

AQUACULTURE RESURGENCE

BIRTH OF BLUE REVOLUTION

Professor Hiralal Chaudhuri's Dynamic Contribution to
South and Southeast Asia and the World



A.B. Chaudhuri

Aquaculture Resurgence: Birth of Blue Revolution

**Professor Hiralal Chaudhuri's Dynamic Contribution to South
and Southeast Asia and the World**

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A.B. Chaudhuri

Dedication

To the millions of poor fisherman of India, Myanmar (Burma), Lao PDR, the Philippines and other countries with whom and for whom Professor Chaudhuri worked, sometimes in unhealthy habitats and insurgent infested areas; the professor has wished them his love, affection and regards.

To Late Mrs. Mukul Chaudhuri, wife of Prof. Chaudhuri, whose work at social level touched the hearts of millions poor fishermen communities; and for extending moral and financial support to the editor in the preparation of this manuscript.

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Foreword

I feel thrilled in writing a few words on the book entitled '*Aquaculture Resurgence: Birth of Blue Revolution*' containing epoch making contributions of Prof. (Dr.) H. Chaudhuri, the Legendary personality in fishery science of the present world.

The success in Induced Breeding of Major Carps in confinement, standardisation and its application in varied eco-climatic conditions opened a new era in aquaculture of high production, as achieved now. The basic material itself for the modern aquaculture was the gift of the 'Father of Induced Breeding in India' who is a silent worker-cum-teacher of outstanding cordiality.

The present attempt of documenting the treatise of Prof. Chaudhuri's work in South and Southeast Asia in particular and the World in general would lead to further research by young Scientists in the multidirectional fishery Science.

I appreciate the effort of the Editor, Shri A.B. Chaudhuri, IFS, Ex-Director, Forest Survey of India for his present endeavour.

Dr. P. Das

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Preface

To the Readers

Since late 90's when some local news papers flashed the news of Professor Chaudhuri's success in induced breeding of carps and his monumental achievements in aquaculture resulting in profuse carp seed production, there had been a lot of queries about more detailed information about his successes episode. But neither the professor himself (he was averse to any publicity, name and fame) nor our Government gave the discoveries the importance it deserved.

Thereafter, felicitations and accolades came in profusion from various universities and institutions offering him their honorary membership and D.Sc (*Honoris causa*) and there was more public demand to know in details of the professor's contribution to aquaculture. Prof. Chaudhuri was highly honoured by three Universities of Japan and the USA for his outstanding work and World Aquaculture Society offered him lifetime honorary membership. At such a moment came a request from M/s Daya Publishing House that they were interested to publish Professor Hiralal Chaudhuri's lifetime contributions to aquaculture. It was thought a visionary and praiseworthy offer in the context of World wide recognition of his work.

The present editor was in a dilemma. It was because of Professor's apathy for any publicity of his work and his inability to help or untying various complicated knots in his papers for this write up if any. Another, apprehension was, if this editor (myself) was competent to present the Professor's work in true perspective without any misrepresentation of facts; and further that there could be wrong speculation that the professor was interested in the present publication although he was never behind this endeavour. Prof. Chaudhuri did not need any more recognition to his successes which he has already achieved.

The professor very reluctantly acceded to the request of this editor which the readers may peruse in the letter appended hereinafter.

On being successful in getting his consent the editor collected reprints, reports and journals those were available at his Saltlake residence. This treatise like two others now under publication by the same Publisher does not present all the achievements of the professor as the bulk of his work donated to the libraries of ICLARM and University of the Philippines was not available for analysis and presentation.

As such, this endeavour is primarily meant to bring to highlight Prof. Chaudhuri's contribution to aquaculture in South and Southeast Asia and designed to satisfy the need of those mostly non-technical and non-aquaculture enthusiasts. The Professor's magnanimity to consider his successes as joint effort of those who were associated with him was well-known.

