá and Antonina bays, according to Clauzet et al., (2005), Cast net use, in Portuguese language called tarrafa, is possible to have same or better performance in fish capture in environments of low depth, as well as in the capture of shrimps, that are sold to sport fishers, who use shrimp as bait.

Local canoe fishing communities in the south coast of Paraná, have as main characteristic, the simple technology with which also exerts its work and for the high cost of the materials that they use for fish capture. Work force comes on its majority for familiar force. The dedicated time to the fishing activity is from 3 to 10 daily hours, 6 or 7 days a week, it was evident that this period depends on the climatic conditions that need to be favorable for the security.

The average of the interviewed ones was 44-year-old males, similarly to the reported ones for other regions, the activities shared between the men fishing, and the women cleaning, taking care of the conservation and selling the production.

The study showed that the majority of the involved people with canoe fishing was married (n=68%), and that only 50% of the interviewed ones attended High School. Questioned about their participation in any specific fishing course all the fish workers that accepted to participate in this study answered in a negative way, no one participated of any type of fishing course, neither for the practical of the canoe fishing nor conservation and commercial usage transformation of the production.

The totality of the interviewed ones had told that they had learned the profession by oral way and, being the knowledge gotten day by day in an empirical form, passed from father to son or learned with neighbors and other relatives practicing the activity. The fisheries have origin in the extrativism, which in some periods of the year create conflicts between fishermen and the ambiental and governmental agencies of defense and protection of the environment due disagreement with the closed period season, and with low fiscalization when

great boats promote shrimp fishing near the coast, fact that reduces fisheries offer in the coast region (Table 1).

Table.1: Implications in the traditional canoe fish workers perception in Paraná coast.

	Implications	IR
1	Sale instability	24,99
2	Low price off summer season	21,12
3	Low class organization capacity	14,76
4	Unavailability of specific credit lines to fish workers	14,76
5	Lack of capital for buying products and equipment	11,06
6	Products with origin in the nature collection	3,92
7	Concurrence with well-structured fish workers	3,47
8	Lack of public and governmental incentives	2,18
9	Climatic instability	2,17
10	Precairous conditions work	1,57

That way, the reduction of fisheries offer, must promote a new conscience from the canoe fishing class, needs to be considered. Clauzet et al., (2005), highlights that a new conception of conservation of the biological diversity, must be perceived in these fishing communities that beyond the preservation of the biological resources, the conservation of the cultural diversity of the local fishing populations also should be included, remembering that the fishing local communities keep direct contact with natural environment, have great knowledge of history, environment and of the use of the natural resources in the region where they live.

According Andreolli and Silva (2008), theory knowledge establishes connection to practical knowledge that the traditional fish workers have about behavior, reproduction, cycles and habits fisheries have, these knowledge should be adapted to the new socio and environmental problems, without dismiss the culture, the tradition and all the knowledge repassed in centuries in an oral way from father to son. In this context, it urges that new proposals of traditional fishing are considered as form to develop the income of these families, preventing the dropout of the activity, and giving other alternatives as the seafood collection others than shrimp and fish (shellfish, sururu, oysters and siris), as well as the possibility of marine animals cultivation must be considered. Canoes, different from other boats, have permission to sail in some environments according to Federal Law 9,537/97,; the marine waters within and beyond the coast are the bays, coves and rivers of the coast, known by being sheltered waters of bad weather,

where storms don't influence the production, in these waters an increase of fish capture and the seafood collection as oysters, shellfishes and siris happen. The coast areas are those that will be possible to see the coast from the sea, limited to a maximum of 20 nautical miles (about 37 km). The canoes in question sail in these two areas in such a way, exploring the capture of fish and shrimps in opened sea, as the capture of fish, oysters and shellfishes in the bays.

In accordance with the totality fish workers interviewed, the most propitious fishing period of the year is the winter, when the massive tourists presence is not observed, and some species of fish prefer cold waters to mate fact that majes easier the capture. On the other hand, according to fish workers, the months from December to February, is the best trade period, when they can sell their production to the tourists. So, fishing activity suffers a dilemma, in the period they can have a great producation, they don't have consumers to trade it. And when tourists arrive in the summer season, the production decreases.

The interviewed canoe fish workers did not have any other kind of income that was not related to fishing, being tthe average income of the involved families with fishing, presented variation, in special due the summer season, between USD 409,83 until USD 573,77 monthly. As Fields et al (2017) urges that the scene of any activity be evaluated, so that if knowing the implications to the development and presented chances to have a successful activity in the future.

The Opportunities (Table 2) can be in accordance with the attractiveness and probability of success of a corporation project, also to the small-scale traditional canoe fishing in Paraná coast. According to Silva et al. (2007), the probability of success of a corporation project does not depend only on the force of its business, of the basic requirements occurred in a market-target, but of its abilities to outperform their rivals and their capacity of changing the scene where they are involved.

