

## Pollution and Food Taboos: A Practical Reason ?

Elisa Madi and Alpina Begossi\*

Núcleo de Estudos e Pesquisas Ambientais, UNICAMP CP 6166 CAMPINAS SP, 13081-970 Brazil,  
Fax : [55] [192] 39-7690, E-mail: alpina@turing.unicamp.br

**KEY WORDS** Food Taboos. Diet. Piracicaba Basin.

**ABSTRACT** This study is on fish food taboos observed among some residents from the banks of the Piracicaba River (Porto Street, Piracicaba City, Brazil). Among the fish available from the polluted Piracicaba River, the *caborja* (*Haplosternum littorale*) and the *mandi* (*Pimelodus maculatus*) are usually avoided as food. Whereas the *caborja* is avoided year round, the *mandi* is avoided especially when the river water level is low and pollutants may be more concentrated.

### INTRODUCTION

Food taboos have been associated with clean and unclean aspects of foods, in particular animal food. The classical study by Douglas (1969) shows how these associations have symbolic meanings. On the other hand, Harris (1989) explains food taboos as trade-offs between animals as a source of food and as a source of important services. Examples are the studies on the sacred cow in India (Harris, 1977, 1985).

Colding (1995) classified taboos in seven categories: 1) taboos regulating the quantity of resource extraction; 2) time-restricted taboos; 3) taboos on species' life history stages; 4) specific species taboos; 5) habitat-protective taboos; 6) taboos on harvesting and hunting methods, and 7) segmentary taboos, or prohibitions for people in specific time-periods (such as menstruating women, mothers of new borns, and ill persons, among others). In Brazil, especially in rural parts, this category of food taboo is called popularly as food *reimosa* or *carregada*.

Maritime and riverine fishing communities from the Atlantic Forest coast and from the Amazon have many food taboos concerning

different fish species (Begossi 1995, Smith 1981). Many of these taboos are related to carnivorous, toxic, or medicinal fish, as observed by Begossi (1992) at Búzios Island (southeast Brazil) and by Begossi and Braga (1992) at the Tocantins river (northern Brazil). The same authors found that the coastal community of Búzios Island, and the riverine communities studied at the Tocantins river avoid fish *reimoso* or *carregado* in certain time of their lives. Most of the fish avoided or tabooed includes carnivorous fish. Fish considered as *reimoso* is usually avoided when people is ill, have wounds, skin rashes, tumors, venereal diseases, or are recovering from a disease. Women should avoid eating *reimoso* fish after giving birth. In general, this category of food (or of fish) is believed to have a "strong" flesh which may exacerbate illnesses.

We studied part of an urban community located in the banks of the Piracicaba river, a very polluted river at Piracicaba city, São Paulo State, Brazil. There were two main objectives as the focus of our study: a) Was the population consuming fish from polluted areas of the river ? b) Were there any kind of fish food taboos, and what were the main reasons for these taboos ? Our results reinforce the hypothesis that toxic fish may be tabooed, such as in the case of fish from polluted waters, and that fish may be considered *reimoso* or *carregado* when a high level of pollution is present in the river (in the dry season).

### Study Site

The Piracicaba Basin has many environmental problems, due to pollution caused by sugar cane industries and by a variety of other

\* Correspondent author

industries. The area studied is a street, Rua do Porto (Porto Street) on the banks of the Piracicaba river, city of Piracicaba. About 50 families live on this street. It is a type of touristic street, with many bars and restaurants along the riverside. This stretch of the river is particularly badly polluted. According to a review made by Pareschi (1994), in 9 sampled sites analyzed, phosphates and fecal residues exceeded what is allowed by Brazilian legislation. The dissolved oxygen was below 5.0 mg/l in 90% of the samples, showing the importance of organic pollution in this area. Petrer et al. (1993) stressed that during the dry season, when the water level is low, about two-thirds of the water volume is made up of organic residuals. Moreover, mercury was also found in the flesh of carnivorous fish from the Piracicaba river (Sant'Ana et al., 1988).

#### MATERIAL AND METHODS

Visits at Porto Street were made from August to November 1994 in order to interview local people. The male and female head of the household were interviewed separately concerning the consumption of local fish and fish preferences. Questions concerning food taboos were of two kind: a) general fish avoided b) fish considered as reimoso or carregado (avoided by ill persons).

Data on age, economic activities and income, and degree of instruction, among others, were also gathered. Fish were collected by R. A. M. Silvano (Ecology/Nepam, Unicamp) and identified by J. C. Garavello, from the Federal University of São Carlos, São Paulo State.

#### RESULTS AND DISCUSSION

A total of 48 individuals (21 men and 27 women) were interviewed. Excluding three businessmen with average incomes of about 1.760 dollars per month, the average income was 264 dollars per month for men, and 104

dollars for women. These are low incomes by Brazilian standards, as the minimum wage is about 100 dollars per month.

