

Promoting Aquaculture for Sustainable Food Production

U|V|A|S

**Fisheries and Aquaculture
Newsletter****Introduction:**

The Department of Fisheries & Aquaculture, UVAS aims to provide excellence in higher education, training, research and development, services and advice in the fields of sustainable Fisheries and Aquaculture consequently contributing to economic and social development of the country .

Mission:

Produce highly skilled professionals in the field of Fisheries and Aquaculture to meet the demand of growing fisheries industry by resolving food and environmental problems.

CONTENTS

- ✓ UVAS-Industry Liaison Working Group Fisheries & Aquaculture meeting
- ✓ Research Project Awarded by Pakistan Agricultural Research Board (PARB) Worth Rs. 18.096 Million
- ✓ Pakistan Agricultural Research Board (PARB) awarded Rs. 16.745 Million for research project on Poultry and Duck-cum Fish Farming
- ✓ UVAS Students Visited University of Aberdeen UK Under HEC-BC KEP Project
- ✓ UVAS Students Visited Ataturk University, Turkey Under Mevlana Exchange Programme
- ✓ International Fisheries and Aquaculture Conference & Expo 2019 "Emerging Trends for Sustainable Exploitation of Aquatic Resources" 30-31st January, 2019 at UVAS, Lahore-Pakistan
- ✓ Traceable and transparent fishing in Indian Ocean

**UVAS-INDUSTRY LIAISON WORKING GROUP
FISHERIES & AQUACULTURE MEETING**

The University of Veterinary & Animal Sciences (UVAS) Lahore organized stakeholders meeting on Industry Liaison Working Group Fisheries and Aquaculture for the promotion of fisheries and Aquaculture sector in Punjab. UVAS Vice-Chancellor Meritorious Prof. Dr. Talat Naseer Pasha chaired the meeting and reviewed preparation/arrangement for the upcoming International Fisheries & Aquaculture Conference and Expo with the theme of "Emerging Trends for Sustainable Exploitation of Aquatic Resources". The event will be held on 30-31st January, 2019. In this meeting Director General, Department of Fisheries Punjab Dr. Sikander Hayyat, Chief Operating Officer, Fisheries Development Board, Islamabad Junaid Wattoo, Mr RSN Janjua and professionals, fish farmers, representative from fish feed industries, UVAS faculty members and officials from Fisheries Department were present.

Continued on Page No.02

Office Secretariat:
Email Address:

Department of Fisheries and Aquaculture, UVAS Lahore-Pakistan
Dr. Noor Khan (Associate Professor/Chairman) noorkhan@uvas.edu.pk
Dr. Muhammad Hafeez-ur-Rehman (Associate Professor)
mhafeezurehman@uvas.edu.pk

Speaking on the occasion, VC Prof. Pasha said that UVAS is planning to make this conference result oriented with applied innovative knowledge for the benefit of fish farming community, fish feed industry, professionals for aquaculture sector development in the country. He said objectives of the conference would bring national and international scientists, experts and stakeholders at single platform for sharing their experiences and innovative knowledge in recent development and scientific advancement in the field of Fisheries & Aquaculture. The Vice Chancellor Prof. Pasha also briefed the members and discussed salient points regarding development of Pakistan Fisheries & Aquaculture policies. The members also appreciated this idea and assured their full support. All the members of the meeting suggested about the upgradation of UVAS Fisheries & Aquaculture Society to Pakistan Fisheries & Aquaculture society. Many national and international scientists from different countries of the world such as Mexico, USA, UK, Croatia, Turkey, Thailand, South Korea, Sri Lanka, Columbia, India and New Zealand are expected to participate in this event. Earlier Associate Professor/Chairman Department of Fisheries & Aquaculture Dr. Noor Khan gave detailed presentation on International Fisheries & Aquaculture Conference and Expo especially its preparation and different event including the aims and objectives, technical aspects, technical session themes, workshops/fish farmer sessions, abstracts/poster/ expo, participants, donor/sponsor agencies and estimated cost.

