



Event report

Hatchery produced mola (Mahurali) seed release programme

Odisha, India

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About WorldFish

WorldFish is a nonprofit research and innovation institution that creates, advances and translates scientific research on aquatic food systems into scalable solutions with transformational impact on human well-being and the environment. Our research data, evidence and insights shape better practices, policies and investment decisions for sustainable development in low- and middle-income countries.

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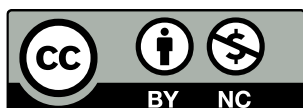
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Harvested Mola fry for distribution from partner hatchery.



List of acronyms

AFO	Assistant Fisheries Officer
DFO	District Fisheries Officer
FARD	Fisheries and Animal Resources Development Department
GP	Gram Panchayat
IAS	Indian Administrative Service
NFDB	National Fisheries Development Board
OAS	Odisha Administrative Service
SIS	Small Indigenous Fish Species
WSHG	Women Self-Help Group



Dr. Shakuntala Thilsted distributing mola seed packets to WSHG members.

1. Background

Undernutrition is one of India's most serious development challenges. Fish is rich in protein, micronutrients, vitamins, and essential omega-3 fatty acids that are difficult to replace with other foods. Fish is therefore vital in the fight against malnutrition, especially in states such as Odisha, where many women, men, and children are undernourished. Some indigenous small fish species, referred to as SIS, are considered 'superfoods' as they are many times richer in micronutrients than commonly farmed carp species such as rohu and catla.

WorldFish has pioneered 'Nutrition-sensitive aquaculture' approaches to promote the production of micronutrient-rich SIS alongside conventional carp farming. SIS are characterized by small size (<25 cm standard length) and originate from natural freshwater ecosystems. The availability of SIS is declining rapidly in many parts of India due to resource degradation, overexploitation, pollution, and climate change. Although formerly plentiful and cheap, some of the SIS now are becoming increasingly scarce and expensive.

Mola (*Amblypharyngodon mola*), known *Mahurali* in Odisha, is a champion species for nutrition-sensitive approaches. It is particularly rich in essential micronutrients, including calcium, zinc, and vitamins A and B12 that can make crucial contributions toward human nutrition and health, including for women and children. Over the past decade, WorldFish has promoted nutrition-sensitive carp-mola farming in Odisha, Assam, and Bangladesh to popularize SIS production for household consumption and income.



Dr. Shakuntala Thilsted and Dr. Yeddula Vijay, IAS during inaugural session.

WorldFish's past research showed that including SIS in carp polyculture increases intakes of micronutrient-rich small fish by women and children and is a cost-effective way to reduce malnutrition. However, to date, a lack of standardized hatchery-based mass production of mola seed has been a key bottleneck for scaling nutrition-sensitive aquaculture to reach large numbers of people.

To address this bottleneck, WorldFish is implementing a project named "**Taking nutrition-sensitive carp-SIS polyculture technology to scale**" in Odisha and Assam. The Scaling SIS project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and commissioned by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through the Fund International Agricultural Research (FIA). A key goal of the project is to develop scalable mass production techniques for mola seed, based on standardized protocols for hatchery-based breeding.

1.1 The breakthrough: Induced breeding for mass production of mola seed

During June-July 2022, with the support and appreciation from the Fisheries and Animal Resources Development Department (FARD), Government of Odisha, WorldFish succeeded in induced breeding mola for the first time in India at its partner hatchery (Biswal Aquatech), located at Tulanga village of Tirtol block, Jagatsinghpur district. The field team is led by Mr. Francois Rajts, a veteran fish breeding expert based in France who conceived the idea of mola breeding and developed a hatchery breeding technique for mass production of mola seed. The team was able to produce over 7 million mola hatchlings at the hatchery through scientific breeding experiments from June to September 2022. The team has also developed better management practices (BMPs) for nursing mola seed in ponds, and fry rearing for sale to farmers is currently taking place in the hatchery.

2. The event: Institutional release of mola seed

To celebrate this momentous technical breakthrough and share the project's experiences, WorldFish organized a "mola seed release programme" in collaboration with the Fisheries and Animal Resources Development Department (FARD), Government of Odisha, on 28th September 2022 at the partner hatchery.