Illiteracy is low in this area (only 7%) and representative of Brazilian urban populations from southeast Brazil, which include about 9% of illiterates (IBGE 1992). About 48% of men fish (only two are full-time fishermen), whereas only 11% of women fish at Porto Street. With the exception of the full-time fishermen, the other fishers use the catch for consumption. Many prefer to fish in the "Summer" (verão) (September through March), the rainy season, when the river has a high water level. At this season, the water is proportionately less polluted and fish migrate for reproduction (called piracema).

The fish mentioned as consumed are mandí (*Pimelodus maculatus*), followed by curimbatá (*Prochilodus lineatus*). These fish are also appreciated by local people. Twenty-five per cent of people interviewed said they do not eat fish from the Piracicaba river, especially because of the water pollution. Some said that when the river level is high, they may eat the fish, because pollution is lower and fish have a better taste.

The fish mostly avoided are caborja (*Hoplosternum littorale*) and also mandí (Table 1). Mandí was mentioned as avoided (reimoso) by 75% of people interviewed. These people explained their fish preferences based on smell, taste, morphology, boniness, and fat content. Fish avoidance has a strong relation to pollution. Mandí is considered to taste and smell kerosene in the dry season and then, it was considered as reimoso by interviewees especially in this season (between April and August, the river level drops significantly); some said that it has the 'bad taste of the river water'. Still, some said the mandí is oily. In spite of being considered as 'polluted' and reimoso, the mandí was also mentioned as a 'preferred food' (Table 1), because it was not considered as a 'bony fish'. In consequence, women in general mentioned the mandí as a

good food for children. Among others, some Anostomidae were also avoided because of their boniness. Boniness is an important feature in fish: Begossi and Richerson (1992) found that bony fish were considered as 'low status' food at Búzios Island and that high price fish have often a few bones.

**Table 1: Fish consumed, appreciated and avoided (food taboos) by at least 20% of the families from Porto Street, Piracicaba river and city**

Names		Consumed	Preferred	Avoided
Common	Scientific			
Caborja	<i>Hoplosternum littorale</i> (Callichthyidae)	0	0	28
Cascudo	many spp. (Loricariidae)	20	35	6
Curimbatá	<i>Prochilodus lineatus</i> (Prochilodontidae)	36	30	0
Lambari	<i>Astyanax bimaculatus</i> (Characidae)	20	12	6
Mandí	<i>Pimelodus maculatus</i> (Pimelodidae)	40	35	23*
Piava	(Anostomidae)	24	16	9

\* quoted by 75% of interviewees as avoided during illnesses (reimoso, carregado)

The avoidance of *caborja* was related to its morphology (Fig. 1), but its smell and taste

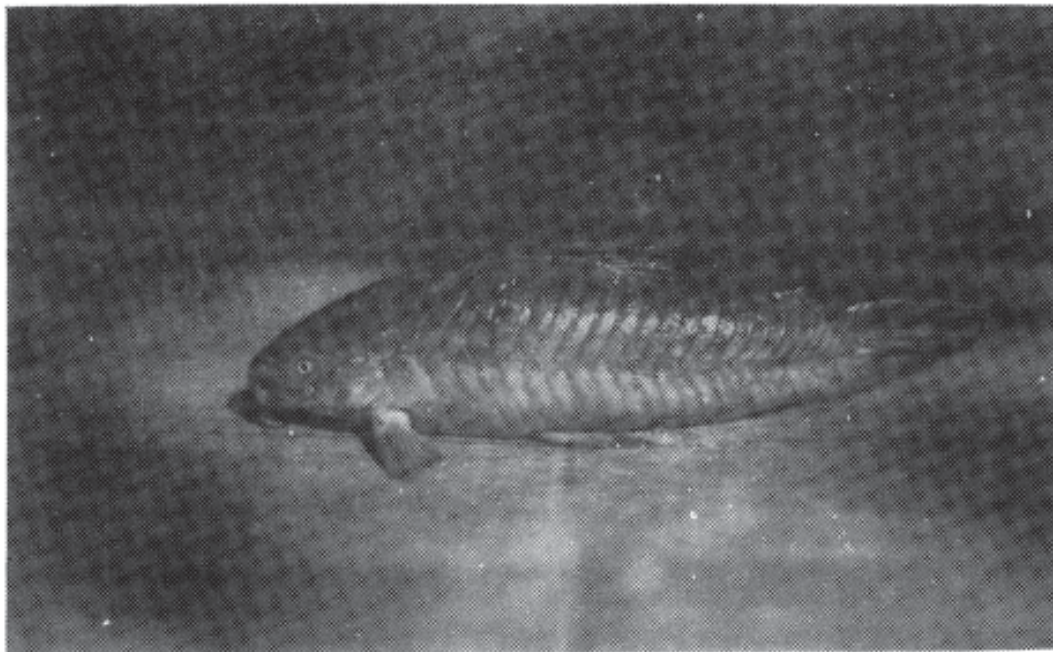
were also considered. Most interviewees never tried this fish, which is usually found in polluted waters. Heavy polluted areas of the Tietê river, the river that passes through the city of São Paulo, showed the presence of just one species, the *caborja* in experimental fishing samples (Barrella, pers. comm.).