Source: Department of Fisheries and Aquaculture, UVAS



RESEARCH PROJECT AWARDED BY PAKISTAN AGRICULTURAL RESEARCH BOARD (PARB) WORTH RS. 18.096 MILLION

Research project entitled “Interactive Effects of Manipulated Artificial Feeds on Growth and Breeding Potential of Channa spp. (*Channa marulius* and *Channa striata*)” has been awarded by Pakistan Agricultural Research Board (PARB) to Dr. Noor Khan, Associate Professor/Chairman as Project Manager. The project will focus on the interaction of feed, growth, breeding potential of an important group of Channa Spp. The project will be a revolutionary step for fish farmers to boost their income and fish production with the introduction of this important group of fish species in aquaculture system. It will contribute directly to food security, livelihood and export earnings. Channa is a group of freshwater fishes and are more popularly known as snakehead murels due to its head resemblance to that of a snake. The distribution of this group is widespread in the tropics and originates from Africa, South East Asia and East Asia. About 02 species of Channa (*Channa marulius* and *Channa punctata*) are found in Pakistan. These strains of Channa are highly resistant to temperature and disease, surviving even in muddy water. Unfortunately no attention has been paid to practice their culturing, breeding and conservation in Pakistan. Environmental pollution and drought condition affected their population to a significant extent. In this project, efforts will be made to introduce this species in present aquaculture system, its breeding and fry rearing and developing artificial feed which is the basic key of any successful aquaculture enterprise for carnivorous fish species in semi-intensive and intensive culture system.



➤ Giant Murrel, (*Channa marulius*)



➤ Striped Murrel, (*Channa striatus*)



PAKISTAN AGRICULTURAL RESEARCH BOARD (PARB) AWARDED RS. 16.745 MILLION FOR RESEARCH PROJECT ON POULTRY AND DUCK-CUM FISH FARMING

Punjab Agriculture Research Board (PARB) has awarded the project entitled "Development and Establishment of Model Poultry-Cum-Fish Farming with Nutrient Recycling: An Integrated Approach" with the total budget of Rs.16.745/- million for a period of 36 months to Dr. Muhammad Hafeez-ur-Rehman, Associate Professor, Department of Fisheries and Aquaculture, UVAS as Project Manager.

In Pakistan fish culture is primarily of semi-intensive type where organic and inorganic fertilizers are extensively used to improve pond productivity which serves as fish food. The major problem of utilizing wastes in fish farming system is to recycle different nutrient elements present in such wastes.



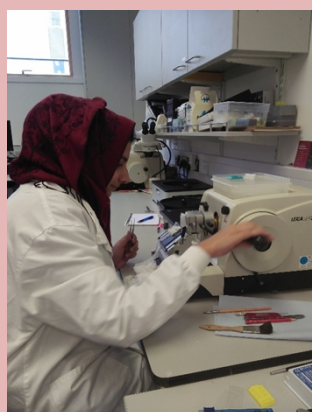
Due to energy crisis, prohibitive cost of chemical fertilizers and poor purchasing power of marginal and small farmers, it is necessary to use organic manures/wastes to its maximum potential with proper technology to spare expensive agriculture/animal by-products for livestock and chemical fertilizers for crops.

With the prevalent economic situation in the country, there is the need for farmers to engage in a result oriented farming system that will guarantee and sustain adequate food security. Integrated fish farming offers hope in this direction as it serves as food-production base that combines cultivation of crops, rearing of livestock/poultry/duck and fish farming.