The editor shoulders all shortcomings for his inability to present Prof. Chaudhuri's work in proper flavour without any blemish as his work was highly technical and complicated. The editor also begs of the readers his unqualified apology for any mis-statement, mistakes or mis-representation of facts presented by him.

In the initial stages of his research endeavour the Professor was helped by late G. N. Mitra, Director of Fisheries, Govt. of Orissa by extending research facilities; at research station he was

helped by Dr. K. H. Alikunhi, Head of research station, Cuttack and he was grateful to both of them. The professor acknowledges with all sincerity the help and assistance extended by Dr. Srinivasa Rao, Dr. C. V. Kulkarni, and Dr. B. R. Bhatia and he thinks all his successes were possible because of their active help.

For proper evaluation of Prof. Chaudhuri's work in India, South and Southeast Asia especially by the non-technical and non-aquaculturist readers, the editor has presented the following observations in [Chapter 1](#):

1. Stalwart aquaculturists assessment of his work
2. Forecast of a brilliant era of aquaculture in Southeast Asia
3. Professor's contribution to South and Southeast Asia in particular as viewed by some Universities and World organizations.

These views should be considered enough to evaluate the Professor's contribution to aquaculture in general and especially for the people of India, South and Southeast Asia.

An Amazing Discovery

The fifth decade of 20th Century witnessed aquacultural resurgence in the discovery of "Induced Breeding" of major carps. July 10, 1957 was a red-letter day in aquaculture research. Revelation of life history of milkfish (*Chanos chanos*) in 1977 which made induced breeding of this fish a success was another land-mark of his discovery. Earlier, he was given the epithet as "Father of Induced Breeding" for his series of successes in induced breeding.

Well-deserved rare honour given to Prof. Chaudhuri was the crowning glory of his outstanding works. His findings made possible the planned fresh water aquaculture of today in respect of induced breeding of carps by the administration of pituitary hormones, the most important scientific methodology developed in the field of cultured fisheries. This success made it possible to obtain good quality seeds. He developed high yielding carp culture techniques in late sixties. He also demonstrated the practicability of achieving high fish yield in ponds by carps polyculture (Composite fish culture). His pioneering efforts in the use of reproductive hormones in finfish aquaculture and for his training of generation of students was highly recognized. The president of the Philippines late Ferdinand Marcos congratulated him personally for his successful work of milkfish in 1977.

All these works gave an unprecedented boost to aquaculture research and brought a protein (blue) revolution in the World on a sustained basis.

The readers, it is hoped, will find full justification with the title of this treatise primarily from the observation of stalwart aquabiologists, some journals and institutions as recorded in nutshell in [Chapters 1](#) and [2](#); [Chapter 3](#) gives in short the professor's lifelong activities. [Chapter 4](#) gives some views of aquaculturists on the scenario of 21st Century. Other chapters deal with some project works besides a few publications of the professor.

So having spent second half of his active career in Burma, Lao PDR and the Philippines and rest (first half) in India, the professor's lifetime success and the fruits thereof pertain to the people of India, South and Southeast Asia.

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Professor Chaudhuri's Consent for Publication

Although I have always been averse to name, fame and public appreciation for whatever little I have achieved in my Scientific endeavour, I rather reluctantly permit Shri A.B. Chaudhuri of 131, N.S.C. Bose Road, Block-10, Flat-4, Kolkata – 700 040 to edit my research documents, lecture notes, reports etc. relating to aquaculture, limnology and ichthyology either in part or full or modify them for suitable publications.

All these papers were widely read discussed, quoted and presented in national and international Scientific Workshops, Symposia and Congregations. As such no accent is necessary for present publication from any body or any organization.

