AmbujaNeotia

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MATSYA JAGAT

ISSUE. 1
VOL. 2

Cover Designed by Subrata Halder . BFSc. 2nd year

DIVISION OF FISHERIES SCIENCE

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Forewords

Dear Readers,

It is a great pleasure for me to put some forewords in the occasion of publication of current year's first issue of the e-magazine **"Matsya Jagat"** by the Fisheries Science (FSc.) division of our university. The content of this e-magazine will certainly help the students, faculty members and other readers in having the latest information and activities related to the emerging of fisheries sciences.

Our Fisheries Science division offers a wide range of activities for the benefit of students, fish farmers, entrepreneurs, and use of wetland for fish culture. It is really a challenging job for the professionals and the students in obtaining the reading materials for classes and up-to-date information on aquaculture from the literature that are available. Hopefully the readers' demands will be fulfilled by this magazine, especially those who are interested in the recent advancements in aquaculture and fisheries sciences. It is expected that this e-magazine will be an important media for disseminating information / knowledge regarding latest state-of-arts of infrastructure development and emerging technologies those are exploring in enhancing fish production, marketing, and preservation.

On this occasion, I would like to congratulate fisheries science community of our university for their efforts in developing our fisheries division.

Nevertheless, we require more efforts in translation of knowledge through outreach activities as well as in connecting the fish farmers, entrepreneur and marketing people for proper integration in developing economy, ecology and empowerment to those are living in rural and remote areas in the country.

Dr. Biswajit Ghosh
Hon'ble Vice Chancellor
The Neotia University

The Editor-in-Chief **Message**

It is my pleasure to introduce the 2nd Volume (I – Issue) of the E-Magazine **"Matsya Jagat"** published by Division of Fisheries Science, The Neotia University, started with the objective to propagate the latest divisional activities, and initiatives of the division and impact thereof among the students and readers.

Matsya Jagat showcases the progress of the activities carried out under Division of Fisheries Science and I strongly believe that this magazine would serve as a great platform for promoting diversified fisheries activities, ideas and experiences and will further welfare of fisher, fish farmers, students and other readers in addition to the dissemination of information on the various aspects. I would like to place on record my appreciation for the consistent efforts put in by the editorial team towards making of this magazine.

Prof (Dr.) H Shivananda Murthy
Chair Professor
Division of Fisheries Science
The Neotia University

From the Editorial Desk

Dr. Hakim Mudasir Maqsood

Editor- Matsya Jagat,
Assistant Professor
(Fish Genetics and Breeding)
Head, Department of Aquaculture

Welcome to the first issue of 2024 of Matsya Jagat, the e-magazine brought to you by the Division of Fisheries Sciences, TNU. This edition marks a significant milestone as we showcase the scholarly endeavors of our Bachelor of Fisheries Science (BFSc) students from various semesters. Throughout these pages, you'll encounter insightful articles penned by our students, each meticulously crafted under the mentorship of our dedicated faculty. Our primary objective in fostering this culture of scientific writing is to cultivate a spirit of inquiry and academic rigor among our student body.

Noteworthy is the vibrant cover design adorning this issue, a creation of our talented BFSc graduate students. Selected through a rigorous inter-semester poster design competition, the cover exemplifies the creative prowess and artistic flair present within our academic community.

As you delve into the contents of this issue, you'll find that our students take center stage. Their research, insights, and perspectives illuminate the pages, offering a glimpse into the breadth and depth of knowledge cultivated within our academic environment. From innovative aquaculture practices to advancements in fish processing technology, each article reflects the passion and dedication our students bring to their studies.

At the Division of Fisheries Sciences, our overarching aim is to nurture a cadre of skilled and self-reliant professionals poised to make meaningful contributions to the field. Through a blend of rigorous academic training, practical experience, and mentorship, we endeavour to empower our students to become leaders and innovators in the realm of fisheries science.

As you journey through the pages of Matsya Jagat, we invite you to immerse yourself in the world of fisheries science, to engage with the research, ideas, and aspirations of our students, and to join us in our pursuit of excellence and innovation.

Thank you for your support, and we hope you find this issue both enlightening and inspiring.

Warm regards,

Dr. Hakim Mudasir Maqsood,
Assistant Professor (Fish Genetics and Breeding)
Head, Department of Aquaculture

Foreword from **Faculty Head**

Dr. Neeraj Pathak
Assistant Professor and Faculty Head
Division of Fisheries Science
The Neotia University

