

Foreword

Last few decades had witnessed widespread development in the technologies for capture as well as the culture of aquatic organisms' world over. There is tremendous advancement in post-harvest technology in the field of fisheries. Improvement in pre-process handling, processing, packaging and transportation are quite appreciable, even in the developing countries like India. Being a commodity of high economic value earning substantial quantum of foreign exchange, the fish and fishery products receive utmost care and importance and the scope for further development in this sector is quite promising. The policy of importing the raw material from other countries for processing, which in turn helps in utilization of the under-utilized built-up capacity of the processing industry, will open up new possibilities.

Aquarium Fish culture and its trade is neglected in India, though the fish keeping in home or public aquariums is the second most popular hobby in the world. India has wide resources of various colourful indigenous species which have tremendous market value in foreign markets. Billions of foreign currency can be earned by trading ornamental fishes.

Human resources development in this sector is being well attended by a chain of fisheries colleges, functioning under the State Agricultural Universities, Fisheries Institutes under the Govt. of India. Asutosh College, Kolkata also plays a pioneer role in the field of fisheries science. Department of Industrial Aquaculture and Fisheries (B.Voc studies) of the college, plays the role to give the education on fisheries science.

Preface

Fisheries are a vital sector contributing substantially to the Indian Economy. It is a major provider of employment, next only to the agriculture, and the much needed inexpensive wholesome protein food to the masses. It is therefore, no wonder that fisheries has given due importance in the developmental activities in India. Fisheries is a multidisciplinary field Even with the best of infrastructure in terms of facilities and technology, the success of operations will depend on the qualified manpower behind them. This fact has been very well understood and necessary infrastructure has been developed by way establishing several teaching and training Institutions over the country. But lack of infrastructure, training to the students is widely felt, especially based on Indian conditions and contexts. We have visited *Ramkrishna Ashram KrishiVigyan Kendra (RAKVK)* for excellent one day visit programme. This field visit has intensified our knowledge.

Acknowledgement

I am indebted to several persons of my college for conducting the training programme at. I am thankful to the principal Mr. Prasant Chatterjee of Asutosh College, who allowed us to go to get the training programme. I am thankful to Dr. Bidisha Sen Maitra (Coordinator of Industrial Fish and Fisheries). I am deeply thankful to Dr. Mukti Chanda Paul, Prof. Basudha Basu, and Prof. Vincent Souvik Gomes of our Department for the entire field visit. I wish to extend my thanks to Prof. Rishi Bhattacharia, Dr. Santanu Modak, Prof. Beauty Sarkar to assistance our group, I also extent my grateful thanks to Debasis Pramanik, Shuvam Pramanik and Indra Nath Chatterjee. I also wish to place on record my thanks to the Ramkrishna Ashram Krishi Vigyan Kendra (RAKVK) for excellent one day visit programme. I wish to express my gratitude to all the teachers and stuffs and contributors of the training Institutions and Asutosh College for their kind cooperation in all aspects.



INTRODUCTION ON RAMKRISHNA ASHARAM KRISHI VIGYAN KENDRA (RAKVK)

- Sri Ramkrishna Asharam, Nimpith, was founded by revered Swami Buddhanandaji.
- Through his efforts “Ramkrishna Asharam Krishi Vigyan Kendra (RAKVK)” – a project of Indian Council of Agricultural Research (ICAR), New Delhi was established in 1979.
- The foundation stone for KVK project was laid by Shri Morarjibhai Desai.

- KVK administrative building was opened by MR. M. Hidayatullah, then the Vice-President of India, on 06.02.1983.

Nimpith KVK – Milestone (1979-2018)