2.1 The inaugural session

Dr. Yeddula Vijay, IAS, Director of Animal Resources Department, FARD was the chief guest. Dr. Shakuntala Thilsted, Global Lead for Nutrition and Public Health at WorldFish and the 2021 World Food Prize laureate was the guest of honour. Shri Sachidananda Sahoo, OAS, Additional District Magistrate, Shri Debananda Bhanja, Additional Director of Fisheries (Technical), Shri Sashikant Acharya, Deputy Director of Fisheries (Reservoirs), Simanchal Behera, Deputy Director of Fisheries (Cuttack zone), Smt. Mamata Mahapatra, District Fisheries Officer (DFO) (Kendrapara), Shri Dipti Ranjan Mahapatra, DFO (Jagatsinghpur) and Dr. Manas Kumar Sinha, National Freshwater Fish Brood Bank, National Fisheries Development Board (NFDB) were also present as special guests.

The event was also attended by Assistant Fisheries Officers (AFO) from relevant blocks of Jagatsinghpur district, Dr. Arun Padiyar, WorldFish-India Lead, and Mr. Dharmananda Bhoi, GIZ-India representative. Along with local press and media representatives, the event featured more than 150 participants, including 17 Department of Fisheries officials, 96 nearby farmers, and 25 women from 13 Women's Self-Help Groups (WSHGs).

At the outset, Shri Debananda Bhanja, Additional Director of Fisheries (Technical), welcomed the honourable delegates and dignitaries, district fishery officials, district administration, farmers and WSHG group members. Scaling-SIS project staff Dr. Sourabh Kumar Dubey and Mr. Kalpajit Gogoi described the steps involved in induced mola breeding for mass seed production and showed mola at different stages of the life cycle including eggs, hatchlings, fry, and broodfish, displayed in tanks.

During her opening speech, Dr. Shakuntala Thilsted thanked the FARD for their long-term support and described WorldFish's innovations in many developing countries. She narrated the advantages of fish consumption, particularly small fish in the first 1000 days of life, for better cognitive development and other positive health outcomes for children and women. She discussed her experiences with incorporating small fish into homestead ponds for polyculture with carp while working in Bangladesh in the early 1980s. She felt the need for SIS seed production through hatcheries at the time, and these dreams have now materialized. She added, "good nutrition through consuming aquatic foods can nourish and empower present and future generations. Unlocking the technology for hatchery-based mass production of mola seed is key to enhancing access and availability to nutrient-dense SIS, to improve food and nutrition security in villages across Odisha".

Dr. Arun Padiyar, WorldFish Lead for India sincerely acknowledged the long-standing and strong technical collaboration with FARD Department Odisha for promoting various WorldFish innovations across Odisha. Dr. Padiyar said, "WorldFish is committed to



Dr. Sourabh Kumar Dubey and Mr. Kalpajit Gogoi describing the steps involved in the mola induced breeding process to the dignitaries.

continuing its support to the Department of Fisheries for the comprehensive development of the fisheries sector and jointly addressing the undernutrition, increasing income of farmers and fishers and job creation especially among youth and women in the state through a sustainable aquatic food systems approach”.

Dr. Ben Belton, the Project Lead conveyed his best wishes from Malaysia for the successful completion of the event. Dr. Belton stated, “this ground-breaking commercial mass seed production trial with mola will facilitate large-scale adoption of carp-SIS polyculture to increase farm incomes and consumption of micronutrient-dense fish in regions of India where undernutrition is prevalent. In doing so, this project is directly supporting the attainment of India’s Sustainable Development Goals of No Poverty and Zero Hunger”.

Following the inaugural sessions, Dr. Yeddula Vijay, IAS and Dr. Shakuntala Thilsted jointly distributed and handed over oxygenated mola seed packets to 10 WSHG representative members and 5 local farmers. Best Management Practices for stocking and nursing hatchery-reared mola seed were also provided to these farmers.



Participation by WSHG members in the mola seed release event.