It is with great pleasure and enthusiasm that I extend my warmest greetings to the readers of “Matsay Jagat” as I contribute this foreword to the forthcoming Issue. 1 Vol.2. In the ever evolving realm of Fisheries Science, "Matsay Jagat" serves as a beacon of knowledge and insight, catering to the curiosity and intellect of enthusiasts and professionals alike. As an Assistant Professor and Faculty Head for the Division of Fisheries Science at The Neotia University, I am acutely aware of the importance of disseminating valuable information and fostering a community of learning and collaboration. This issue promises to deliver a wealth of thought-provoking content, covering a diverse range of topics within the realm of Fisheries Science. From advancements in Fish Processing Technology to discussions on Emerging Fish Quality and Safety, each article is meticulously crafted to offer both depth and breadth of understanding. As a researcher and educator deeply invested in the field, I commend the editorial team for their dedication and vision in curating this enriching experience. Matsay Jagat continues to be a vital platform for sharing knowledge, fostering dialogue, and shaping the future of Fisheries Science. I extend my heartfelt gratitude to the contributors whose expertise and passion illuminate the pages of this publication. May their insights inspire and empower readers to further explore the boundless possibilities within the realm of Fisheries Science. With best wishes for a captivating and enlightening read

Faculty of **Fisheries Sciences** at a Glance

Prof. (Dr.) H. Shivananda Murthy

MFSc, PhD, PDF (USA, UK and Spain)

Chair Professor, Division of Fisheires Sciences

Dr. Hakim Mudasir Maqsood

Assistant Professor (Fish Genetics and Breeding)
Head, Department of Aquaculture

Key Research Area:
Nutrigenomics, Genome Editing,
One Health Aquaculture

Mr. Khemraj Bunkar

Assistant Professor and Head (FEES)

Key Research Area:
Supply/Value chain analysis and
Economic analysis

Dr. Neeraj Pathak

Assistant Professor and Head,
Fish Processing and Technology
Faculty Head, Div. of Fisheries Sciences

Key Research Areas:
Emerging Fish Quality and Safety,
Thermal Processing

Dr. Vikas Pathak

Assistant Professor and Head (FRM)

Key Research Area:
Fish diversity,
Biology and Ecological studies

Dr. Suman Karmakar

Assistant Professor & Head,
Aquatic Environment Management

Key research area:
Aquatic Toxicology

Ms. Camelia Chattopadhyay

Assistant Professor (Ad hoc grade-II), FEES

Key research areas:
Fisheries Extension and Aquaculture

Ms. Aditi Banasure

Assistant Professor (Fisheries Engineering)

Key Research Area:
Traditional fish traps, TKs, Collapsible trap,
Destructive fishing practices.

Dr. Avishek Bardhan

Assistant Professor and Head (AAHM)

Key Research Area:
Antimicrobial resistance, Aquatic Health,
Antibiotic Safety, Drug toxicity

Unlocking the Golden Secrets:
A Case Study on Goldfish Culture and Breeding at TNU's Aquaculture Department

Dip Sahoo1, Shoaib Khan1 and Hakim Mudasir Maqsood2*
1BFSc (2nd Year), Div of Fisheries Sciences, TNU
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Goldfish, renowned for their beauty and attractiveness, create a captivating ambiance in aquariums and their surroundings, making them a preferred choice for many hobbyists. They require minimal space, low oxygen levels, and are easy to maintain. In this article, we will delve into the alluring world of goldfish culture, exploring their origins and the experience of keeping them as pets.

The tale begins in East Asia, specifically China, where Carassius auratus, or Goldfish, originated over a millennium ago. Initially bred for food in ancient China, their remarkable beauty and attractive colours soon captured the global fascination. Consequently, goldfish underwent selective breeding to enhance ornamental qualities such as body shape and colour, resulting in the stunning varieties observed today.

Varieties of Goldfish:

Goldfish exhibit a wide array of varieties distinguished by their colours, shapes, and sizes. Over time, thanks to extensive selective breeding by both professionals and enthusiasts, the number of varieties has significantly increased. Here are some commercially important and popular goldfish varieties: Telescopic eye, Lion head, Veil tail, Orenda, Butterfly tail, Pearl scale, Black moor, Fan tail, Calico, Celestial eye, and Comet.

Breeding of Goldfish:

Goldfish breeding is a meticulous art that hinges on the careful selection of parent fish to achieve desired traits in the offspring. The crucial aspect of this process involves choosing suitable parents for selective breeding, typically maintaining a male-to-female ratio of 2:1.

Creating an optimal breeding environment is essential, often accomplished by providing a spacious breeding tank with clean water and introducing floating weeds like duckweed or water lettuce. While goldfish typically release eggs naturally, in some cases, manual methods such as hand stripping or the use of synthetic hormones or pituitary gland may be employed. Successful hatching occurs approximately 27 hours after the eggs are laid. The physico-chemical parameters optimal for breeding of goldfish are mentioned in table 1.

Table. 1 Optimal physico-chemical water quality parameters for breeding Carassius auratus.

