Status of fisheries education and research in Bangladesh

MD SAGIR AHMED¹ AND MD AKHTERUZZAMAN²

¹*Department of Zoology, University of Dhaka, Dhaka 1000, Bangladesh (sagir@du.bangla.net)*

²*SUFER Project, DFID, UGC Bhaban, Agargaon, Dhaka 1207, Bangladesh.*

SUMMARY:

Fisheries research was started in Bangladesh in the late 1940s. This began in the Department of fisheries (DOF) and was followed by academic research from the Department of Zoology, University of Dhaka (DU); Institute of Marine Sciences (IMS) at Chittagong University (CU) and Department of Zoology at Rajshahi University (RU). Higher education in the fisheries made a significance advance in 1967 with the establishment of the Faculty of Fisheries in Bangladesh Agricultural University (BAU) that offers graduate and post graduate level degrees as well as modest research programme. Fisheries and Marine Resources Technology Discipline at Khulna University (KU) also offers graduate level degree in the field of fisheries. Under the umbrella of Ministry of Fisheries and Livestock, the Department of Fisheries (DOF) and Bangladesh Fisheries Research Institute (BFRI) are also engaged in transfer of technology and adoptive research. Beside these, a lot of donor organizations and NGO's viz., DFID, ICLARM, CARE, CARITAS, BRAC, Proshika, etc., are involved in fisheries education, research and sustainable resource management in Bangladesh.

KEY WORDS : fishery education, research, Bangladesh

Introduction

Fisheries is second to agriculture in overall agro-based economy of Bangladesh. About 1.2 million people are directly employed in the fisheries sector in Bangladesh and another 11 million are estimated to earn their living through employment indirectly related to fisheries.¹⁾ Eight percent of population relies solely on fishing for their livelihoods, and nearly three quarters engage in some part time fishing activity. The sector is integral to survival, not only in national economic terms, but also in terms of nutrition. In spite of its vital contribution to the nation's economy, for a long time there was hardly any scope for fisheries education and research in the country.

DOF and BFRI are the prime organizations engaged in transfer of technology and adoptive research, management, dissemination of modern technology on aquaculture, fisheries management, hatchery operation etc., conservation of fisheries resources, quality control of fish & fishery products and planning, formulation, implementation of the fisheries development projects. This paper is intended to discuss the present status of fishery education and research in Bangladesh.

Information Sources

Data on fisheries resources, research projects, on going research activities, resource personals, etc. was collected from January to June 2001. During this period authors visited six Universities of the country,

interviewing with faculty members to get information. Information was also collected from different information sources such as DOF, Fisheries Management Support (FMS) resource center, University Grants Commission (UGC), Bangladesh Agriculture Research Council (BARC) information centre, etc.

Fishery Resources and Production

Bangladesh has the vast and highly diversified fisheries resources both in type of production system and commodities. The inland fisheries are made-up of rivers, estuaries, canals, floodplains, oxbow lakes, reservoirs and inundated paddy fields and ponds covering an area of 4.3 million hectare (m ha). The culture fisheries include ponds 0.15 m ha, oxbow lakes 5488 ha and coastal shrimp 0.14m ha. It has a coast line of 480 km along the Bay of Bay with an area of 16.61 m ha.

Based on the diversity of resource base, the fisheries of Bangladesh can be classified as follows: Inland freshwater capture and culture fisheries, brackish water & shrimp culture fishery and marine capture fisheries. Total fish production of the country is about 1.66 million mt.²⁾ Out of this total inland open water capture fisheries generate 47%, inland fresh and brackish water aquaculture 31% and marine capture 22%, inland total coming to about 80%.

Fishery Education

The University of Dhaka was set up in 1921, and the start of fisheries education was in 1954 when Zoology

courses were begun, with the MSc having a fisheries option from the late 1950s. A decade later, a BSc (Honours) Fisheries course was established at BAU, and this was followed a few years later by RU's Zoology department also offering a fisheries option. Chittagong University set up its Department of Marine Biology (Table 1) in 1973 and offered an MSc in Marine biology.

Table 1 Development of fisheries education in Universities of Bangladesh.

Year of establishment	Name of University
1921	Dhaka University
1954	Dept. of Zoology, DU
1967	Faculty of Fisheries, BAU
1971 (73)	Dept. of Marine Biology, CU
1972	Dept. of Zoology, RU
1972	Dept. of Zoology, JU
1992	Fishery & Marine Resource Technology Discipline, KU
1998	Dept. of Aquaculture & Fisheries, DU
2001	Dept. Fisheries & Aquaculture, RU

- Functioning of the Department started in 1973

Twenty years later, Khulna University (KU) began Fisheries programmes at under-graduate level within its Fisheries and Marine Resource Technology Discipline (FMRT). DU has initiated a BSc in fisheries studies, equivalent to the BAU.