2.1 The technical session

Fisheries Department representatives and project personnel led the technical session. Various government programmes and schemes of the department of fisheries were discussed, with a focus on the carp-mola polyculture technology by WSHGs in the gram panchayat (GP) tanks, by Shri Debananda Bhanja, Additional Director of Fisheries (Technical), and Shri Sashikant Acharya, Deputy Director of Fisheries (Reservoirs). The opportunities and limitations of carp-mola polyculture in GP tanks were discussed by DFOs Mamata Mahapatra (Kendrapara) and Shri Dipti Ranjan Mahapatra (Jagatsinghpur). Additionally, they talked about the various carp-mola polyculture management techniques and harvesting methods in GP tanks.

Mr. Rashmi Ranjan Das, Technical Coordinator, the Scaling-SIS project, shared lessons learned and challenges encountered while developing mola mass seed production technology in the hatchery. He described the various steps involved in stocking the ponds with mola seed produced in a hatchery. He also spoke about management techniques for integrating mola into the pond farming system.

Government representatives interacted with farmers and WSHG members during the group discussion session and answered technical questions on carp mola polyculture that were put forth by the participants. The officials talked about the mola seed release event with the local media as well. The session closed with a vote of thanks from DFO Jagatsinghpur, Shri Dipti Ranjan Mahapatra.



A WSHG member responding to the local media.

3. Outcomes of the event

- Strengthening partnership and cooperation with the Department of Fisheries and cementing the government's sense of co-ownership of the Scaling-SIS project.
- Publicity on the availability of mola seed from the project partner hatchery and dissemination of information on mola seed production and farming to a wide audience through local media.
- Increased public awareness of the importance of nutrition sensitive approaches to aquaculture.
- A platform for WSHGs and local farmers to communicate with and voice their concerns to government representatives.
- An opportunity for government to disseminate information about its various fisheries development programmes and initiatives to the public.



Some of female participants in the event.

4. Annexures

4.1 Photographs of the event



Welcoming Department of Fisheries officials and other dignitaries.



Dr. Shakuntala Thilsted, Dr. Yeddula Vijay, IAS and Shri Sachidananda Sahoo, OAS.



Mola seed packet distribution to a WSHG member by the dignitaries.



Mola seed packet distribution to a local farmer by the dignitaries.



WSHG members participating in the mola seed release event.



AFOs from different blocks of Jagatsinghpur district participating in the mola seed release event.



DFOs Shri Dipti Ranjan Mahapatra (Jagatsinghpur) and Smt. Mamata Mahapatra (Kendrapara) in discussion.



Shri Debananda Bhanja, Additional Director of Fisheries (Technical) and Smt. Mamata Mahapatra, DFO (Kendrapara) interacting with the participants.



Shri Debananda Bhanja, Additional Director of Fisheries (Technical) addressing the audience.



Shri Sashikant Acharya, Deputy Director of Fisheries (Reservoirs) discussing Department of Fisheries programmes.



Shri Dipti Ranjan Mahapatra, DFO (Jagatsinghpur) talking with farmers about carp-mola polyculture in GP tanks.



Mr. Rashmi Ranjan Das, Technical Coordinator, SIS Scaling project, sharing his experiences of developing the mola mass seed production technology.



Press briefing by Shri Debananda Bhanja, Additional Director of Fisheries (Technical).



Press briefing by Mr. Rashmi Ranjan Das, Technical Coordinator, SIS Scaling project.