Sl.	Parameters	Range
1.	Temp. (0C)	23 – 28
2.	Dissolved oxygen (ppm)	6.0 – 6.8
3.	pH	7.4 – 7.8
4.	Alkalinity (ppm)	227 – 245
5.	Total hardness (ppm)	189 – 195
6.	Free CO2 (ppm)	1 – 1.5

Sexual dimorphism:

a. During the breeding season, tubercles emerge on the head, operculum, and occasionally on the pectoral fins and other fins of males. They may also manifest as dots on the scales. Females, however, do not display breeding tubercles.

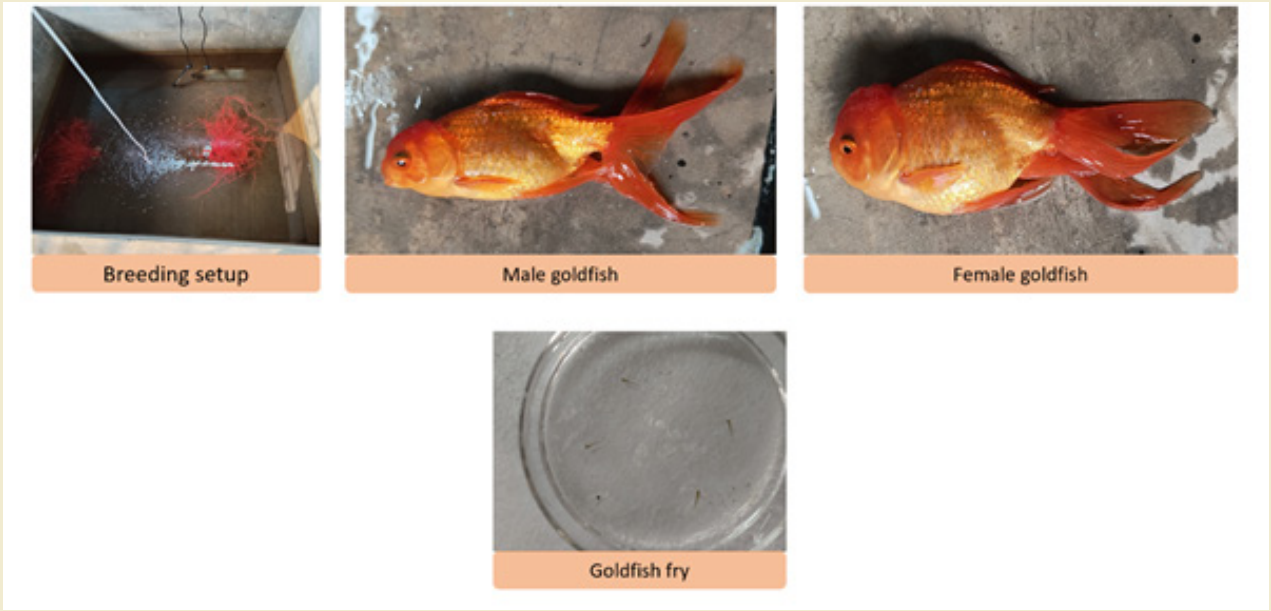
b. When observing the belly line from the lowest point of the belly to the tail from above, females exhibit a circular outline, while males show a slight curve. Additionally, the female's belly may be slightly bulging to one side.

c. The genital opening in females is round and protruded, whereas in males, it is long and oval.

d. If belly line between the lowest point of belly to tail is observed from above, it is circular in outline in female but a slight curve in male. Belly of the female may be slightly bulging to one side.

e. Genital opening is round and protruded in female while in male it is long and oval.

Fig. 1 Breeding set up, male-female gold fish, and newly hatched fry.



Welfare of goldfish under laboratory conditions:

In the rearing of goldfish, meticulous care is crucial. Goldfish lack a stomach, making it challenging to digest excess proteins, leading to the release of a considerable amount of waste. Regular monitoring of water quality is essential to mitigate these challenges. Adequate light is preferable as goldfish produce colour pigments in the presence of light. Leaving the fish in darkness may result in discoloration.

As omnivores, goldfish require feeding twice a day. It is advisable to keep at least one pair of fish in the aquarium to prevent stress, as solitary fish have a higher risk of succumbing to adverse conditions. The preferable water quality parameters for goldfish rearing are mentioned in table 2.

Table 2. Water quality parameters for rearing of goldfish under controlled conditions

Sl.	Parameters	Range
1.	Temp. (0C)	15 – 35
2.	Dissolved oxygen (ppm)	>3.4
3.	pH	7 – 9.5
4.	Alkalinity (ppm)	50 – 200
5.	Total hardness (ppm)	>20
6.	Free CO2 (ppm)	0 - 10

Goldfish culture is a captivating blend of history, art, and passion that has evolved over centuries. From their origins in China to the diverse varieties now adorning aquariums worldwide, goldfish continue to captivate and inspire enthusiasts. Dive into the world of goldfish culture and explore the wonders of these mesmerizing aquatic companions.

