

## **Fish and Human health**

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### **FISH: As Food**

- About 75% of the world fish production is used for the human consumption.
- Around 60% of people of developing countries depend on fish for their animal protein requirements.
- Being rich in minerals, proteins and lipids etc , fishes are a globally recognized source of Nutritional Security

### **Areas of association:**

Fish is directly or indirectly associated with up-keep of human health. Apart from serving as Games & Sports items for recreation, fishes also are involved in prominent research areas as experimental models. They provide a safeguard against environmental pollution and other water borne diseases by acting as potent bio-indicators against a variety of pollutants and toxicants. Larvivorous fishes are adapted to feed effectively on mosquito larvae which are available in water. Several mosquito species are directly involved by acting as vectors in spreading of certain dreadful diseases like, malaria etc.

- Currently, the use of larvivorous fish is in full swing to cover the entire states of Gujarat, Maharashtra and Karnataka.
- In Maharashtra, the bioenvironmental methods have been spread to cover the entire state through the primary health care system
- In Gujarat, hundreds of fish hatcheries have been established for use in the entire state and training programmes are being organised in association with the National Institute of Malaria Research.
- Fish have been widely documented as useful indicators of environmental water quality because of their differential sensitivity to pollution.
- Fish have the ability to uptake and concentrate metals directly from the surrounding water or indirectly from other organisms such as small fish, invertebrates, and aquatic vegetation
- In addition, fish are located at the end of the aquatic food chain and may accumulate metals and pass them to human beings.
- Fish diversity may be a useful biological indicator of water quality and this could be used in biomonitoring networks and programmes to assess water quality and in mapping out fish species hot-spot areas.