4.1 List of participants

SI	Name	Designation	Affiliation	Gender
1	Dr. Yeddula Vijay, IAS	Director of Animal Resources Department	FARD	M
2	Sachidananda Sahoo, OAS	Additional District Magistrate	District administration	M
3	Debananda Bhanja	Additional Director of Fisheries (Technical)	FARD	M
4	Sashikant Acharya	Deputy Director of Fisheries (Reservoirs)	FARD	M
5	Simanchal Behera	Deputy Director of Fisheries (Cuttack zone)	FARD	M
6	Mamata Mahapatra	District Fisheries Officer (Kendrapara)	FARD	F
7	Dipti Ranjan Mahapatra	District Fisheries Officer (Jagatsinghpur)	FARD	M
8	Reshma Rani Singh	Additional District Fisheries Officer	FARD	F
9	Mirarani Biswal	Assistant Fisheries Officer	FARD	F
10	Atanu Kumar swain	Junior Fisheries Technical Assistant	FARD	M
11	Prasanta Kumar Sahoo	Junior Fisheries Technical Assistant	FARD	M
12	Pritish Kumar Nayak	Assistant Fisheries Officer	FARD	M
13	Khagendra Rout	Junior Fisheries Technical Assistant	FARD	M
14	Ravindra Kumar Sahoo	Junior Fisheries Technical Assistant	FARD	M
15	Dillip Kumar Roy	Assistant Fisheries Officer	FARD	M
16	Rabinarayana Kar	Sagar Mitra	FARD	M
17	Ranjit Kumar Rout	Assistant Fisheries Officer	FARD	M
18	Bidhan Chandra Das	Junior Fisheries Technical Assistant	FARD	M
19	Dr. Manas Kumar Sihna	Senior Executive	NFDB	M
20	Dharmananda Bhoi	Project Assistant	GIZ SAFAL	M
21	Dr. Shakuntala Thilsted	Global Lead for Nutrition and Public Health	WorldFish	F
22	Dr. Arun Padiyar	India Lead	WorldFish	M
23	Dr. Baishnaba Charan Ratha	Senior Nutrition Specialist	WorldFish	M
24	Neetha Shenoy	Aquaculture Specialist	WorldFish	F

25	Amar Gaikwad	Aquaculture Specialist	WorldFish	M
26	Bishnu Charan Sahoo	Admin Assistant	WorldFish	M
27	Dr. Sourabh Dubey	Project Coordinator	WorldFish	M
28	Rashmi Ranjan Das	Technical Coordinator	WorldFish	M
29	Kalpajit Gogoi	Technical Coordinator	WorldFish	M
30	Bibhuti Bhusan Das	Hatchery Technician	WorldFish	M
31	Kumar Jayanta Ballav Mahantha	Hatchery Owner		M
32	Susanta Pradhan	Hatchery Owner		M
33	Sourava Kumar Biswal	Hatchery Owner	Biswal Aquatech	M
34	Manaswini Jena	Woman farmer	WSHG	F
35	Pravati Das	Woman farmer	WSHG	F
36	Sanghamitra Moharana	Woman farmer	WSHG	F
37	Baenita Nayak	Woman farmer	WSHG	F
38	Binapani Nayak	Woman farmer	WSHG	F
39	Mamata Mallick	Woman farmer	WSHG	F
40	Banita Swain	Woman farmer	WSHG	F
41	Ratnamali Manohari	Woman farmer	WSHG	F
42	Sabita Manohara	Woman farmer	WSHG	F
43	Kabita Panda	Woman farmer	WSHG	F
44	Manorama Barik	Woman farmer	WSHG	F
45	Kalyani Barik	Woman farmer	WSHG	F
46	Reenarani Das	Woman farmer	WSHG	F
47	Basanti Das	Woman farmer	WSHG	F
48	Pramila Parida	Woman farmer	WSHG	F
49	Pratima Panda	Woman farmer	WSHG	F
50	Mani Moharana	Woman farmer	WSHG	F
51	Anjali Sutar	Woman farmer	WSHG	F

52	Ranilata Pradhan	Woman farmer	WSHG	F
53	Kabita Das	Woman farmer	WSHG	F
54	Sandhyarani Pradhan	Woman farmer	WSHG	F
55	Sabita Sahoo	Woman farmer	WSHG	F
56	Ranilata Das	Woman farmer	WSHG	F
57	Bharati Swain	Woman farmer	WSHG	F
58	Muna Nayak	Woman farmer	WSHG	F
59	Ashis Kumar Nayak	Farmer		M
60	Saroj Kumar Sahoo	Farmer		M
61	Dhurjati Rout	Farmer		M
62	Prakash Mohapatra	Farmer		M
63	Royhahakanta Sahoo	Farmer		M
64	Arun kumar Mallick	Farmer		M
65	Himansu Kumar Das	Farmer		M
66	Tapan Kumar Gachayat	Farmer		M
67	Lituna Beura	Farmer		M
68	Pratap kumar Swain	Farmer		M
69	Pradish Swain	Farmer		M
70	Ajay Kumar Rout	Farmer		M
71	Hemanta Pradhan	Farmer		M
72	Dhruba Charan Das	Farmer		M
73	Sangram Kumar Swain	Farmer		M
74	Ganesh Tudu	Farmer		M
75	Bijaya Kumar Sahoo	Farmer		M
76	Bhanu sankar Routray	Farmer		M
77	Kailash Behera	Farmer		M
78	Bishwa Prakash Parida	Farmer		M