Table 2. Table 1. Implications in the traditional canoe fish workers perception in Paraná coast.

	Opportunities	IR
1	Quality due the fresh product	19,11
2	Processing the production to summer season	16,41
3	Active participation from female labour	14,22
4	Summer increasing trade	12,71
5	Products with quality and nutritional value	10,26
6	Important alternative as familiar income	10,26
7	Familiar work force	5,49

8	Flexible work hours	4,46
9	Proximity to large consumer centres	3,54
10	Knowledge of the activity	3,54

The corporation, independent of the scale that presents a better performance as Kotler (1998) will be that one that will be able to generate the better value to consumers and to support his value throughout the time, conferring to the product or service values that exceed the simple monetary value.

In this context, the set of the described chances in the perception of the canoe fish workers (Table 1; Table 2), shows a widely favorable scene, where the product quality is had as main positive question in the scene where these fish workers are immersed.

Other factors contribute, and chances have encouraging view, as exploit and development of an active participation from the female local labour helping, in general context.

These aspects with the good capacity of capture in winter period and the massive presence of consumers in the summer (Table 2) definitively show a positive scene, however dependent on internal and external actions of the families involved.

Although the set chances show a favorable scene, must be considered the set of the weak aspects that generate serious implications to the capacity of development of a productive sector.

The implications are the factors that can decrease or mitigate the potentialities, implications not observed many times by the involved ones. According to Silva et al. (2007), implications can be characterized as a recurrent challenge of a trend or favorable development to the corporation that can contribute directly for the deterioration of the production, of sales and consequent it promotes reduction of the profits.

A factor that deserves a more careful analysis, given that it can be associated innumerable to the other implications, is low the capacity of collective organization, that refers to the organization in fishing associations. The organization of a class on the basis of the interpersonal relations can result in improvement of the conditions of the traditional canoe fishing community. According part of the interviewed ones (n=25%) there are two associations that would have to act as fishing class representatives, but that they remain inoperative for low participation of the class.

Low efficiency of these institutions, plus the little participation of the fish workers, results in a scene where the problems of the class, that should receive better negotiations, do not occur, resulting that the precarious conditions of the work tools, lack of hygienic cleaning of

the canoes and difficulties to get better conditions and technological equipment reduce the quality of the given service, and raise the costs of the fish workers, resulting a cycle of difficulties where the fish workers have a decrease in the familiar income for not having investment conditions to technology and for not to investing in new and more modern fishing technologies, finish for having the income below of the ideal.

The trade system adopted for the fish workers also deserves a deepest analysis, a great important data to the final profit results.

Fishing in Paraná coast demonstrates certain passivity in the commercial question, and are at the mercy of of the migratory flow of tourist to present a better profit scene, although fish workers have an excess of production in the winter period, few fish workers use the expedient of the small-scale industry, that is in evidence in the current times.

The processing of the production in excess, from the winter period, could be an income source in the summer season, when the customers are in great amount, and the region presents a lack of fisheries.

The traditional fishing transition to a small scale processing is possible, as cambira (cured and dry fish), fish hamburger, fish sausage, and frozen and packed fish fillets. This practical set does not demand great investments and could be adopted by significant number of traditional fish workers.

Silva et al. (2007) reinforce the question saying that to manage properties or small businesses as fishing, we must consider the professionalization and planning, investing part of the profit gotten in the season periods in structure to conserve the production gotten in the period of winter. Still according to Silva et al. (2007), this process is necessary due the constant environmental changes, demanding more attention on the part of the managers of these corporations. To organize, to plan, to direct and to control are necessary so that the company or property can be always in perfect and efficient production, and present quality products to satisfy the necessities of the consumers. A continuous monitoring is also necessary if divergences occur, being detected as soon as possible for correction and preventing future problems.

Thus, an alternative of changing the current scene in the canoe fishing, would be the careful and gradual adoption by the traditional canoe fish workers of a new model of corporation, using a model of described enterprising behavior as the beginning of the continuous professional development, in the case of the production, thus according Nakagawa (1991) the fish workers must always look for the fisheries quality, processing fisheries in long lasting products with the use of the micro industrialization, and also in what refers to the services of

attendance the consumer, the viable alternative is that to each year the canoe fisherworkers insert a change of industrial behavior in relation to winter production excess.

Examples of change in relation to the entrepreneurship and the product maximization are described in other areas of the agrobusiness, according to Curvelo et al. (2016), the banana candies, and vegetables also have great offer of production in the winter, and into the proper properties they are transformed in small-scale, adding value and giving longevity to the production that would be lost if this process was not adopted. According to Fields et al. (2017), this process is long and can last one decade, but it is necessary it initiates. It is observed that many times the community for itself does not organize itself for the change of the scene, in this case the support of the governmental institutions could promote the process, modifying the chain of operations that involve since the fisheries manufacturing, the transformation (micron industrialization), distribution and commercialization, arriving until the final consuming.