Thus, there is need to investigate inclusion level of poultry and ducks droppings for maximum meat and egg yield on scientific lines when integrated with fish fulfilling the nutrient requirements of the pond productivity and fish food simultaneously sustaining the system. It enables the farmer to be productive all the year round and fully maximize its production. Its contribution in the enhancement of food security, self-sufficiency and regular source of income. In emergence situations when water scarcity or failure of monsoon, the farmers also have an option of mixing up of agricultural enterprises like dairy, poultry, fisheries, rice culture, sericulture, apiculture etc. that will be suitable to their agro-climatic and socio-economic condition.

Two M. Phil students (Miss Sadaf Dogar and Miss Sadia Nazir) from the Department of Fisheries & Aquaculture, University of Veterinary and Animal Sciences, Lahore, Pakistan visited Scottish Fish Immunology Lab, School of Biological Sciences, University of Aberdeen, UK under HEC-BC KEP Project for a period of two months from 15th January to 15th March, 2018. Students worked under the supervision of Prof. Christopher J. Secombes (Principal Investigator, UK) and Prof. Samuel Martin (Co-PI) and learned techniques of gene expression (RNA extraction, cDNA synthesis and PCR) with Rohu primers. They also performed histological studies with the same samples in Histology Lab located at IMS (Institute of Medical Sciences Aberdeen) and worked under the supervision of Facility Manager Kevin Mackenzie and Lab assistant Lucinda Wight. This student exchange visit will be helpful in strengthening the existing link between Department Fisheries & Aquaculture, UVAS and Scottish Fish Immunology Lab, School of Biological Sciences UK for further joint projects and collaboration

UVAS STUDENTS VISITED UNIVERSITY OF ABERDEEN UK UNDER HEC-BC KEP PROJECT



Two M.Phil students Miss Tehmina Yaqoob and Miss Dania Anees from Department of Fisheries and Aquaculture, University of Veterinary and Animal Sciences visited Faculty of Fisheries Ataturk University, Turkey under Mevlana Exchange Program for a period of five months from 29th September, 2017 to 28th February, 2018. During their stay they enrolled a course titled “Use of Oils and Fats in Fish Nutrition” by Prof. Dr. Murat Arslan (Dean Faculty of Fisheries). Both students also participated and gave presentations in a seminar on titles “Present and Future Aspects of Fisheries and Aquaculture in Pakistan” by Tehmina Yaqoob and “Benefits of GMO’s in Aquaculture” by Dania Anees. Both students also conducted their trials for research purpose as part of their M.Phil Programme under the supervision of Prof. Dr. Murat Arslan. The students successfully performed their lab work and came back with results for thesis that is required for the partial fulfilment for the Degree of M.Phil. This academic visit will provide opportunities and open up ways for faculty and students exchange programmes between Pakistan and Turkey to promote research activities in future.

UVAS STUDENTS VISITED ATATURK UNIVERSITY, TURKEY UNDER MEVLANA EXCHANGE PROGRAMME



INTERNATIONAL FISHERIES AND AQUACULTURE CONFERENCE & EXPO 2019 “EMERGING TRENDS FOR SUSTAINABLE EXPLOITATION OF AQUATIC RESOURCES” 30-31ST JANUARY, 2019 AT UVAS, LAHORE-PAKISTAN



International Fisheries and Aquaculture Conference & Expo-2019 to be held on 30-31st January, 2019 is a mega event which will provide great opportunity for the presentation of latest development and research work in the field of Fisheries and Aquaculture. The event is a joint effort by the Department of Fisheries & Aquaculture, Department of Fisheries Punjab, UVAS-Industry liaison working group on Fisheries & Aquaculture and other relevant departments as well as stakeholders to join and bring researchers, scientists, fish nutritionists, fish feed manufacturers, fish farmers, and scholars around the globe to share recent research findings and knowledge uplifting the sector, solving problems and discussing scientific views and ideas related to emerging trends for sustainable exploitation of aquatic resources. As aquaculture is growing rapidly in Pakistan since last few years and it is expected that recent developments in promotion of this sector both in culture technologies and species diversification will further enhance per acre fish production and quality protein by exploiting natural aquatic resources. The main aim of this conference is to bring International & National researchers, professionals and stakeholders together at one platform to share problems and their solutions, views & ideas related to new knowledge and scientific inventions in the field of Fisheries & Aquaculture. The core theme of the conference is “Emerging Trends for Sustainable Exploitation of Aquatic Resources”. The specific objectives include:

- ✓ To get insight into recent developments and scientific advancements in the field of fisheries & aquaculture sector.
- ✓ To bring together international and national scientists, experts and stakeholders in the field of fisheries and aquaculture at single platform.
- ✓ To provide opportunities for scientific linkages between researchers, academia, government bodies working in the field of fisheries and aquaculture.
- ✓ To strengthen institutional capacity and other stakeholders working together against poverty and malnutrition.
- ✓ To build public-private partnerships for better increase in fish production and food security especially for poor rural communities.
- ✓ To launch awareness campaign among scientific and fish farmer’s community related to aquatic resources exploitation, their useful manipulation and target production.

TRACEABLE AND TRANSPARENT FISHING IN INDIAN OCEAN

Center of Excellence in Marine Biology (CEMB) organized a lecture on “Title: Traceable and transparent fishing in Indian Ocean” delivered by Commander Ghazi Sallahuddin, of PMSA on April, 26, 2018. The academia and students of the CEMB, IMS and Karachi University attended the lecture.

The speaker initiated the session with a brief introduction of his organization Pakistan Maritime Security Agency (PMSA), Ministry of Defense (MoD), established in 1987. The PMSA is a law enforcement agency responsible for implementation of maritime laws at sea. The main points of the lecture were:

UNCLOS— it is a combination of many laws, conventions, policies, regulations and protocols which drives the enforcement of different maritime activities. It is the most comprehensive and efficient convention. According to UNCLOS there are four zones of territorial waters such as internal waters, territorial sea, contiguous zone and exclusive economic zone, which is total 200 nautical mile area from the baseline.

Domestic illegal fishing, registration of fishing boats and traceability are not possible if we do not know how many boats are operating in our area. Registration of boats is a major issue. Among these above-mentioned challenges one challenge is fisheries management its traceability and transparency.



IUU is the core subject, he added. While Addressing IUU (illegal unreported and unregulated) fishing he mentioned the overview of IUU, it is a type of fishing that involves activities such as illegal fishing, poaching fishing and unreported vessel's fishing. The international community uses the term IUU that define unlawful activities. Historically IUU was the problem of developing countries but it is in practice in most developed countries too. IPOU-IUU (the 2001 FAO international plan of action to prevent, deter and eliminate IUU fishing) elaborated the definitions of IUU fishing that are as follows; Illegal fishing refers to activities conducted by national and foreign vessels in waters under the jurisdiction of a state without the permission of that state, or in contravention of its laws and regulations. While unreported fishing refers to fishing activities which have been reported, or have been misreported, to the relevant national authority, in contravention of national laws regulations; or undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization. In addition, Unregulated fishing refers to fishing activities in the area of application of relevant regional fisheries management organization that are conducted by vessels without nationality or by those flying the flag of a state not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization.

Further he added IUU fishing has two kinds of problem that are fishing inside area of national jurisdiction and outside area of national jurisdiction. IUU fishing negatively impacts a broad range of marine life specifically Tuna and generally other large pelagic fish due to high market value and poor seafood traceability, He mentioned. IUU hits major sectors of a country such as economical, social and environmental. Economic impacts are cyclic from lower scale fisherman to industrial level fisherman. Moreover, it affects other interrelated processes such as shipment processing and landing sale resultantly the loss of value of catch and GDP. It affects country's economy directly. Total estimated value of current IUU fishing losing worldwide is \$10 billion and \$2305 billion annually. Developing countries are more at risk, he added. Speaking about the social impacts he said local fisher folks are prone to illicit fishing as they depend on this food source. According to FAO survey 90% fishes have vanished from seas and oceans. Because of these very reason crimes generate in nations.