Successful Breeding of Goldfish at TNU Campus:

A Milestone in Ornamental Fish Husbandry:

Goldfish breeding marks a significant achievement at TNU's Division of Fisheries Sciences, showcasing the institution's commitment to advancing ornamental fish husbandry. Male and female goldfish, carefully selected based on weight criteria, were housed in concrete tanks within the wet-lab facilities. The brood fish were meticulously cared for, receiving regular feedings tailored to meet their nutritional needs, ensuring optimal health and condition for breeding. Water quality parameters were closely monitored and maintained within optimal ranges to create a conducive environment for reproduction. A well-designed breeding setup was implemented and monitored for any signs of fungal infestations, with routine water exchanges conducted as needed to promote a healthy breeding environment. This comprehensive approach to husbandry and monitoring contributed to the success of the breeding program. Despite being the first attempt to breed ornamental fish on campus, the survival rate exceeded expectations, with more than 75% of the offspring thriving. This achievement underscores the expertise and dedication of the team at TNU's Division of Fisheries Sciences in pioneering advancements in ornamental fish breeding.

Moving forward, this success paves the way for further research and innovation in ornamental fish husbandry, positioning TNU as a leader in the field and opening new opportunities for collaboration and exploration in the realm of ornamental fish breeding.

Further reading:

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HACCP Concept in **Seafood Industry**

Subhadip Giri, B.F.Sc. 4th semester

HACCP is essential in guaranteeing sanitation, particularly in the Indian food industry. It depends on logical proof to distinguish and control expected perils all through the food creation process. Its use, especially in the seafood industry, is in line with international standards and has advantages like less sampling and being flexible to changes.

Understanding HACCP:

1. Conduct Hazard Analysis:

Recognize and survey potential dangers related with fish creation. This incorporates natural, compound, and actual perils, like microorganisms, poisons, and unfamiliar items.

2. Determine Critical Control Points (CCPs):

Deciding CCPs is the second standard of HACCP. As per Codex rules, a CCP is a stage essential for controlling or decreasing sanitation dangers. The Codex HACCP system uses a decision tree to help identify CCPs logically.

3. Establish Critical Limits:

The specific criteria that differentiate acceptable from unacceptable conditions in food production are referred to as critical limits. They lay out the limits for factors like temperature, time, aspects, and dampness, guaranteeing item security when kept up with inside these cutoff points.

4. Establish a monitoring system:

To ensure that the established critical limits are being met, regularly observe and measure the critical control points. This includes nonstop observing and documentation.

5. Establish Corrective Actions:

The codex HACCP framework and rules for its application characterizes restorative activity as "any activity to be taken when the consequences of observing at the CCP show a deficiency of control"

6. Establish verification procedures:

In HACCP verification, methods, tests, and monitoring are used to ensure compliance. Techniques incorporate arbitrary examining and examination to affirm the framework's adequacy.

7. Establish Documentation and Recorded keeping:

Four sorts of records ought to be kept as a feature of the HACCP program: 1. Support documentation for fostering the HACCP plan 2. Documents produced by the HACCP system 3. Documentation of strategies and methods utilized 4. Documents from the employee training program.

Implementation in the Seafood Industry:

1. Harvesting:

Guaranteeing the wellbeing of fish starts with mindful reaping rehearses. HACCP standards are applied to distinguish potential dangers connected with water quality, marine contaminations, and taking care of works on during collecting.

2. Processing:

In fish handling, HACCP oversees defilement gambles through checking basic focuses underway to forestall pollution, cross-tainting, and guarantee legitimate cooking temperatures.

3. Distribution and Storage:

Temperature control is essential for preventing bacterial growth and spoilage in the seafood supply chain. HACCP standards lay out basic control focuses and checking systems for transportation and capacity.

4. Retail and Consumer Handling:

HACCP applies to both retail and consumer safety practices, so it's not just for the food industry. Rules for fish capacity, taking care of, and cooking are critical for security.

Advantages of HACCP:

1. Sets aside your business cash over the long haul.
2. Stays away from you harming your clients.
3. Food handling norms increment.
4. Guarantees you are consistent with the law.
5. Food quality guidelines increment.

Conclusion:

HACCP is essential in the fish business for guaranteeing wellbeing and uprightness. By distinguishing and controlling perils deliberately, it shields general wellbeing and keeps up with customer certainty, adding to industry maintainability.

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An Overview of Integrated Multi-trophic Aquaculture (IMTA)

Tridisha Harbab (B.F.Sc., 2nd Year)

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Introduction:

India has emerged as the third-largest fish-producing country, ranking second in aquaculture production, contributing 8% to global fish production. Integrated multitropic aquaculture (IMTA) is gaining popularity in the Indian aquaculture sector, representing a recent practice that enhances overall production rates and fosters a more balanced and sustainable ecosystem.

Principle of IMTA:

IMTA involves cultivating multiple species with different trophic levels and ecological interactions together, allowing one species to utilize the waste or byproducts of another. Introduced in Canada in the Bay of Fundy region in the 1970s, IMTA practices have gradually been integrated into Indian aquaculture over the past few decades.

