

Social science research in small-scale fisheries in Malaysia : conceptual and methodological issues and constraints

JAHARA YAHAYA

RECHERCHE SOCIOLOGIQUE SUR LES PÊCHES ARTISANALES EN MALAYSIE : CONTRAINTES ET LIMITES DE L'APPROCHE

RÉSUMÉ

La communication présentée ici dresse un panorama rapide de l'état actuel des recherches en sciences sociales dans le domaine des pêches artisanales et de l'aquaculture en Malaisie. L'accent est mis sur les problématiques mises en oeuvre dans ces secteurs. Ensuite, l'importance des concepts et des méthodologies est soulignée ainsi que leurs principales faiblesses et limitations. Dans cette optique, notre discussion est plus spécifiquement centrée sur la définition et l'évaluation de «l'activité économique» dans le secteur des pêches artisanales, pour les femmes plus particulièrement. Enfin, il est fait des propositions générales pour améliorer la fiabilité et la précision des données.

1. INTRODUCTION

In a country like Malaysia which is heavily dependent on primary commodities like rubber, palm-oil, cocoa and timber, it is inevitable that the fisheries sector has benefitted only marginally from agricultural development programmes. Within the fishing industry itself, the main thrust of most development programmes in the sector has been on the relatively large-scale commercial fisheries which are export-oriented and capital intensive, and which utilize advanced and labour-saving technologies. Yet, nearly 80 percent of the fish consumed domestically comes from small-scale or artisanal fishing which is also an important source of livelihood for a large proportion of the coastal population.

In : La Recherche Face à la Pêche Artisanale, Symp. Int. ORSTOM-IFREMER, Montpellier France, 3-7 juillet 1989, J.-R. Durand, J. Lemoalle et J. Weber (eds.). Paris, ORSTOM, 1991, t. II : 1023-1029.

Given the socio-economic importance of small-scale fisheries, the Malaysian government is currently formulating policy guidelines and major programmes for the development of small-scale traditional fishing communities. Having established the need for developing the small-scale traditional fishing communities in order to exploit their food supply and employment potentials, the next question we should concern ourselves with is how best to achieve this goal without destroying «the complex but fragile human ecology of small-scale fishing communities» (RUDDLE and LOCKWOOD, 1977). Such concern stems from the fact that there is a dearth of socio-economic information on small-scale fishing communities at the household and village levels. In the absence of such information, planners are often denied a fundamental base on which development programmes can be conceptualized and formulated. Without such firm base, development programmes are often formulated in a vacuum and are therefore most likely to fail. Worse still, some development programmes are counterproductive and would only aggravate the miseries of the individual fishing households.

Research on the fisheries sector is not entirely alien to the social scientists in Malaysia, but it is a field in which very few have sustained a long-term professional interest (RUDDLE and LOCKWOOD, 1977). Since the pioneering work of Raymond Firth's «Malay Fishermen : Their Peasant Economy» in the 1960's, there has been numerous studies conducted by anthropologists, sociologists, economists and geographers on varied aspects of the Malaysian fisheries sector. Unfortunately, a great majority of these studies have been too academically-oriented and are not directly relevant for development planning purposes.

Notwithstanding the numerous fragmented studies conducted in the past, the fact remains that there is a general lack of support for social science research on the problems of the small-scale fisheries. This lack of research support, to a certain extent, is reflective of the general neglect of the small-scale fisheries sector in the overall rural development efforts and the lack of government's commitment towards fisheries research. It also helps to explain why so few social scientists in the country have been able to specialize in this field. The weak position of the social sciences in the country's fisheries department, research institutions and universities is another manifestation of the general lack of support for social science research and teaching in small-scale fisheries. It is therefore hardly surprising that social science research and teaching in small-scale fisheries are far from adequate in fulfilling the national needs of the country.

Other major concerns in the state of affairs of small-scale fisheries research in the country include, inter alia, the lack of planning and coordination at the national level among research agencies; insufficient fisheries research inputs and resources, a shortage of social scientists committed and well-trained in small-scale fisheries; inefficient use and fragmented distribution of research resources so that the efforts expended were more to accumulate new knowledge or satisfy the researchers' curiosities but seldom to help solve the problems faced by the sector; ineffective dissemination of research findings; and minimal impacts on the socio-economic status of the fishing communities despite the large sums of government funds being spent annually.