First 5 years (1979-84)	Emphasis on training and demonstration mainly on borrowed knowledge from SAU & Research Institutes and innovation of Land Shaping technology for Sundarbans.
Second 5 years (1984-89)	Developing area specific technologies and more emphasis on extension including entrepreneurship development through Land Shaping Programme.
Third 5 years (1989-94)	Development of entrepreneurship on Fish Seed Nursery, Poultry Farming, Mushroom Production, Dairy farming etc.
Fourth 5 years (1994-99)	More coverage through Farm Science Clubs, other NGOs and CBOs and introduction of Cotton Cultivation in Sundarbans rice fallow.
Fifth 5 years (1999-2004)	Integrated resource utilization, micro level modules by analyzing Agro-Eco system; On Farm Research in farmers' fields, On Farm Testing Large scale cotton cultivation in rice-fallow lands.
Sixth 5 years (2004-09)	Developing linkage with National and International Institutes to standardize technologies; Emphasis on capacity building of CBOs; Seed production as commercial venture, Private Public Partnership development for marketing of agricultural produce. Implementation of NWDPPRA, AICRP on Sunflower & NAIP programme. Establishment of Medicinal Garden Demonstration Unit. Distribution of low cost greenhouse to progressive vegetable growers. Disease forecasting and SMS alert System. Model for waste water utilization and preservation of germ plasm of Bengal Goat by establishing Goat breeding farm. Sustainable IPM module development with main emphasis on eco-friendly management approaches.
Seventh 5 years (2009-14)	An ISO 9001: 2008 Certified Institute Meenmitra Award by State Department of Fisheries Best KrishiVigyan Kendra Award, Zone-II, ICAR-Best KrishiVigyan Kendra Award (National), ICAR KrishiVigyan Kendra Samman, National Award (Mahindra Sammriddhi India Agri Awards 2014)
Eighth 5 years (2014-18)	Demonstration & establishment of number of Integrated Farming System model through KVK developed Landshaping & Rainwater Harvesting Technology. Promotion of Ail cultivation technology and development of Climate Smart Village through NICRA Programme. Entrepreneurship development through ARYA Programme, Mass Production of Bio-Pesticide and Bio-Fertilizer at village level. PanditDeendayalUpadhyayRashtriyaKrishiVigyanProtshahanPuraskar, 2016 at National Level. Patenting of Animal Husbandry related technology. Emphasis in Soil & Plant Health Management including beekeeping for better pollination in crops.

Awards achieving last 5 years

YEARS	AWARD
2017	PanditDeendayalUpadhyayRashtriyaKrishiVigyanProtshahanPuraskar 2016 (National)
2018	ISO 9001: 2015 Certification
2019	Best Research Centre for AICRP Honey Bees & Pollinators
2020	KrishiVigyan Kendra Samman, National Award (Mahindra Sammriddhi India Agri Awards 2020)
2022	RAKVK, Nimpith is a registered Certified Seed Producing Organization in the State of West Bengal

Discipline of RamkrishnaAsharamKrishiVigyan Kendra (RAKVK)

- Agronomy
- Horticulture
- Plant Protection
- Fishery
- Animal Husbandry
- Home Science

About the discipline of Fishery

FLD

- Asian cat fish (*Clarias batrachus*) for increasing net return.

OFT

- Enhancing profitability by culturing *Mystus gulio* in small monoculture freshwater ponds (0.0325ha or 5 cottah) of Sundarbans.
- Increasing profitability from carp polyculture ponds (0.065ha or 10 cottah) by introduction of *Mystus gulio*.

Topic of Training

- Doubling farmers income by diversifying fish and prawn culture in freshwater ponds.
- Integrated fish farming.

- Breeding & culture of indigenous fish - magur, singhi, koi and tangra as an alternative option for livelihood.
- Preparation of fish feed with locally available feed ingredients.
- Problems of fish and prawn farming and their remedies.
- Induced breeding of carps in eco-hatchery.
- Ornamental fish breeding & farming for additional income generation.
- Methods of pond preparation for carp culture.
- Improved method of carp fry and fingerling production for doubling farmers income.
- Management of carp grow out ponds.
- Fish and prawn farming hazards - methods of diagnosis & prevention.
- Good aquaculture practices in mixed fish and prawn farming for doubling farm income.