Species Selection:

Bivalves and seaweed are the most economically viable groups chosen for IMTA, while carnivorous fish and shrimp are nourished by feed. Selection criteria for species in the IMTA system include adaptation to tropical environments, rapid growth rates, high market demand, compatibility for cohabitation, and the ability to consume various types of feed, both natural and artificial.

Current Status of IMTA in India:

Various successful experimental projects have been executed by scientists and institutions across India, benefiting numerous fishermen. Notable studies on IMTA include open sea cage culture and raft culture in Karnataka, pen culture in Sindhudurg district (Maharashtra) under the guidance of CIBA, brackish water cages and rope culture in Malvan (Maharashtra) under CIBA, brackish water ponds and pole-and-line fishing in Sunderban (West Bengal) under CIBA, and open sea cage culture and raft culture in Munaikadu (Palk Bay), Ramanathapuram district (Tamil Nadu) under the guidance of CMFRI.

Further reading

FAO.2015.Fishery and aquaculture statistics. Global aquaculture production 1950-2013(fishstat).in: FAO Fisheries and Aquaculture Department (online).Rome.updated 2015 https://www.fao.org/fishery/statistics/software/fishstatj/en.Researchgate:

CMFRI Repository: http://eprints.cmfri.org.in

Handbook of fisheries statistics 2020.

Shore based traditional **Aquaculture Systems in Indian History**

Subrata Halder, BFSc 2nd Year

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Introduction:

Nowadays we know the practice of fishing and aquaculture dominated by modern aquaculture methods. In Indian history, eastern India was based on some traditional processes. Kautilya's "Arthashastra" and king Someswara's "Manasoothra" refer to the practice of fish farming. Shore based aquaculture or coastal brackish water aquaculture is practiced in many countries. There are various methods of traditional culture system based on the local conditions. This article provides a brief overview of those traditional culture system. Brackish water aquaculture also an age old practice, comprises with Bhery or Bhasa-bandha fishery in West Bengal and "Pokkali" shrimp farming in Kerala. It is observed that these practices not use any additional knowledge and Technologies rather than trapping of naturally breed juveniles of fish and prawns.

Traditional Methods:

In India there are three types of traditional aquaculture systems were practiced.

- Paddy cultivation during rainy season (June-September) followed by fish or shrimp culture in "Pokkali" fields in Kerala.
- Fish or Prawn culture through out of the year. This is on the deep fields on eastern India.
- Paddy cum fish culture is practiced mainly in West Bengal and Goa.

Fish Farming in "Pokkali" Fields:

Traditionally, the coastal wetlands in many parts of India have been used for sequential paddy-fish cultivation under different forms of institutional structures. In Kerala it is called Pokkali. In the recent years there's a decline in Pokkali cultivation. In more than 90 % of the single cropped Pokkali lands, rice cultivation is done during the low saline phase from May-June to September-October. The traditional prawn filtration is taken up during the high saline phase which sets in during December-January. The Pokkali system mainly depends on traditional Pokkali cultivars and high yielding varieties derived from these cultivars. Pokkali, Churuttu Pokkali, Chettyviruppu, Anakkondan and Cheruviruppu are the traditional cultivars prevalent in this tract.

Bhery Culture or Bhasa-Badha Fisheries:

"Bhery" culture is the traditional fish farming practices of West Bengal. It is mainly observed in low laying areas of Sundarban region. Bheries are chiefly large perennial

waterbodies surrounded by earthen dykes which are constructed by borrowing earth from the trenches excavated inside the bheries near the toe line of the dykes. Bheries are deeper and larger in extent than the Pokkali fields of Kerala.

During high tides the sea water enters to the fields but at low tide the water flow back through sluices which are covered with screen made up by bamboo slates. This screen prevents the escaping of fish or shrimp juveniles. The stocking of fish done during the months of January to February. Juveniles grows in the bheries by consuming the organic matter and planktons on sea water without use of any external feed. Fish or shrimp grows up to marketable size, those are harvested. Fish species which are cultured in Bheries; Catla catla, Labeo rohita, Cirrhinus mrigala, Cyprinus carpio, Chanos chanos, Clarias batrachus etc.

Fish Culture in "Khazan" Lands of Goa:

Khazans are coastal wetlands of Goa. They were reclaimed from mangrove forests, probably in the pre-Christian era by an intricate system of dykes, sluice gates and canals and put to multiple productive uses such as agriculture, aquaculture and salt panning. The first documentation of khazans is in the sixth century AD, which is a donation of a khazan land by a king on a copper plate.The khazan ecosystem is an integrated system, initially with major emphasis on agriculture. Expenses for maintenance were met through leasing of cultivation and fishing rights. However, with changes in the global economy and market, aquaculture has become the main activity of khazans now. Some of the khazans are used only for aquaculture now and remain uncultivated otherwise but some are still used as paddy fields in monsoons. The zone immediately upstream the sluice gate, has a depression ('poiem'), acting as a reservoir not only of water, but also of eggs and larvae of the estuarine aquatic fauna. During high tides, fish swim to the less saline water to spawn. The juvenile fish grow in these estuarine waters, which are rich in nutrients due to the organic biomass supplied by the agricultural fields. The adult fish that migrates back to more saline waters to be recruited to the adult stock is caught at the sluice gate during dark hours.