In the context of the above issues and concerns, this paper sets out to fulfill two major objectives: first, to review the present status of research on small-scale capture and culture fisheries and discuss issues and problems related to it; and, secondly, to examine some of the conceptual and methodological constraints and weaknesses of small-scale fisheries research.

2. PRESENT STATUS AND ISSUES

Fisheries research responsibilities in Malaysia rest primarily with the Fisheries Research Institute, Penang. Formally established in 1957 as the Fisheries Laboratory Glugor, the Fisheries Research Institute in Penang is the oldest and largest establishment involved with fisheries research. In terms of organizational structure, the Institute is divided into four sections viz. Resource, Biology, Aquaculture and Aquatic Environment, all of which are staffed

by a total of 31 scientists. It should be pointed out that the Fisheries Research Institute in Penang functions as an appendage to the parent administrative structure i.e. the Fisheries Department, Ministry of Agriculture. The Department also runs two other research stations viz. the Brackishwater Aquaculture Research Centre in Gelang Patah, Johor and the Freshwater Fisheries Research Station in Bukit Tinggi, Pahang.

In addition to the above, fisheries research is also carried out by the local universities such as the University of Malaya, Universiti Kebangsaan Malaysia, Universiti Pertanian Malaysia and Universiti Sains Malaysia. Of these, the Universiti Pertanian Malaysia is the most prominent in as far as fisheries research is concerned. It should be noted, however, that much of the research conducted by the existing research bodies and universities are in the natural sciences and technical fields, while research in the social science discipline lagged behind.

Despite the existence of the various research agencies, there is no denying that research capabilities in fisheries have not been able to provide the necessary support for the modernization of the fisheries sector nor are they able to solve the problems faced by the sector. Underlying this inadequacy is the lack of clear direction to guide research development in the fisheries sector due to lack of research management mechanism to plan, direct, co-ordinate and evaluate research activities. Closely related to the above reason is the lack of financial support and commitment from the relevant sources, thus resulting in insufficient and weak research and technical manpower and research facilities. In short, the main weakness of the present structure and capability of the research agencies in the country, particularly the Fisheries Research Institute, can be attributed to the lack of government's commitment and support towards fisheries research.

As a result of the inadequacies of fisheries research capabilities, the fisheries sector is deprived of valuable inputs which are vital in the planning and development of the sector. Notably lacking is research on identification and location of new fisheries resources ; management of resources ; development of aquaculture ; protection of the aquatic environment; increasing fishing efficiency and reducing cost of fishing inputs ; maintenance of fish quality and minimizing post-harvest losses ; improvement of utilization of fish and fishery products ; and development of socio-economic assistance programme. It is strongly felt that research in these areas are essential to enhance the application of science and technology to both the capture as well as culture fisheries, thereby contributing towards the alleviation of the current depressed state of the industry.

Another inevitable net result of fisheries research inadequacies is a dearth of information to provide management guidance for the fishery managers and administrators. Distinctly lacking are empirical information on the status of the fisheries resources and resource potentials. Existing information on stock abundance, recruitment and mortality rates, catch rates, types of species are so meagre and fragmented that they really cannot serve as the basis for arriving at any definite conclusion on the status of the fisheries resources. A clear case in point is the issue of «overfishing». Owing to the lack of reliable and precise information, it is extremely difficult to assess whether overfishing has occurred in the coastal waters as this will have profound implications on the small-scale fishermen. The few resource assessment studies conducted by the Fisheries Research Institute can, at best, grossly indicate that overfishing in the coastal waters has occurred but no conclusive evidence has yet been established on the status of the fisheries resources.

The lack of precise information on the fisheries resource potentials has also hampered planning on the optimum level of fishing effort (boats, gear and fishermen) that the fisheries can support. This in turn has made it difficult for fishery managers to formulate and implement measures aimed at reducing fishing effort. In the absence of adequate and reliable information on the status and potential of fisheries resources, it is also very difficult to convince fisherman of the necessity to reduce the number of licences. Such measure, in the past, has also been rendered ineffective by political interference, and this has resulted in increased number of licences being issued (SHAROM, 1984). Not surprisingly, lack of information coupled with political intervention have often frustrate efforts and measures to reduce the number of fishing boats and gear to the desired level.