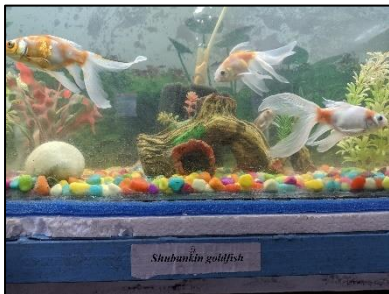
Tips for good fish culture practices

- Prepare pond meticulously before initiating fish culture every year.
- Get rid of all pre-existing fish before starting new culture.
- Stock fish optimally - do not overstock or under stock.
- Do not stock small fish with big ones or in other words, stock fish of more or less the same size and at the same time.
- Apply organic manure, lime and inorganic fertilizer as per recommendations and rake the pond bottom by netting operation, at least once a month.
- Apply supplementary feed on daily basis as per recommendations.
- Keep the pond and its surrounding devoid of weeds.
- Pond dykes should have such plants/trees that provide shade, check soil erosion but at the same time do not pollute the water with the falling leaves.
- Ponds should be airy and have sufficient sunlight penetration.
- Use cheap local ingredients as fish and prawn feed to minimize cost of culture.
- Dyke of the pond should be strong and well-guarded to prevent escape of fish & prawn from the pond and also to prevent entry of wild fish into it.

Ornamental fish breeding & culture – a flourishing avenue for self-employment generation

- Ornamental or aquarium fish can be grown in cisterns or ponds.
- Cisterns may be made up of cement, fiberglass or recycled plastic materials..
- These fish can also be grown directly in ponds or in enclosures fixed in ponds
- Beginners may start with different varieties of live bearers such as guppy, molly, platy or sword tail.
- A pair of mature live bearer may first be released in a small mud tumbler & provided with sufficient feed.

- The offsprings produced by the pair may be collected & released in tanks and fed with planktons.
- The egg bearers like koi carp, milky carp and varieties of goldfish may be tried.
- For the beginners it is advisable to first practice rearing of small fry of any egg bearer upto marketable size of 3-4 inches in ponds or tanks.
- Breeding behavior of egg bearers vary from species to species and may be tried by farmers, once experience is gathered, by growing ornamental fish for some time.
- It is better to apply live feed such as zooplanktons, chopped earthworm or mollusc meat, aquatic insects, tubifex worms, etc. to the ornamental fish for better growth, colour, maturity and to reduce input cost.



TIPS FOR SALINE WATER INUNDATED FRESHWATER FISH PONDS :

1. If possible, dewater the ponds as far as practicable.
2. If ponds are disinfected by spraying bleaching powder, it is necessary to rigorously agitate water to remove chlorine before stocking fish.
3. After accumulation of fresh rain water in the saline water infested ponds, advanced fingerlings of both brackish water and fresh water species may be released after "Suitability testing" by holding fish in a net enclosure in the pond for 24-48 hrs.
4. Giant fresh water prawn & tiger shrimp may also be tried in such ponds.
5. Tilapia may also be a suitable species to grow in such ponds.
6. Asian catfish fingerlings may also be grown when the pond salinity reduces to a great extent after the monsoon sets in.

TIPS FOR YAAS AFFECTED FRESHWATER AND BRACKISHWATER FISH PONDS:

1. Remove all leaves and branches of trees and dead fish from the pond.
2. Spray lime @10kg/bigha at weekly interval in ponds which have been polluted due to decomposition of organic matters post Yaas.
3. Spray dilute solution of Potassium Permanganate (5 ppm) in early morning and late evening if fish surfacing persists.

4. Agricultural lands and freshwater ponds inundated by brackishwater due to breaching of river embankment may be utilized for culture of brackishwater fish species like mullets, sea bass, cat fish, shrimp etc.

Different units of Ramkrishna Ashram Krishi Vigyan Kendra (RAKVK)

Soil and Water Testing Laboratory :

Recommendation of proper doses of fertilizer in different crops according to the soil analysis report. Recommendation for proper pond management. Distribution of soil health cards.



Bio-control laboratory

The laboratory is equipped with modern instruments like stereo microscope, dissection microscope with photographic arrangement, laminar flow hood, BOD incubator, fermenter, shaker, mixer, hot air oven, refrigerator, UV chamber, Centrifuge, Automatic Corcyra rearing system, Egg cleaning device, Insect collection device, etc.

- The following bio-control agents are presently maintained in the laboratory for mass production and distribution to farmers:

SN	Species	Nature	Use
1	<i>Trichoderma viride</i>	Beneficial Fungi	Against various fungal diseases
2	<i>Trichoderma harzianum</i>	Beneficial Fungi	Against various fungal diseases
3	<i>Pseudomonas fluorescens</i>	Beneficial Bacteria	Against various bacterial & fungal disease
4	<i>Metarhiziumanisopliae</i>	Beneficial Fungi	Against various insect pests
5	<i>Trichogrammachilonis</i>	Beneficial Insect	Egg parasitoid against various insect pests
6	<i>SINPV</i>	Beneficial Virus	Against insect pest (Spodopteralitura)

- On-farm mass production technology of fungal bio-control agents with low cost inputs.
- Home-based production and use of Botanical Bio-pesticides.