This practice ensures high yield while protecting fish and shrimp. Good-sized crabs can also be caught in traps. The importance of the fish in this form of coastal management reconciling different needs is symbolized by local art work.

Use of Modern Methods in Recent Times:

In recent days technologies goes far beyond our imagination. Now requires more production and transportation of fish or shrimps. So, the traditional practices doesn't fit for it, consumption rate increased than before in the ancient times. Several modern methods of fish farming are developed. Such as Extensive and Intensive Fish farming.

Extensive farming:

An Extensive fish farming system based on a semi-natural environment (e.g. Existing ponds), with natural food supply to the fish cultured such as algae, crustaceans and zooplanktons etc. Production of fish within the extensive system can be increased by fertilizing the pond (with animal waste). The natural balance within the extensive system is maintained by stocking the pond with the variety of fish occupying different ecological niches.

Intensive farming:

Intensive fish farming systems are often in closed-circulation tanks (e.g. trout farming) or flow through raceways. In these farming systems oxygen, water quality and food supply are closely controlled. This is a high cost process of fish farming (due to feeding cost and equipment) but the production rates are high and therefore offset the outlay. But some disadvantages are also there in this method, there is an increased risk of disease and high degree of monitoring and expertise is necessary.

Cage culture:

Cage aquaculture system involves the growing of fishes in existing water resources as being enclosed in a net cage which allows free flow of water. It is an aquaculture system made of a floating frame, net materials and mooring system (with rope, buoy, anchor etc.) with a round or square shape floating net to hold and large number of fishes and installed in reservoir, river, lake or sea. A catwalk is built around a battery of floating cages. Cage culture is an aquaculture system where fish are held in floating net pens Cage culture offers the farmer a chance to utilize existing water resources in which most cases have only limited use for other purposes.

Further reading

Sahoo, L., Behera, B. K., Panda, D., Parhi, J., Debnath, C., Mallik, S. K., & Roul, S. K. (2023). Fisheries and Aquaculture. In Trajectory of 75 years of Indian Agriculture after Independence (pp. 313-330). Singapore: Springer Nature Singapore.

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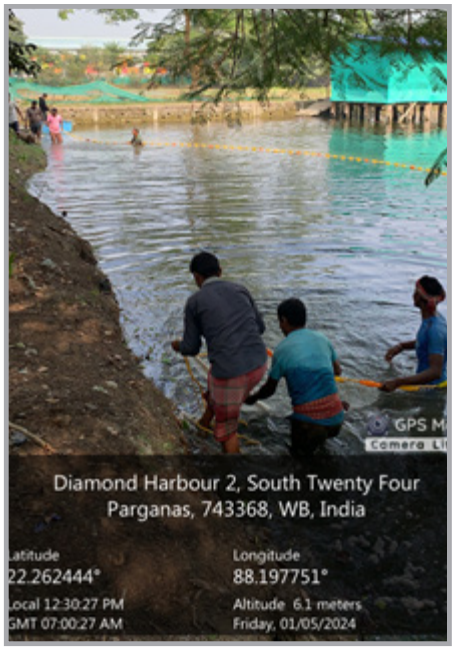
Activities at Division of **Fisheries Sciences**

Department of AEM & FRM, Division of Fisheries Science conducted National Seminar (Virtual Mode) on the occasion of World Wetland Day

Debate and Poster presentation competition on the occasion of World Wetland Day celebration



Routine activities of Department of Aquaculture:

Fish harvesting and sale, Ornamental Fish rearing and breeding,

Activities of Department of Fish Processing Technology: FPT in collaboration with Aquaculture inculcating sense of entrepreneurship among BFSc grad students by demonstrating "Farm to Plate" concept adapted by FPT and Aquaculture Departments at Division of Fisheries Sciences.

Final Year grad students attended 5 days training on "Recent advances in Aquaculture" at ICAR-CIFA Rahara Research Station.

Who knew learning could be so hands-on?!