Developments in fisheries education reflect the expansion of employment opportunities in activities related to fisheries and aquaculture. Until the mid

1950s, the government had a laissez-faire attitude to fisheries management, and DOF was a minor institution employing few people. Most fisheries graduates went into teaching in zoology-related disciplines. Demands for fisheries graduates only increased when the DOF began to expand as a response to declining production from capture fisheries in the 1960s. This demand was met by the creation of the new Faculty of Fisheries at BAU. The Bangladesh Fisheries Development Corporation (BFDC), the Freshwater Fisheries Research Station and former Fisheries Research Institute (FRI) are examples of newer institutions recruiting university graduates.

As government institutions became more involved in fisheries management, a demand for research to meet the needs of management arose. The history of research into fisheries began in the late 1940s. This began in the DOF, and was followed by academic research from the Dept of Zoology at DU, and the Dept of Marine Biology at CU. Other research within the sector was carried out at the Freshwater Fisheries Research Station at Chandpur, and the Bangladesh Fisheries Development Corporation (BFDC). More organizations with research potential came onstream with BAU's Faculty of Fisheries (1967) and the Fisheries Research Institute (1984). Within the universities, research projects were carried out by students as part of the requirements for their degrees, and by faculty members who wanted to establish a publications record to fulfil their requirements for promotion. The result was that less challenging, but easily accessible, research projects were chosen, and little or no attempt was made to

Table 2 Some particulars of fishery teaching staffs in Bangladesh Universities.

	Dept or Faculty	No. of teaching staffs	Number according to Qualification			No. of teaching staffs Position wise				No. of BSc (Hons) students	Teacher: Student Ratio
			PhD	MSc	BSc	Prof	Asst Prof	Assoc Prof	Lecturer		
BAU	(4 dep.)	45	31 69%	14 31%	-	25 56%	5 11%	5 11%	10 22%	60	1:1.33
CU	IMS	15	6 40%	9 60%	-	7 47%	3 20%	-	5 33%		
DU	Zoology	13	11 85%	1 15%	-	9 69%	-	3 23%	1 80%	25	1:1.92
	Aqua. & Fish.	4	3 75%	1 25%		1 25%			3 75%	15	1:3.8
KU		19	3 19%	13 68%	3 16%	1 5%	1 5%	8 42%	9 48%	35	1:1.8
RU	Zoology	7	4 57%	3 42%	-	3 42%	-	2 28%	2 28%	15	1:2.1
	Total	103	58 56%	42 41%	3 3%	46 45%	9 9%	18 17%	30 39%	150	1:1.45

address the technical or socio-economic problems faced by the poor fish farmers of rural Bangladesh. Neither has there been any concentration on how the aquatic resources of the country may be better utilized in the drive to reduce poverty.

Organisational Structure

The University Grants Commission (UGC) is the Government authority under Ministry of Education (MOE) granted for all kinds of developmental activities. The UGC approve all new courses and appointments but in effect the Vice-Chancellor (VC) are to a large extent autonomous and accountable only internally. The General policy such as promotion, student selection, course structure, and university administration are controlled by the VC, Academic council and Syndicate.

Teaching faculty

The structure and composition of the teaching faculty in five universities are summarized in Table 2.

Courses offered

Undergraduate courses of four years duration are offered as BSc (Honours) in Fisheries in four universities (BAU, DU, KU & RU) and BSc (Hons) in Marine Science at IMS recently, RU introduced such a course under a new department (Table 3).

Table 3 Fisheries courses offered at different Universities in Bangladesh.

Courses offered	BAU	CU	DU	KU	RU	JU
BSc (Hons) Fisheries	+	-	+	+	+	-
BSc (Hons) Marine Science	-	+	-	-	-	-
MSc Zoology with Fisheries	-	-	+	-	+	+
MSc Marine Science	-	+	-	-	-	-
MS Fisheries	+	-	-	+	-	-
MPhil Zoology (Fish)	-	-	+	-	+	+
PhD Fisheries	+	-	+	-	+	+

MSc courses in Zoology with fisheries are offered by the three general universities: DU, JU & RU. The MS in fisheries is available in the two technical universities, BAU & KU and an MSc in Marine Biology is offered at IMS. At BAU, each of the four departments within the Faculty of Fisheries offers a specialist MSc course (Aquaculture, Fisheries Management, Fisheries Biology & Genetics, Fisheries Technology).