When employment opportunities is decreased, criminal activities will increase. Illegal fishing is more than a crime against fish, He added. Cross boarder violation is another aspect of IUU fishing. Indo Pak violation is in our interest. More than 300 Indian boats were apprehended in 2016 and 2017 by PMSA, he mentioned. Environmental impacts are damaging oceanic environment. Estimates are that more than 7 million tons of dead fish is dumped annually into the sea, he included. IUU have two main driving factors that are internal and external factors. As far as internal factors are concerned, includes high catch value, the higher cost of legitimate business, smuggling, money laundering, humane trafficking, and extreme remoteness, ineffective inspection of fish landing, poor traceability and insufficient penalties. However external factors includes, organized crime such as taxes and customs' fraud, corruption, human trafficking, money laundering, drug trafficking, possible contravention of environmental norms and open registry. He said, over the period of time number of initiative has been enforced to fishing against IUU. For example UNCLOS 82 (relating to conservation and management), IPOA-IUU (identifies responsibilities for all states), and other regional initiatives like RFMOs (regional fisheries organization). Good governance is the prerequisite for prohibition of IUU Fishing. He closed the session with this remarks.

Source: Dr. Shahnaz, CEMB, Karachi

ARTIFICIAL BREEDING OF WALLAGO ATTU (MULLI) AT FISH BIODIVERSITY HATCHERY CHASHMA

A high value catfish *Wallago attu* has successfully bred through induced spawning at Fish Biodiversity Hatchery Chashma. The Department of Fisheries Punjab under the supervision of Malik Ramzan Deputy Director Fisheries Biodiversity Hatchery Chashma was struggling since two years to explore a proper method for its induced breeding as well as techniques for rearing of its seed up to a stackable size. With the blessing of Almighty ALLAH it bred first time in the world with a specific artificial method through hormone injection. Now the Biodiversity Hatchery



Chashma is not only able to stock its seed in Chashma reservoir for its conservation but also supply its seed to the progressive fish farmers who are interested its culture in ponds. *Wallago attu* is one of the important catfish in family siluridae, naturally it found in rivers & lakes of South Asia. It attains large size (up to 20 kg recorded from Chashma reservoir), very voracious and predatory in habit. It associated with deep, still or slow flowing water with mud or silt substrata and stay on muddy bottom in search of food. Its juvenile feed mainly on zooplankton and insects, adult feed on smaller fish crustaceans and mollusks. It is pre-monsoon summer breeder but unable to breed in confined stagnant water. There is no pairing, nesting and parental care in this species. For its conservation in Chashma reservoir, it had planned to restock as per potential of the water area through artificial breeding; so that its breeding has conducted in control condition. Number of trials has been conducted to reach the best one. Finally, the team has achieved the skill of its induced breeding and survival of its seed successfully this year 2018.

It is a notable feature that the working team was before succeeded in its spawning techniques in earthen ponds but its seed was not surviving due to cannibalism. Now its induced breeding is being done in circular tanks successfully with good survival/rearing of its fry. During current year Fish Biodiversity Hatchery Chashma stocked thousand number of *Wallago* seed in Chashma lake and also supplied some seed to the progressive fish farmers as well as to the public hatcheries for further propagation.

*Source: Malik M. Ramzan, Deputy Director Fisheries, Punjab.

EDITORIAL BOARD NEWSLETTER

Prof. Dr. Talat Naseer Pasha, Vice Chanveller (Patron),
Dr. Noor Khan (Editor)
Dr. Muhammad Hafeez-ur-Rehman (Managing Editor)

Dr. R.S.N. Janjua (Member) Dr. Anser Mehmood Chatha (Member) Mr. Junaid Ahmed Watoo (Member)
Mr. Shahid Iqbal Sindhu (Member) Ms. Sadaf Dogar (Member)