Routine practical exposure of BFSc grad students to various techniques

Insights from the world of **Fisheries and Aquaculture**

- **Global Record:**
  Total world fisheries and aquaculture production hit an all-time high of 184.6 million tons in 2022.
- **Indian Economic Impact:**
  The fisheries sector contributes 1.1% to India's Gross Value Added (GVA) and constitutes 6.72% of the agricultural GVA for the fiscal year 2020-21.
- **Indian Fish Production Breakdown:**
  India's total fish production in 2022 reached 16.24 million tons, with the inland sector contributing 74.6% (12.12 million tons) and the marine sector contributing 25.4% (4.12 million tons).
- **Export Milestone:**
  India's fisheries export value surged to 57,586 crores during the financial year 2021-2022, showcasing a remarkable increase.
- **Marine Discovery:**
  The Zoological Survey of India (ZSI) unveiled a vibrant orange deep-water marine fish species, Pterygotrigla intermedica, commonly known as gurnards or sea-robins, discovered in Digha Mohana, West Bengal.

- **Freshwater Marvel:**
  ZSI, Gopalpur, discovered a new freshwater fish species, Motla (Awaous motla), in the Mahanadi River in 2023. The fish boasts a striking yellow-colored body and a distinctive fleshy upper lip.

- **Biodiversity Riches:**
  A recent discovery, 'Badis limaakumi', belonging to the Badidae family, emerged in the Malak River in Nagaland, adding to the rich biodiversity of the region

Do you know?

'Bombay Duck' is not a duck, but a fish

- Scientific name: *Harpadon nehereus*
- 90% water content
- Fresh fish can be fried or cooked in curry
- Dried fish can be pickled or used as a condiment

The 1st ever captive Spawning and Larval Production of Bengal's Yellowfin Seabream at ICAR-CIBA, Kakdwip Research Centre, West Bengal

Bengal yellowfin seabream ***(Acanthopagrus datnia)*** belongs to the Sparidae family, majorly distributed in the Bay of Bengal region.

The demand and market price of this product are significantly high, ranging from Rs. 300-400/kg.

Due to the non-availability of quality seed, till now it is only grown traditionally in Bheries of West Bengal.

Broodstock development and trials on induced spawning were initiated in the Recirculation Aquaculture System

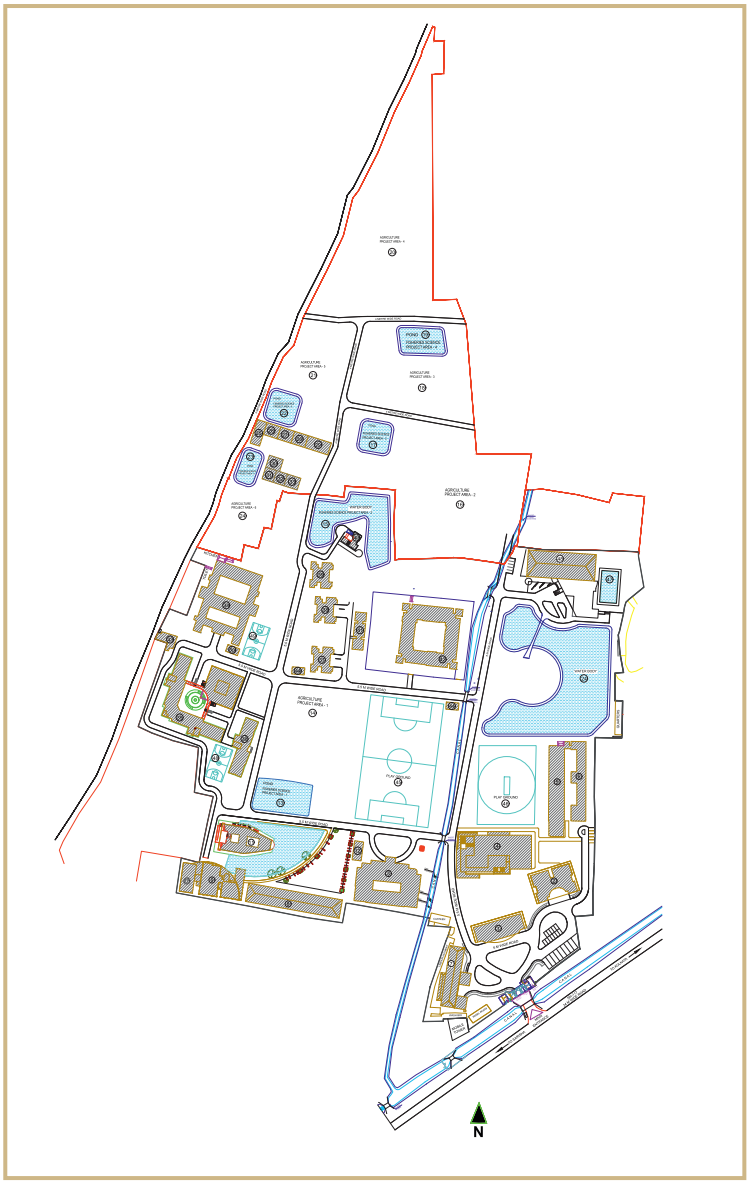
Globally this is the first report on captive spawning and larval production of Bengal yellowfin seabream.