Kolkata

Sd/-

H. Chaudhuri

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Regional Aquaculture Coordinator
South East Asian Fisheries Development Centre, Manila*

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THE BOOK

The book focuses a realistic and factual account on the resurgence of aquaculture and birth of blue (protein) revolution. The resurgence got a booming start on the success of induced breeding of carps in mid 1957. Thereafter, further research successes gained momentum year after year in the fields of high fish seed production, integrated polyculture hybridization, training of personnel and in various other fields. Bulk impact of benefits from these successes were on the people of India, South and Southeast Asia who harvested the successes of induced breeding. These successes were considered the best research success in the field of Aquaculture in the region. The credit for these successes goes to Prof. Hiralal Chaudhuri the “Father of Induced Breeding” and the international scientist. As the publisher M/s Daya Publishing House wanted to document the research success of Prof. Chaudhuri specifically the editor prepared this treatise on whatever little documents of Prof. Chaudhuri were available. The professor was averse to publicity, name and fame and in no way connected with this endeavour except that he rather reluctantly permitted to consult his papers. He said the success was due to a teamwork of several aquaculturists. Since various stalwart aquaculturist’s observations have been presented in [Chapters 1, 2 and 4](#) there was no room for the editor to glorify Prof. Chaudhuri’s achievements any further.

ABOUT THE EDITOR

A.B. Chaudhuri belonged to Indian Forest Services, and held the posts of Chief Coordinator, Pre-investment Survey of Forest Resources and Director, Forest Survey of India, in Central Government; prior to that he held the post of Conservator of Forests in the State.

Chaudhuri has been mostly working as a consultant ecologist in the aquatic and terrestrial arena for the last 23 years.

He has to his credit publications of 33 books besides more than 50 Environmental Impact Assessment reports, many technical papers and a few international assignments.

Chapter 1

Aquaculture Resurgence: Birth of Blue Revolution

A RESUME

This chapter unsuitably records the stamp of success of Prof. Chaudhuri in India, South and Southeast Asia. A galaxy of bio-aquaculturists and top International institutions have acknowledged his outstanding success in various facets of aquaculture.

“Aquaculture Asia”, a journal of eminence accepts the professors “Induced Breeding and mass seed Production” as the major contribution to Southeast Asian Aquaculture

World Aquaculture Society (WAS) observes:

Under the auspices of the FAO, this expertise in freshwater fish breeding and grow-out has been shared with numerous extension workers and other government staff in many countries, including his own (India), Laos, Myanmar, the former Soviet Union, Malaysia and Fiji. He also managed a large FAO field project in Laos for five years from 1979 to 1984. In his post in the Philippines Hiralal Chaudhuri worked in a collaborative training program developed between SEAFDEC itself and NACA, the Network of Aquaculture Centres in Asia, which has its base in Bangkok, Thailand.

WAS say he is truly an international figure and is rightly called the “Father of Induced Breeding”. Outstanding Contribution of this scientist made possible planned freshwater aquaculture in Induced breeding. His pioneering research since 1950’s made possible to obtain seeds of good quality on a sustained basis.

This chapter, is in fact, justifies the title of the book.

Every fibre of Professor Hiralal Chaudhuri’s mortal being was tuned to the development of aquaculture not only in the South and Southeast Asia, but also all over the World. Resurgence, in fact started on 10th July 1957 with the success in his induced breeding of Carps in Cuttack. The success continued upto 1975 as a researcher with Govt. of India and, thereafter from 1976 to 1993 with SEAFDEC, FAO/UNDP and the Philippines University in various capacities. The successes were achieved wherever he laid his hands. Blue (Protein) Revolution was a corollary to such successes. Some facts are presented hereinafter to substantiate the aforesaid observations.

A.Unique and Outstanding Achievement: “Aquaculture Asia” Views

The Journal “Aquaculture Asia” asked two expert aquaculturists and veteran Aquaculture Development experts what they thought had been one of the major factors to Asian Aquaculture Department.

The response was:

“Induced breeding of carps and their mass seed productions”.

[Source: Mr. Nisheet Bhatt, Aquaculture Asia’s Technical Correspondence reports in the Journal Vol.V No. January–February 2000]

None other than Prof. H. Chaudhuri deserves this appreciation. The first success obtained in 1957 continued long years in various fields in South and Southeast Asia and other parts of the World.