79	Lipa Ranjan Mallick	Farmer	M
80	Sisan Mallick	Farmer	M
81	Sonu Lenka	Farmer	M
82	Subas Kumar Sahoo	Farmer	M
83	Sanjay Sahoo	Farmer	M
84	Rashmi Ranjan Biswal	Farmer	M
85	Abhinash Mishra	Farmer	M
86	Sarat kumar Beura	Farmer	M
87	Biranchi Narayana Mallick	Farmer	M
88	Bishnu Sahoo	Farmer	M
89	Debendra Kumar Sahoo	Farmer	M
90	Ramakanta Swain	Farmer	M
91	Rabin Mallick	Farmer	M
92	Nityananda Mallick	Farmer	M
93	Tapas Kumar Das	Farmer	M
94	Sangita Sahoo	Farmer	M
95	Dibyajyoti Das	Farmer	M
96	Bikram Kumar Das	Farmer	M
97	Biswaranjan Das	Farmer	M
98	Hemanta Pradhan	Farmer	M
99	Swapneswar Khuntia	Farmer	M
100	Dhanjaya Nayak	Farmer	M
101	Dipak Kanr	Farmer	M
102	Nilu Kanr	Farmer	M
103	Dhruba Charan Mohanty	Farmer	M
104	Sankar Das	Farmer	M
105	Adikanda Jena	Farmer	M

106	Gouranga Sahoo	Farmer	M
107	Radhanatha Pradhan	Farmer	M
108	Nityananda Beura	Farmer	M
109	Saroj kumar Das	Farmer	M
110	Prashanna Panda	Farmer	M
111	Jagabandhu Das	Farmer	M
112	Debendra Kumar Jena	Farmer	M
113	Ajaya Kumar Sahoo	Farmer	M
114	Satrughna Nataha	Farmer	M
115	Soumendra Dash	Farmer	M
116	Nihar Mallick	Farmer	M
117	Nirakara Swain	Farmer	M
118	Nimain Parida	Farmer	M
119	Tullu Mallick	Farmer	M
120	Sapan Patra	Farmer	M
121	Sankar Das	Farmer	M
122	Soubhagya Das	Farmer	M
123	Kahnu Lenka	Farmer	M
124	Ramesh Sahoo	Farmer	M
125	Rabi narayana Das	Farmer	M
126	Ajaya Das	Farmer	M
127	Saroj Behera	Farmer	M
128	Bijaya Kumar Das	Farmer	M
129	Suman Mallick	Farmer	M
130	Laba Mallick	Farmer	M
131	Keshab Mallick	Farmer	M
132	Rashmi Ranjan Parida	Farmer	M
133	Dibya das	Farmer	M

134	Krishna Mallick	Farmer	M
135	Debendr Swain	Farmer	M
136	Bharat Pradhan	Farmer	M
137	Dharani Baral	Farmer	M
138	Babuli Swain	Farmer	M
139	Shantana Parida	Farmer	M
140	Trilochan Parida	Farmer	M
141	Shudula Mohanty	Farmer	M
142	Pintu Sahoo	Farmer	M
143	Sinthal Das	Farmer	M
144	Bibuna Mohanty	Farmer	M
145	Samir Ranjan Baria	Farmer	M
146	Tilotamma Gochhayata	Farmer	M
147	Sachi Lenka	Farmer	M
148	Sarada Mohanty	Farmer	M
149	Chitaranjan Ratha	Farmer	M
150	Pitambara Dash	Farmer	M
151	Umakanta Sahoo	Farmer	M
152	Subrat kumar Das	Farmer	M
153	Pradosh Swain	Farmer	M
154	Gyana Ranjan Sahoo	Farmer	M

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