The hatchery-based seed production of Bengal yellowfin seabream in India has achieved a significant milestone, opening new opportunities for species diversification in the country.

Lecture Series

Division of Fisheries Science of the Neotia University, West Bengal, in the guest lecture series, organised three guest lectures by eminent personalities namely, Dr Dilip Kumar, Former Vice Chancellor, ICAR-CIFE Mumbai; Dr Mruthyunjoy Kunda, Dean, Faculty of Fisheries, Sylhet Agriculture University, Bangladesh and Dr B K Chakraborty, Former Director of Fisheries and Visiting Professor, Bangladesh University, Bangladesh on 22.02.2024.

The guests were introduced to the state-of-the-art facilities the Division of Fisheries at TNU offers to BFSc graduate students



LEGEND- BUILDING

A. ADMINISTRATIVE BLOCK

1. ADMINISTRATIVE BUILDING (G + V)

B. ACADEMICS BLOCK

2. SCHOLASTIC BUILDING - 1 (G + III)
3. SCHOLASTIC BUILDING - 2 (G + II)
4. SCHOLASTIC BUILDING - 3 (G + III)
5. SCHOLASTIC BUILDING - 4 (G + III)
6. SCHOLASTIC BUILDING - 5 (G + III)
7. WORKSHOP BUILDING
8. NEW WORKSHOP BUILDING
9. NEW PHARMACY BUILDING (G + III)
10. PHARMACY BUILDING (G + III)
11. SHIP IN CAMPUS (G + III)

C. AGRICULTURE & FISHERY SCIENCE BLOCK

12. POLY HOUSE & NET HOUSE
13. FISHERY SCIENCE PROJECT AREA - 1
14. AGRICULTURE PROJECT AREA - 1
15. FISHERY SCIENCE PROJECT AREA - 2
16. AGRICULTURE PROJECT AREA - 2
17. FISHERY SCIENCE PROJECT AREA - 3
18. AGRICULTURE PROJECT AREA - 3
19. FISHERY SCIENCE PROJECT AREA - 4
20. AGRICULTURE PROJECT AREA - 4
21. AGRICULTURE PROJECT AREA - 5
22. FISHERY SCIENCE PROJECT AREA - 5
23. FISHERY SCIENCE PROJECT AREA - 6
24. AGRICULTURE PROJECT AREA - 6
25. MUSHROOM UNIT
26. FIELD LAB
27. STORE HOUSE
28. SERICULTURE UNIT
29. THRESHING FLOOR
30. BIO GAS PLANT
31. CATTLE SHED
32. VERMI COMPOST PIT
33. BIO FERTILIZER PLANT

D. RESIDENTIAL BLOCK

34. BOY'S HOSTEL - 1 & 2 (G + III)
35. BOY'S HOSTEL - 1 & 2 (G + III)
36. BOY'S HOSTEL - 1 & 2 (G + III)
37. OLD STAFF QUARTERS (G + III)
38. NEW STAFF QUARTERS (G + III)
39. NEW STAFF QUARTERS (G + III)
40. DIRECTOR'S RESIDENCE (G + I)
41. OLD STAFF QUARTERS (G + III)
42. GIRL'S HOSTEL - 3 (G + II)

E. UTILITY & SERVICES BLOCK

43. ELECTRICAL ROOM
44. PUMP ROOM

F. RECREATIONAL BLOCK

45. FOOTBALL GROUND
46. CRICKET GROUND
47. SWIMMING POOL
48. MULTI PURPOSE HALL
49. BASKETBALL COURT (3 NOS.)

G. HEALTH BLOCK

50. MEDICAL UNIT

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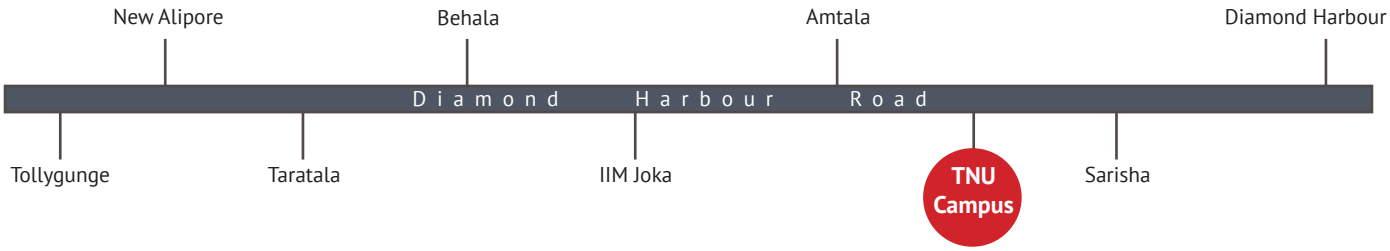

AmbujaNeotia

THE NEOTIA UNIVERSITY

ज्ञानम् आत्म प्रदीपाय

Approved Under Sec.2(f) of UGC Act 1956

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