The success of this considered model can be tied to the fish workers interaction degree, and the capacity of communication with the different segments of the productive chain, the collective form, reduces the risks and uncertainties, in this context the fishing canoe class capacity can result in greater bargaining power in the processes of negotiation with the universities, asking for extension free management courses, as well as asking for fishing fairs and special fishing local trade to coast city halls, to the agency of defense of environment they could receive guidelines about aquatic period reproduction, and in special solidary access endorsement with financial agencies, to equipment achievement as well as, necessary equipment to industrialization.

IV. CONCLUSION

The study showed, in a general context, that the canoe fish workers from Paraná south coast, are in average 44 years old, all of them male.

The fishing canoe system in the coast of Paraná is characterized by the use of low technology for the exercise of the profession, having been the fishing capture observed, as well as the cleaning of the production and the trade made exclusively for the family, being that the totality of the interviewed ones had in traditional canoe fishing the only source of income.

The main potentialities observed in the perception of the interviewed ones were the good quality of fisheries, the possibility to promote the improvement of the production for the commerce in the summer and the valuation of feminine workmanship. The main observed implications had been the sale instability, fisheries low price out of the

summer season and the low capacity of the class organization in the search for the resolution of the collective problems.

The micro industrialization can be the solution for the excess of production in the winter in relation to low production in the summer, when exactly occurs great presence of consumers.

Apparently, the limit factors and the implications of the activity could be mitigated by the strengthening capacity of collective organization that could result in greater ability of negotiation next to other involved social factors in the fishing activity with canoes in Paraná coast.

emprego/2015/06/pais-possui-mais-de-um-milhao-de-pescadores-ativos, acesso em: outubro de 2018.

- [11] NAKAGAWA, M. Conceitos, sistemas de implementação. São Paulo: Atlas, 1991.
- [12] SILVA, A. F. A pesca artesanal como arte e como significado cultural: o caso potiguar. *Acta Geográfica*, v. 4, n. 8, p. 57-65, 2010.
- SILVA, F. C., PERIN, E. J.; DESCHERMAYER, S. R. prospecção da ostreicultura no Município de Guaratuba- Paraná- Brasil. Isepe: Guaratuba, 2007.141p.

REFERENCES

- [1] ANACLETO, A.; COSTA, A. M.; LOURENCO, A. C. P.; PINHEIRO, D. C. Ostriculture in the Extreme Northern Islands of Paraná Coast. *International Journal of Development Research*, v. 8, p. 19156-19159, 2018.
- [2] ANDREOLI, V. M.; SILVA, O. H. Conhecimentos tradicionais e práticas conservacionistas da natureza: a pesca artesanal em Matinhos-PR. *IV Encontro Nacional da Anppas*, v. 4, n. 5, 2008.
- [3] CAMPOS, A. M.; ANACLETO, A.; BIANCA D. N. Retail trade of fishes in natura in Paraná Coast - Brazil. *BUSINESS MANAGEMENT DYNAMICS*, v. 6, p. 2-8, 2017.
- [4] CHAVES, P. T.; ROBERT, M. C. Embarcações, artes e procedimentos da pesca artesanal no litoral sul do Estado do Paraná, Brasil. *Atlântica*, Rio Grande, v. 25, n. 1, p. 53-59, 2003.
- [5] CLAUZET, M.; RAMIRES, M.; BARRELLA, W. Pesca artesanal e conhecimento local de duas populações caiçaras (Enseada do Mar Virado e Barra do Una) no litoral de São Paulo, Brasil. *Multiciência*, v. 4, n. 1, p. 1-22, 2005.
- [6] CURVELO, E.; ANACLETO, A. COELHO, A. P. . As mulheres empreendedoras e as feiras livres no litoral do Paraná. *Revista Faz Ciência*, v. 18, p. 118-139, 2016.
- [7] FAO. The state of world fisheries and aquaculture. Food and Agriculture Organization (FAO), Roma, Italia. 2010. 197p.
- [8] KOTLER, Philip. *Administração de marketing*. 1998.
- [9] Lucena, A. C. M., Mendonça, J. T., Muehlmann, L. D., & Medeiros, R. P. (2017). Socioeconomia da pesca no litoral do estado do Paraná (Brasil) no período de 2005 a 2015. *Desenvolvimento e Meio Ambiente*, 41.
- [10] MINISTÉRIO DA PESCA DO BRASIL, Pesca e Aquicultura, disponível em: <http://www.brasil.gov.br/economia-e->