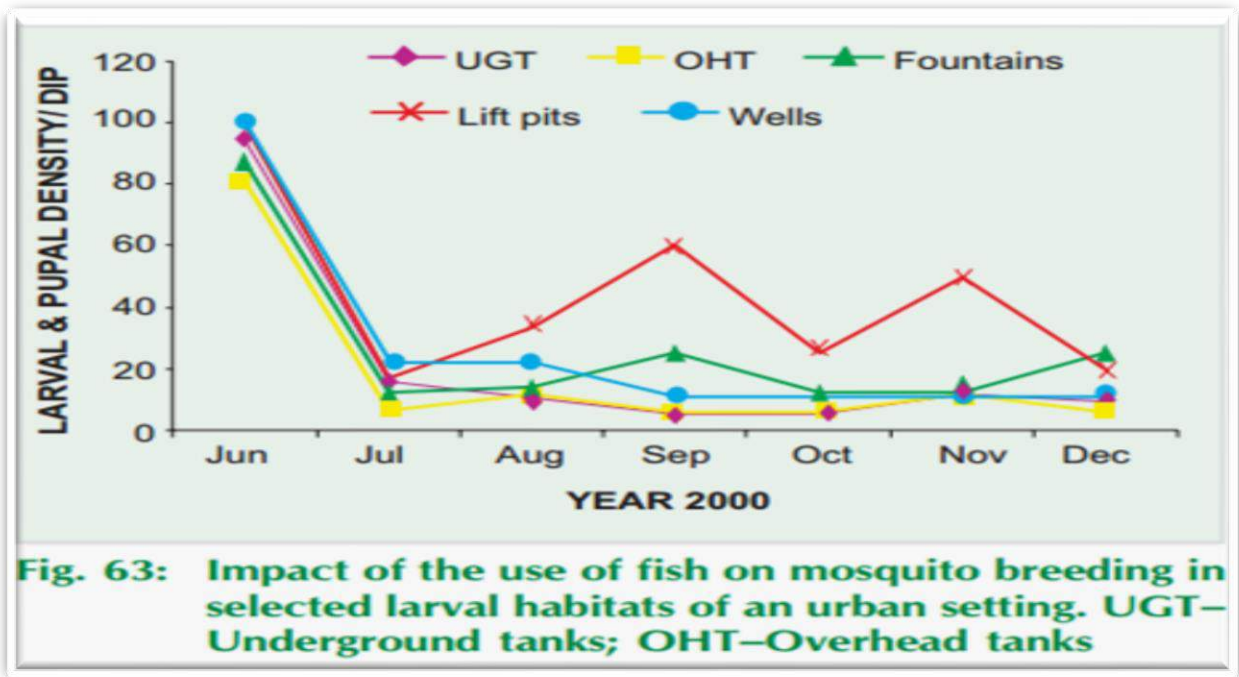
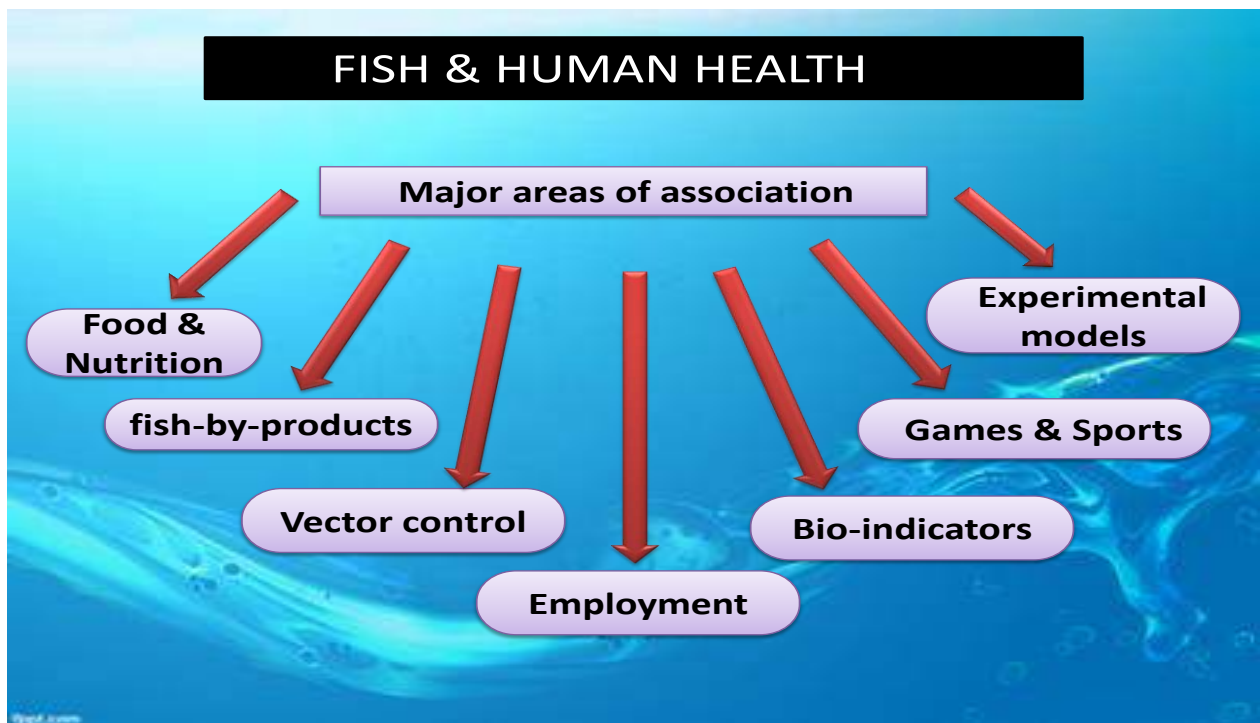
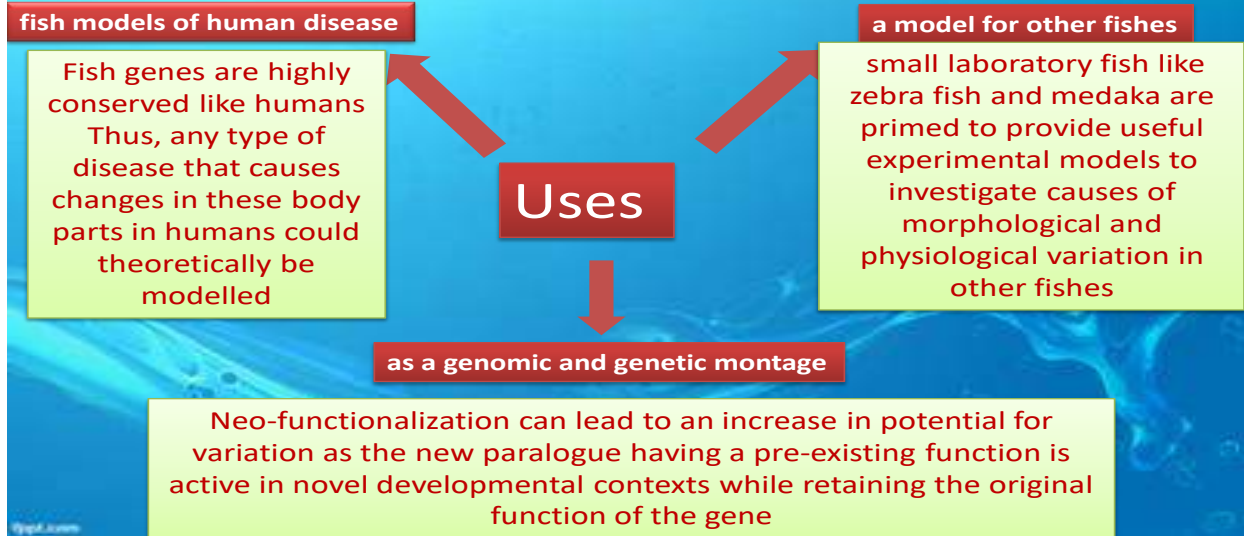