B.Technological Break through of the Millennium

Dr. P.V. Dehadrai in his lecture on Prof. Hiralal Chaudhuri Fisheries Foundation held in

Versova, Mumbai in 2001 says;

“10th July 1957 was an important day for Indian Aquaculture. It was Technology break through of the Millennium when Rohu was induced breed by hypophysation. The hero was Dr. Hiralal Chaudhuri in Collaboration of Shri K. H. Alikun at CFRI Research Station at Cuttack’s Killa fish farm. It set the trend for breeding several commercially important food fishes as well as ornamental fishes.

However, the World over efforts were already going on to understand the mechanism of hypophysation. It took almost 2 or 3 decades to understand the semantics of reproductive hormonal interactions in relations to the interval rhythm of the ambient environment both aquatic and atmosphere”.

Professor Chaudhuri studied thoroughly the seasonal reproductive cycle maintained by endocrine cycle and how the hormonal cascade has perfectly coordinated with seasonal reproduction cycle of the fish to ensure spawning at a specific time of the year. He understood how the environmental factors regulate reproduction by the endocrine or hormonal path way.

C. World Conferences and Symposia–Views

The symposium on “Warm water fish pond culture” held in Rome in May 1966 recorded various activities relating to the subject. Since then some regional conferences were held in various countries. But the landmark was FAO sponsored “World Aquaculture Conference” held in Kyoto, Japan in 1976. It recorded a comprehensive and consolidated step to record the progress of various facets of Aquaculture. It concluded that “aquaculture has developed to become the fastest growing food producing sector in the World; it has expanded, diversified, intensified and technologically advanced and its contribution to aquatic food production has increased significantly. Aquaculture is highly diverse with a broad spectrum of systems, policies and operations ranging from backyard small, household pond systems to large scale highly intensive practices (modified from Aquaculture Asia, 2000).

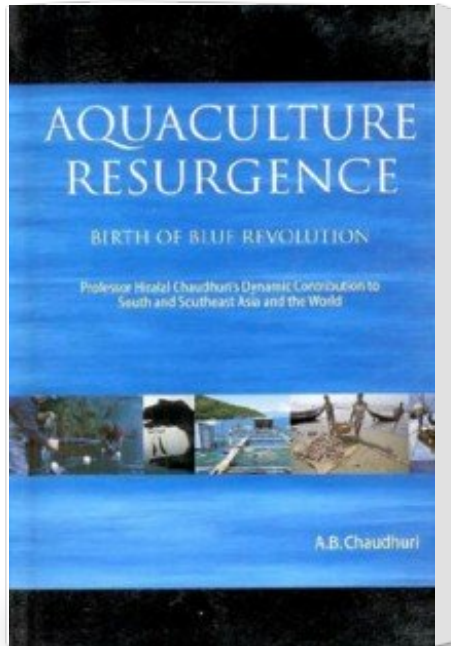
Bangkok Declaration and strategy for aquaculture development beyond 2000, made at a conference in 2000 provide a blue print for Government action for aquaculture development. The Journal “Aquaculture Asia” (Volume, Oct-Dec. 2000) records that Asian aquaculture has progressed a lot since 1980. Kyoto conference while making the declaration records the development of aquaculture in the past decade.

Conferences and symposia have not specifically mentioned Professor Chaudhuri’s epoc-making discoveries and over-looked thumping appreciations offered to him by many world aquabiologists from many research institutes made on his success in induced breeding and in other fields of aquaculture. This editor has however presented scores of facts to establish and confirm that aquaculture got a boost in the success of induced breeding in 1957 and quickly went on gaining momentum.

The professor’s foreign assignments in Burma, Lao PDR, SEAFDAC, and in many other countries proved immensely successful bringing revolutionary improvements in various facets of aquaculture in those countries. As such, aquaculture no doubt rejuvenated since 1957 in South and Southeast Asia and the World.

Elliot Enlis (World Aquaculture, March 1997) uses a Term “Aqua biotech”—a blue revolution to record a profound increase in productivity widely heralded as the green revolution. India had such

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