Bee Keeping Unit :

Established for honey production and better crop production through improved pollination.

Eco-Hatchery Unit :

Production and distribution of carp fish to the local farmers.

Cat fish, butter fish, climbing perch and ornamental fish breeding and culture unit :

- Production and distribution of seed of vulnerable indigenous fish species to encourage their conservation, propagation, livelihood and entrepreneurship development.
- Demonstration of ornamental fish breeding and culture to the rural youth and farm women for entrepreneurship development.

All India Coordinated Research Project (AICRP) on Honeybees & Pollinators

76% of the food crops and 35% of the production depends on insect pollination.

Unit –

AICRP on honeybees & pollinators.

Project staff –

Sri Tapas Kumar Sahana, M.A.(Socio.), PGDAEM, Bees Professional.

Types of bees –

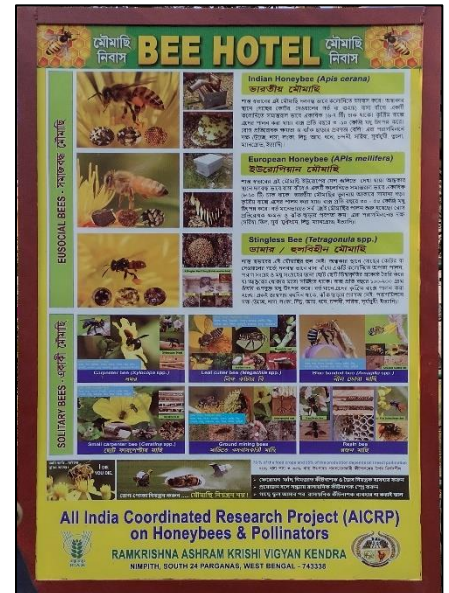
There are two types of bees **(i)** Eusocial Bees, **(ii)** Solitary Bees.

(i) Eusocial Bees:

Indian Honeybee (<i>Apis cerana</i>)	These peaceful bees live in colonies. They nests in dark places (tree trunks, holes in walls or caves). Multiple colonies have parallel (6-7) hives. They are cultivable in artificial boxes. It produces 3-10 kg honey per year on one box.
European Honeybees (<i>Apis mellifera</i>)	These peaceful bees were found in European countries. They nests in dark places and one colony have parallel (8-10) hives. They are bigger in size than Indian bees. They are cultivable in artificial boxes. In a year 30-50 kg honey were produced.
Stingless Bee (<i>Tetragonula spp.</i>)	These peaceful bees were not sting. They nests in dark places (tree trunks, holes in walls or caves) and lived in colonies. In a year it produces 100-200 gm of honey in one box which have medicinal properties. Now a days it cultivable in artificial boxes.

(ii) Solitary Bees:

- Carpenter bee (*Xylocopa spp.*),
- Leaf cutter bee (*Megachile spp.*),
- Blue banded bee (*Amagilla spp.*),
- Small carpenter bee (*Ceratina spp.*),
- Ground mining bees,
- Resin bee.



Conclusion

I am thankful to my teachers and Sri Prasanta Chatterjee, Specialization in Fishery, for giving us this golden opportunity. We spent some quality time and learn increase our knowledge try new things, from some problem to convert as an opportunity it is like a boon it become so fun and had a good experience.

Thanking you.



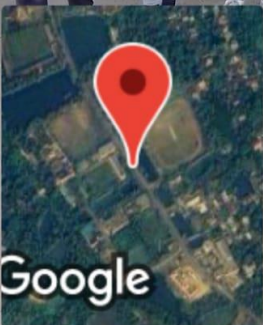
Kolkata, West Bengal, India

92, Shyama Prasad Mukherjee Rd, Jatin Das Park, Patuapara, Bhowanipore, Kolkata, West Bengal 700025, India