Fig: Sources: Larvivorous Fish in Mosquito Control (http://www.mrcindia.org/MRC\_profile/profile2/Larvivorous%20fish%20in%20mosquito%20control.pdf )



# Fish as Experimental Model



## Role of Fish Lipids in Human Health

1. Food with low fat : low in calories and many types of fish do not contain any saturated fat
2. Reduce the cholesterol level in the blood: Unsaturated fats can help to reduce the cholesterol level in the blood, thus lowering the risk of heart disease. Oil-rich fish such as mackerel, sardines, herring and sprats are rich in unsaturated fats containing Omega-3 fatty acids which are valuable for health.
3. Source Omega-3 fatty acids:
  - a) Schizophrenia symptoms can be eliminated or at least vastly diminished by oral supplementation with EPA.
  - b) Omega-3 oils from fish -lowering effect on blood fats.
4. Prevent cancer: Fish oils can help to prevent cancer cells progressing to the tumor stage.

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## Health Benefits of

# Omega 3's



Omega 3s Lower Cholesterol



Omega 3s Reduce the Symptoms of PMS



Omega 3s Help to Prevent Cancer



Omega 3s Are Great for Your Eyes



Omega 3s Reduce Blood Pressure



Omega 3s Keep Your Skin Healthy



Omega 3s Reduce the Risk of Heart Disease



Omega 3s Help to Prevent Diabetes



Omega 3s Soothe the Symptoms of Rheumatoid Arthritis



Omega 3s Protect Your Brain



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### Role of Fish protein in Human Nutrition

- Fish protein contain sufficient amounts of essential amino acids similar to milk, egg and mammalian meat protein.

- Fish proteins are comprised of : 1) Structural proteins e.g. actin, myosin.  
2) Sarcoplasmic proteins e.g. myoalbumin, globulin.

3) Stoma and connective tissue protein

e.g. collagen

- Growing evidence- fish protein improves blood lipid profile in human (ICAR handbook, 2006)
- Best sources - Salmonids and Herrings.

### **Role of Fish Vitamins and minerals in Human Nutrition**

- More attention is given to fisheries products as a source of micronutrients such as vitamins and minerals.
- This is in particularly true for small sized species consumed whole with heads and bones, which can be an excellent source of many essential minerals such as iodine, selenium, zinc, iron, calcium, phosphorus, potassium, vitamins A and D, and several B vitamins.

## Health Benefits of Anchovy

Organic Facts



Aids in weight loss	Helps to prevent premature aging
Helps to reduce risk of skin cancer	Prevents risk of osteoporosis
Reduces risk of cardiovascular ailments	Protects eyes against cataracts and macular degeneration

[www.organicfacts.net](http://www.organicfacts.net)