Post-MSc degrees, MPhil and PhD, are offered at the Dept. of Zoology and Institute of Biological Sciences of RU and by the Dept. of Zoology of DU & JU. BAU offers the PhD as a post MS degree in its

four departments of the Faculty of Fisheries.

Undergraduate Program

Curricula and syllabuses of the four years BSc (Hons) fisheries courses at BAU, KU and DU and that of BSc (Hons) Marine Biology of IMS are basically similar in content, quality and duration (Table 4).

The mode of execution and monitoring of the courses is the annual-mark system (BAU & CU), integrated annual system (DU), and semester credit system (KU), although the duration of the undergraduate courses are the same in all universities. However, the number of courses given and grading marks vary widely from one to another (Table 4). Typically, there is a 9-month teaching period for undergraduate courses, followed by two months revision, and a one month examination period.

Table 4 Certain aspects of undergraduate curricula and syllabuses of University fisheries teaching programmes

University	Courses	No. of Subjects Taught	Unit/ Credit hrs.	Mark for grading
BAU	BSc (Hons) Fisheries	29		3950
CU	BSc (Hons) Marine Science	22		4000
DU (AQ&F)	BSc (Hons) Fisheries	26	32 units	3200
KU	BSc (Hons) Fisheries	47	191.5 Cr. Hrs	9000
RU	BSc (Hons) Zoology			

One unit theoretical course will have three hours of lecture per week in an academic year and carries 100 marks.

One credit hour is equivalent to one lecture of 55 minutes, one semester has 13 weeks duration with 2 lectures per week.

Masters Program

The Masters programmes in fisheries offered by the universities may be categorised into two types *i.e.*, MSc in Zoology with Fisheries, offered by the general universities and the second category by the technical universities (Table 5).

Outcome & contribution to the fisheries sector

Currently around 110 graduates with specialist fisheries background are produced per year. Graduates with fisheries degrees are mostly employed in the DOF, BFRI, NGO's and private banks, farms and the fisheries industry besides academic employment in universities.

The performance of the fisheries graduates is alleged to be below the standard required to cater for

the needs of the sector³⁾ particularly in the inability to apply known principles to solve practical problems of the sector. This is believed to be due to the inadequate training imparted, which involves little fieldwork to solve practical problems.

Table 5 Certain aspects of the courses of the masters Programme if fisheries in different Universities of Bangladesh.

University	Courses	Duration Year	Unit/ Credit	Mark	Groups	Prerequisite
BAU	MSc Fisheries	1.5 (3 Sem)	22 Credit	1100		BSc Hons Fisheries
CU	MSc Marine Biology	1.5 (3 Sem)	-	600	A & B	BSc Hons Marine Biology
DU (Z)	MSc Zoology (with Fisheries)	1	8 unit	800	A & B	BSc Hons Zoology
DU	MSc (AQ&F) Fisheries	Not yet established				
KU	MSc Fisheries	1.5 (3 Sem)	no data	no data	no data	BSc Hons Fisheries
RU	MSc Zoology (with Fisheries)	1	-	600		BSc Hons Zoology

Group A : Non thesis group

Group B : Thesis group, students of thesis group have to submit a dissertation as a partial fulfillment of their degree.

Facilities & resources for research

Most of the physical and material facilities created for teaching are shared for research work. Most universities have limited facilities to carry out fisheries research except at BAU & DU where reasonably good facilities have been created with donor and government assistance. Fisheries research in some needed subjects faces less problems because there are huge gaps in the area and much fisheries research work can be carried out with quite small resources. Students carry out all indoor and outdoor support activities and can provide competent support to faculty research. Overall strength of research in

Bangladesh universities is its trained and highly qualified teaching staffs and weakness is lack of laboratory facilities and research fund.

Research funding

Limited funds are available from the university for student research and the researchy students often bear most of the expenses of their research. Grants for faculty research are limited, with none being available in some universities. At BAU, there is a body called BAURES to manage and support university research. In other universities there are similar committees to manage research activities.

Besides internal funding, some national (eg., BARC, UGC, Ministry of Science & Technology) and international agencies (EU, DFID, IFS, NORAD, DANIDA, etc.) provide funds for fisheries research at the universities.

Conclusions and recommendations

Fisheries education should be imparted at the university level to provide technology based needs oriented higher education that produce graduates to meet sectoral requirements. For strengthening fisheries education and research the following recommendations may be put forwarded :

- Present course and curricular at undergraduate and postgraduate levels should be revised and updated.
- Co-ordination of different universities research institutions and government agencies for proper execution of development plans, setting research priorities and strengthening extension works.
- Emphasis should be given on demand-led research problems facing by the country.
- Establishing a fishery resources and information systems or networkings for easy excess to information for the researchers.

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