Lat 22.525276°

Long 88.346282°

13/01/23 07:45 AM GMT +05:30



Dashra Bhagabanpur P, West Bengal, India

5C3R+GG5, Dashra Bhagabanpur P, West Bengal 743338, India

Lat 22.153917°

Long 88.44079°

13/01/23 11:13 AM GMT +05:30

ORNAMENTAL FISH AND CATFISH
BREEDING-CUM-REARING UNIT
RAMKRISHNA ASHRAM KRISHI VIGYAN KENDRA
P.O. - NIHPITH ASHRAM, DIST. SOUTH 24 PARGANAS

GPS Map Camera

Dashra Bhagabanpur P, West Bengal, India

5C3R+45W, Dashra Bhagabanpur P, West Bengal 743395,

India


Lat 22.152949°

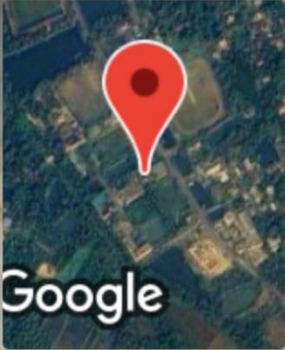
Long 88.439965°

13/01/23 12:16 PM GMT +05:30

Google



 GPS Map Camera



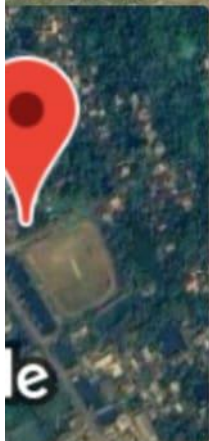
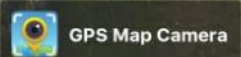
Dashra Bhagabanpur P, West Bengal, India

5C3R+45W, Dashra Bhagabanpur P, West Bengal 743395,
India

Lat 22.153389°

Long 88.440739°

13/01/23 12:20 PM GMT +05:30



Nimpith, West Bengal, India

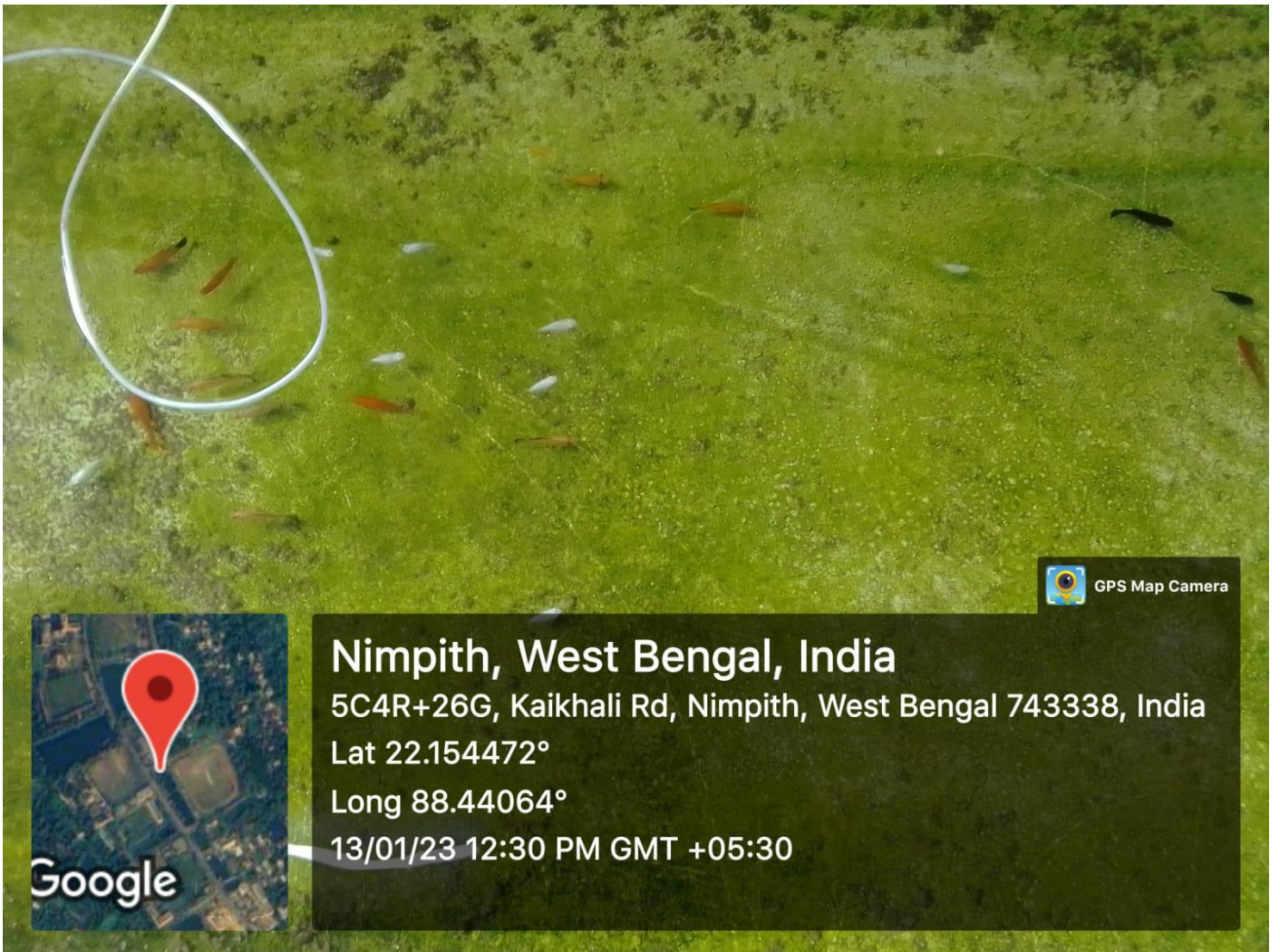
5C4R+26G, Kaikhali Rd, Nimpith, West Bengal