There is also a serious lack of research on the biological characteristics of the numerous species of fish,

crustaceans and molluscs commonly found in Malaysia ; hence the lack of detailed biological information on the distribution and characteristics of the fisheries resources. Owing to the absence of such information, fishery managers are unable to confidently determine the number of licences to be issued by types of fishery, gear and area. Moreover, in the absence of information, the managers are unable to determine the appropriate size of boat (for licensing) by area nor can they suggest alternative fishing methods in areas where trawling has been banned. Under such circumstances, it is not uncommon for the managers to resort to intuitions and arbitrations in deciding on certain regulatory measures, thus rendering themselves vulnerable to attacks and criticisms from fishermen, politicians as well as other government agencies (CH'NG, 1983).

Another major issue in as far as fisheries research in the country is concerned is the lack of policy-oriented research. As mentioned earlier, the types of research undertaken by the Fisheries Research Institute and the local universities are primarily oriented towards the natural sciences and technical fields. To date, there has not been a single research agency undertaking policy-oriented research in fisheries development. As a result, the planning of fisheries development policies and programmes is done on an *ad hoc* basis; inconsistent, contains conflicting objectives and may be counterproductive to the fishermen. It should be realized by now that fisheries development programmes and projects designed without proper research and planning are doomed to failure, or at best, achieved only partial success from the beginning. The failures of certain programmes and projects such as the LKIM's Trawler Scheme involving small-scale fishermen, the Fishermen's Credit Programme and the Fishermen's Subsidy Programme bear testimonies to this lack of proper planning and research.

3. CONCEPTUAL AND METHODOLOGICAL ISSUES AND CONSTRAINTS

One of the biggest challenges faced by social scientists involved in small-scale fisheries research is developing practical methods to generate data in order to advance our understanding of the situation of the small-scale fishing communities. Past experience has shown that methods of data collection (and the statistics derived from them) fail, in many ways, to capture the real living and working conditions of this important segment of the coastal population.

3.1. Weaknesses in Definition and Measurement of «Economic Activity»

A clear case in point is the method of collecting data pertaining to the «economic activity» of the fishermen and their household members. In most past censuses, for example, the economic activity of the respondents was captured by asking questions about the paid work (LEON, 1984). Hence, in the case of fishermen or farmers, the enumerators would take into consideration their habitual means of livelihood. Fishermen were not asked what they had been doing during a given period before the census, but merely what their potential for work was. This method tends to exclude the so-called «secondary» employment undertaken by the fishermen. In a typical rural household like the fishing household, it is not uncommon for the heads of household to undertake multiple jobs to supplement the household incomes. Even if efforts are made to include and record all types of work, the number of man-hours devoted to each type of work is inadequately measured and recorded. Furthermore, seasonal variations in fishing labour have also not been properly recorded in most empirical studies. In the small-scale fisheries context, it is pertinent to remember that fishing activity is highly seasonal and that the seasonal variation in fishing has far-reaching implications on the lives and work of the fishermen.

Another methodological weakness associated with data collection in small-scale fisheries research is the measurement of «economic activity» itself. In a typical sample survey or census, and using the labour force participation approach, the fishing population is divided into : (a) economically active and (b) economically inactive. The former

category is further divided into those who are in paid work, those who are unpaid family labour, and those who are unemployed but are actively seeking work. On the other hand, the economically inactive persons are those outside the labour market such as housewives, students and old-aged persons.