Interviewees stressed that fish are *reimoso* especially in the "Winter", or in the dry season. The *caborja* is usually avoided year round, but the *mandí*, an appreciated fish, is avoided especially in the dry season. The food taboos concerning those fish are stronger when the river level is low, and consequently the concentration of pollutants is higher.

Food taboos have served for many purposes in native communities, from medicinal to resource conservation (Reichel-Dolmatoff 1976). The maintenance of fish food taboos in this urban population and its relation to the river level of pollution show how flexible and adaptive these taboos may be.

## CONCLUSIONS

This brief study shows that food taboos, in



**Fig. 1. The caborja (*Hoplosternum littorale*), a food taboo associated with polluted waters at Piracicaba river, São Paulo State, Brazil (Picture taken by R. A. M. Silvano)**

particular fish food taboos, may have practical reasons. An urban riverine population from southeast Brazil (Piracicaba river) has taboos that are stronger when pollutants are more concentrated in the river. This occurs in the dry season, when the water river level is low. Food taboos may function as pollution indicators, and may be considered as adaptive, in the sense that they protect people from eating toxic organisms. We need more comparative data, including data from other polluted areas, to study with more details the reasons related with food taboos and pollution.

#### ACKNOWLEDGEMENTS

This study is part of the subproject "Fishing and fish consumption" [A.B.], included in the multidisciplinary project-*Environmental quality and regional development in Piracicaba/Capivari Basin*, by D. J. Hogan, A. F. Perez, G. M. Jannuzzi and C.A. Joly, Center of Environmental Studies (Nepam/Unicamp), supported by FAPESP [1994/5] and by CNPq/PADCT[1995/6]. We thank CNPq for research grants and scholarships to A.B..

#### REFERENCES

- Begossi, A. : Food taboos at Búzios Island (Brazil): Their significance and relation to folk medicine. *Journal of Ethnobiology*, 12:117-139 (1992).
- Begossi, A. : Cultural and ecological resilience among caiçaras of the Atlantic Forest coast and caboclos of the Amazon (Brazil). *Paper presented at the Fifth Annual Conference on Common Property Resources*, May 24-28, Bodo, Norway; Chapter 2 in forthcoming book : *Linking Ecological and Social Systems for Resilience*, C. Folke and F. Berkes (Eds.) (1997).
- Begossi, A. and Braga, F.M. S. : Food taboos and folk medicine among fishermen from the Tocantins river (Brazil). *Amazoniana*, 12 :101-118 (1992).
- Begossi, A. and Richerson, P. J. : The animal diet of families from Búzios Island (Brazil): An optimal foraging approach. *Journal of Human Ecology*, 3: 433-458 (1992).
- Colding, J. : *Taboos and the Conservation of Natural Resources, Species and Ecosystems*. Degree project thesis in Natural Resources Management, Department of Systems Ecology, Stockholm University, unpublished (1995).
- Douglas, M. : *Purity and Danger*. Routledge & Kegan Paul, London (1969).
- Harris, M. : *Cannibals and Kings: The Origin of Cultures*. Vintage Books, New York (1977).
- Harris, M. : *Good to Eat: Riddles of Food and Culture*. Simon & Schuster, New York (1985).
- Harris, M. : *Our Kind*. Harper Perennial, New York (1989).
- IBGE (Instituto Brasileiro de Geografia e Estatística) : *Anuário Estatístico do Brasil*. Rio de Janeiro (1992).
- Pareschi, A. C. : População e meio ambiente na região de Campinas (1994). Final Report CNPq, unpublished.
- Petrere Jr., M. and Agostinho, A. : La pesca em el tramo Brasileno de Rio Paraná. In: *Taller sobre las pesquerías de la cuenca del Prata*. Comisión para la pesca continental de América Latina, Montevideo (1993).
- Reichell-Dolmatoff, G. : Cosmology as ecological analysis: A view from the rain forest. *Man*, 11:307-318 (1976).
- Sant'ana, L. S.; Almeida, A. A; Vassilieff, I.; Sanchez, L.: Níveis de mercúrio no sangue e urina de pescadores residentes às margens dos rio Tietê e Piracicaba, no Estado de São Paulo. *III Reunião Anual da Federação das Sociedades de Biologia Experimental*, June 29-July 3, 1988, Rio de Janeiro (1988).
- Smith, N. J. H. *Man, Fishes and the Amazon*. Columbia University Press, New York (1981).