743338, India

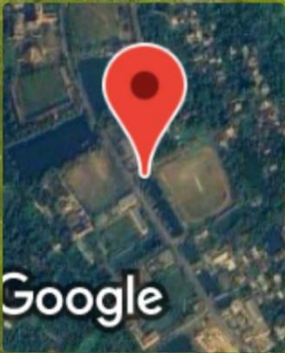
Lat 22.154798°

Long 88.440843°

13/01/23 12:24 PM GMT +05:30



GPS Map Camera



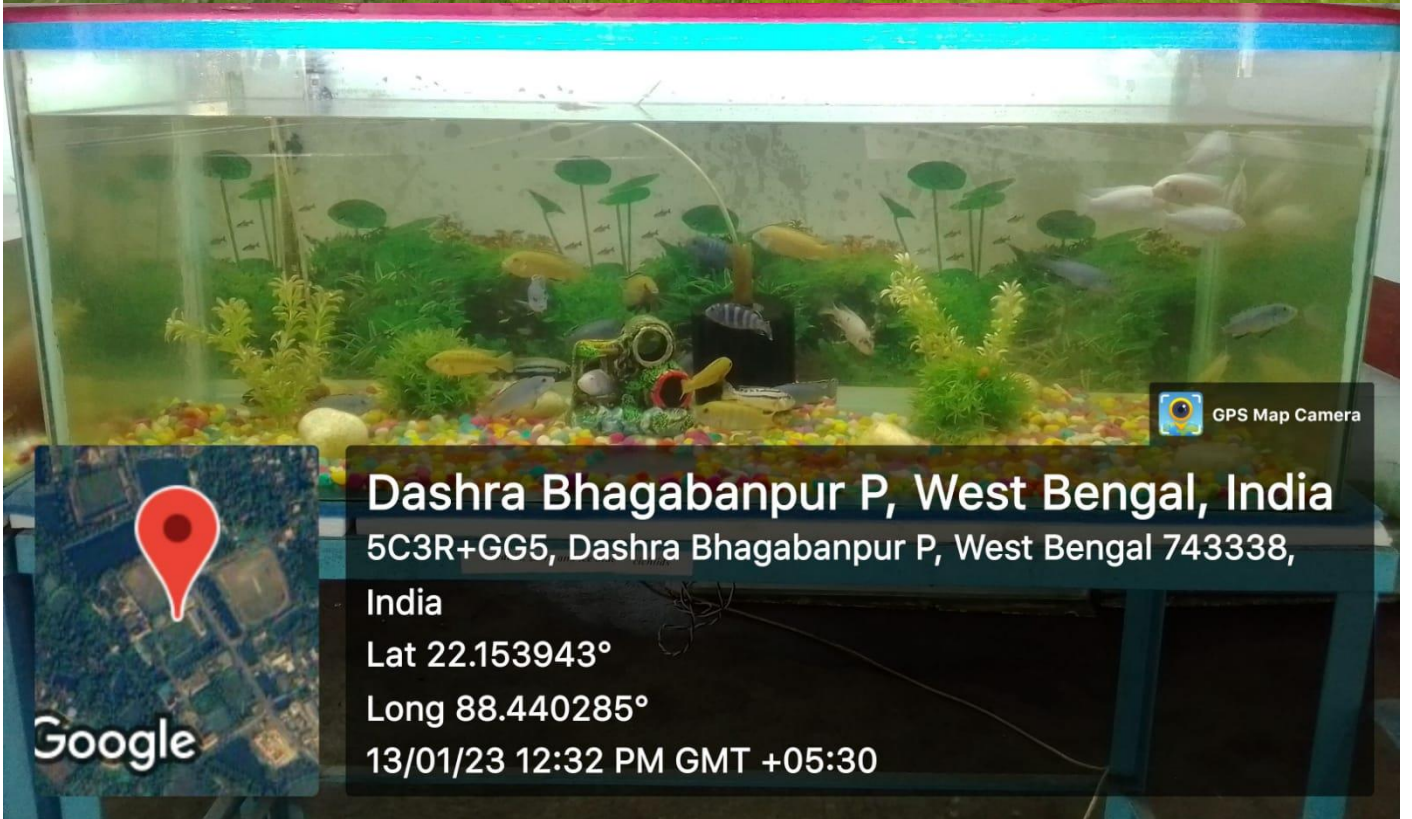
Nimpith, West Bengal, India

5C4R+26G, Kaikhali Rd, Nimpith, West Bengal 743338, India

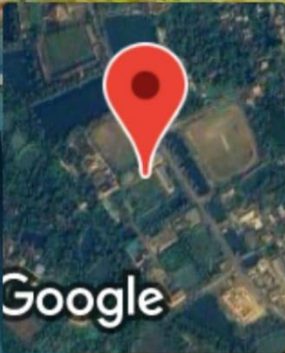
Lat 22.154472°

Long 88.44064°

13/01/23 12:30 PM GMT +05:30



GPS Map Camera



Dashra Bhagabanpur P, West Bengal, India

5C3R+GG5, Dashra Bhagabanpur P, West Bengal 743338, India