Several weaknesses can be detected when «activity» is defined and measured in this manner. First, the concept of economically active population, borrowed from an advanced market economy, is not suitable for application in the third world countries in general and in traditional peasant economy such as the small-scale fishing community in specific. Unlike urban-based waged employment, fishing occupation is not based on regular fixed wage or salary but rather on profit-sharing (locally termed as «panggu») and does not have regularized working days or working conditions. Modes and rates of payment vary not only from one type of fishing method to another but also from area to area. Second, the method of classifying the population into «economically active» and «economically inactive» is prejudicial to extracting information about women's work (LEON, 1984). This is because many women would naturally opt for the classification «inactive» even though they may be gainfully employed in economic activities either on regular, temporary or seasonal basis. For example, it is widely known that women in small-scale fishing communities are gainfully employed in subsistence fisheries related activities such as fish cleaning and gutting, processing, trading and marketing. But the conventional method of defining «economically active population» and «wage earners» preclude women's work in these activities and as a result there has been a gross underestimation of women's economic role and participation in the small-scale fisheries sector. Third, the standard time reference period of «one week» used in this methodology is unsuitable and ignores the seasonality of fishing activities. It could well be that the one week reference period (usually the week prior to the interview) coincides with the «slack» season (usually coinciding with the full-moon phase) when the activities of certain fishing methods like purseining and lift netting could not be carried out. Furthermore, the concept of the one week reference period is disadvantageous in as far as capturing women's work adequately since during that particular one week, the women might not be working, especially if their works are highly seasonal or part-time in nature.

3.2. Weaknesses of the «Recall Method»

In most conventional data collection method, the way in which respondents were asked about their labour participation and utilization is based on the «recall method» i.e. the respondent's evaluation of the actual time be spent on a particular work or activity (WHITE, 1984). Unfortunately, all recall methods suffer from several drawbacks and disadvantages. First, since this method relies essentially on respondents themselves keeping detailed daily records of their own activities and the time spent on each, such record-keeping by respondents is not feasible in a community such as the fishermen's where illiterary rate is high. Secondly, the time frame during which respondents are required to record their daily work activities is usually too short (as in the case of a 24-hour recall) to adequately capture the seasonal variations in these activities. Furthermore, in the small-scale fishing economy, there is a wide variation in work intensity of an activity at different periods of time and for different members of the household. For example, the work intensity of fishing activity varies considerably between the «peak» and «slack» season. Similarly, the work intensity of the women engaged in fish processing activities is highest during the peak fishing season when catch is abundant. On the other hand if the time frame is extended to 30 days or longer, respondents would find it too cumbersome and problematic to record the day-by-day account of their activities. Thirdly, it should be noted that recall method will not be very accurate if the respondent is not the main person in charge of an economic activity as in the case of other members of the respondent's household (e.g. wife and children) who merely help out in the activity. However, by focussing only on the principal person in charge of an activity could lead to an underestimation of the contributions made by the other household members, particularly the women. Ideally, therefore, recall methods of recording labour utilization should be based on the household as a whole rather than individual respondents in order to obtain estimates of total labour inputs involved in an activity.

3.3. Conceptual Constraints

Apart from the problem associated with methodology, there are also conceptual constraints associated with small-scale fisheries research. The crux of the problem here is attributed to the fact that most census or surveys associate «economic activity» with work that receives money income (LEON, 1984). Such contention would limit economic activity to wage work and is incapable of capturing unpaid economic activity. Thus, the concept «work», as applied in fisheries census and survey, would be taken to mean only as wage labour or productive work. Once again our discussion is drawn to women's participation in fisheries and fisheries-related activities since this is one of the most difficult areas to quantify and to capture in most household surveys. Even though tradition and superstitions which linked women with poor catches inhibit their involvement in direct fishing, women are known to perform essential but generally underestimated functions in fisheries production. The broadest definition of fisheries production includes all activities connected with producing fish and fisheries products either for subsistence or commercial production.

Activities undertaken by women in fisheries production include :

- tasks involved in producing or reproducing means of production (net-weaving, net-mending, collection of fingerlings in aquaculture, preparing feeds for cultured fish, etc.) ;
- tasks associated with pre- and post- fishing activities such as throwing skids for the fishing boats, unloading and sorting the catch, spreading the net for drying etc. ;
- tasks associated with fisheries product transformation or processing (sorting, gutting, curing, drying, smoking and packing of fish and prawns, etc.) ;
- tasks involving transportation, distribution and marketing of fish ;
- tasks associated with aquaculture activities such as collection of fish fries, prawn seeds, stocking of the cages/ponds, feeding the fish and general upkeep and maintenance of the cages/ponds.