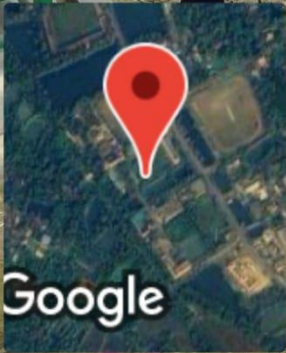
Lat 22.153943°

Long 88.440285°

13/01/23 12:32 PM GMT +05:30



GPS Map Camera



Dashra Bhagabanpur P, West Bengal, India

5C3R+45W, Dashra Bhagabanpur P, West Bengal 743395,
India

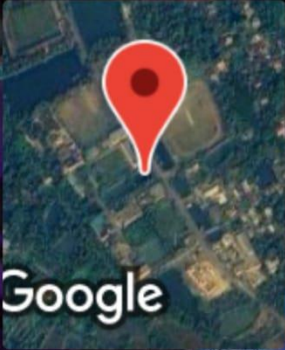
Lat 22.153581°

Long 88.440232°

13/01/23 12:39 PM GMT +05:30



GPS Map Camera



Dashra Bhagabanpur P, West Bengal, India

5C3R+GG5, Dashra Bhagabanpur P, West Bengal 743338,
India

Lat 22.153676°

Long 88.440773°