It is important to realize that the above activities, not all of which are necessarily paid and are often taken for granted, are critical in creating form, place and time utilities which in turn will have tremendous impacts on total fisheries production and distribution. Unfortunately, in most conventional data collection methods, paid work is interpreted as the actual fishing activity only. As a result, most of the tasks performed by women during pre- and post-fishing are not taken into consideration. Beside the conventional method also do not take into account goods produced and services provided by women for the family's own needs such as crop cultivation, fish rearing and animal husbandry since such activities are not associated with monetized income. Yet, such activities although unpaid contribute significantly to the survival of the family.

Another economic activity involving significant women's participation which is not adequately captured in conventional data-collection method is fish trading and marketing. It is generally observed that a large majority of the fishermen's wives on the east coast of Peninsular Malaysia are involved in selling the catch brought in by their husbands to provide supplementary incomes to their families. Trading only small volumes of fish at a time, these women fish traders usually sell the fish to inland markets or the village retail shops where prices are generally better. Such marketing activities undertaken by the women fish traders in small-scale fishing communities are indeed economically productive in the sense they are able to generate income for the individuals which is subsequently used for the family's sustenance. Unfortunately, the conventional way of conceptualizing «work» fails to take such activity into consideration.

4. CONCLUSION

The foregoing discussion has highlighted some of the major conceptual and methodological constraints and problems confronting social scientists researching on small-scale fisheries. Given these problems and constraints, the concern here is what can be done to improve the accuracy and reliability of methods of collecting data in fisheries census and surveys. Admittedly, there are no easy short-cut solutions to these problems and efforts aimed at improving the accuracy and reliability of the research methodologies should be carried out on a regular and sustainable basis. It should be realized, however, that the interest to overcome shortcomings and weaknesses in basic data conceptualization and collection in small-scale fisheries research should be more than mere academic pursuits. Since the government, fisheries organization, fishermen cooperatives, etc. also use census and survey data to formulate fisheries plans, policies and programmes, it only seems fair that this responsibility is also shared by the non-academic communities. The point here is that fisheries policies and programmes that are based on census and survey data with a wide margin of error will not only have limited effectiveness but can also produce undesirable and counterproductive results; hence the justification for the government to be committed in attempts to improve fisheries data conceptualization and collection.

REFERENCES

- CH'NG KIM LOOI, 1983. Management of Marine Capture Fisheries in Malaysia: Issues and Problems. Paper presented at the International Conference on the Development and Management of Tropical Living Aquatic Resources, Serdang, Selangor, Aug. 2-5, 1983.
- YAHAYAJ., YAMAMOTO T., 1988. A Socio-Economic Study of Fisheries Management and Conservation - With Particular Reference to Two Artisanal Fishing Villages in Penang, Peninsular Malaysia, College of Economics, Nihon University (CENU). Publication Series N° 1, Tokyo, Japan.
- LEON M., 1984. Measuring Women's Work: Methodological and Conceptual Issues in Latin America. *In* Research on Rural Women : Feminist Methodological Questions, White C.P. and Young K. (eds.), IDS Bulletin Vol. 15 N° 1, January 1984, Sussex.
- MINISTRY OF AGRICULTURE, 1979. The Case for a National Fisheries Research Organization. Report of Sub-Committee on Living Aquatic Resources, Aquaculture, Aquatic Environment and Research submitted to Working Group on Fisheries Development, Cabinet Committee on Nat. Agric. Policy.
- PAULY D., 1983. Some Simple Methods for the Assessment of Tropical Fish Stocks, FAO, Rome.
- RUDDLE K., LOCKWOOD B., 1977. Small-Scale Fisheries Development : Social Science Contribution East-West Center, Honolulu.
- SHAROM MAJID, 1984. Controlling of Fishing Effort : Malaysia's Experience and Problems, FAO Fish Report (289), Suppl. 3, FAO, Rome.
- SMITH I.R., 1974. A Research Framework for Traditional Fisheries. International Center for Living Aquatic Resources Management (ICLARM), Manila.
- WHITE B., 1984. Measuring time allocation, decision-making and agrarian changes affecting rural women: examples from recent research in Indonesia *In* Research on Rural Women : Feminist Methodological Questions, White C.P. and Young K. (eds.), IDS Bulletin Vol. 15 No. 1, January 1984, Sussex.