13/01/23 01:37 PM GMT +05:30



GPS Map Camera

Dashra Bhagabanpur P, West Bengal, India

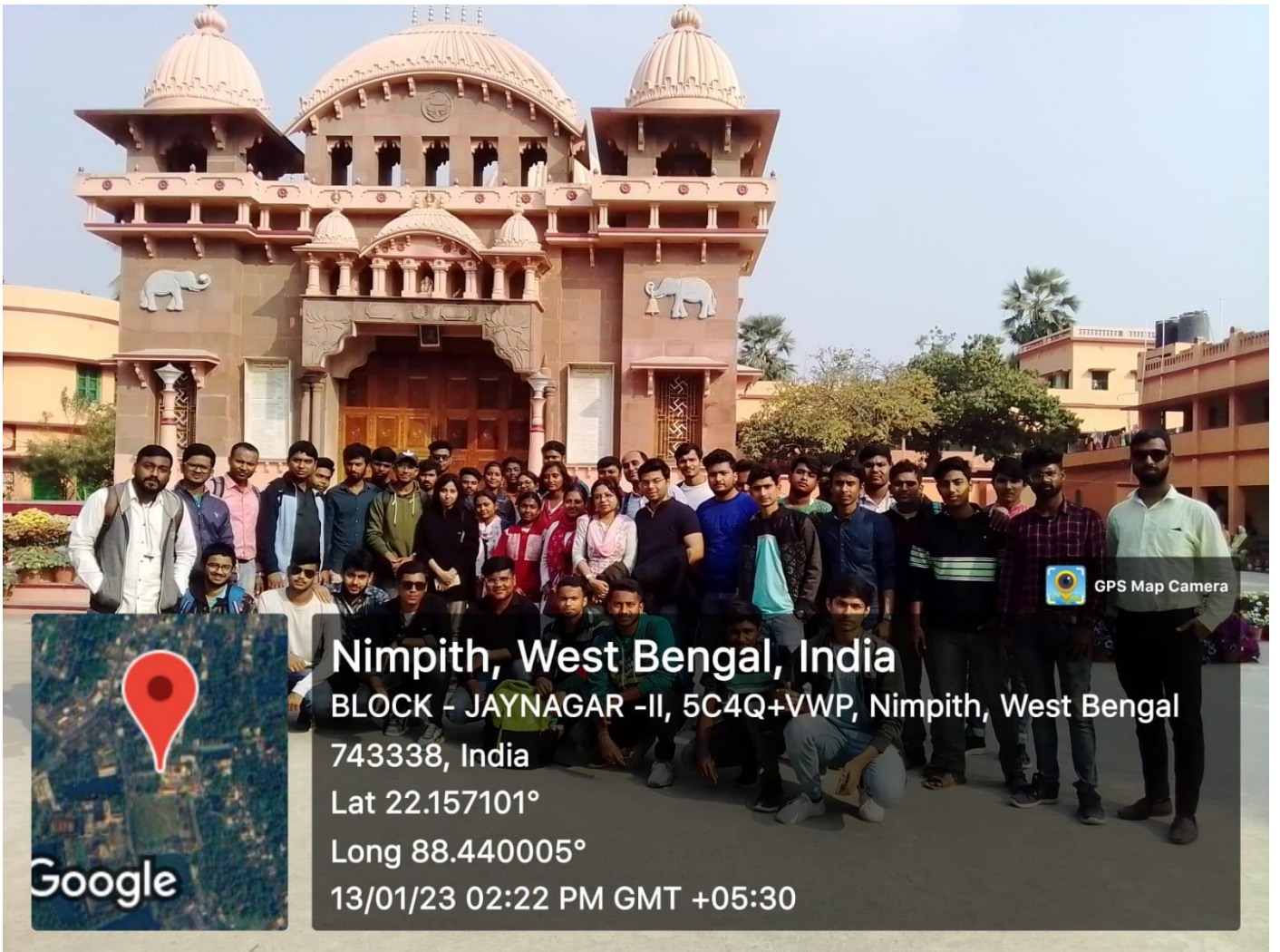
5C3R+GG5, Dashra Bhagabanpur P, West Bengal 743338,
India

Lat 22.153735°

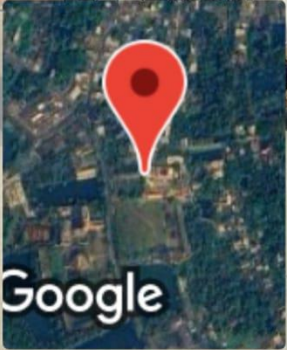
Long 88.440749°

13/01/23 01:41 PM GMT +05:30

Google



GPS Map Camera



Nimpith, West Bengal, India

BLOCK - JAYNAGAR -II, 5C4Q+VWP, Nimpith, West Bengal

743338, India

Lat 22.157101°

Long 88.440005°

13/01/23 02:22 PM GMT +05:30