# Unit 10: Fishery Production and Management

## Basic Concepts in Aquaculture and Farmed Fish Species in Ethiopia

**Aquaculture:** This is the practice of farming aquatic organisms like fish, plants, and shellfish. It involves breeding, rearing, and harvesting in all types of water environments.

**Fish Species in Ethiopia:** Ethiopia is rich in freshwater fish species, with about 153 indigenous and 10 exotic species. The diversity includes:

1. **Nilo-Sudanic Forms:** Predominantly found in the Nile basin.
2. **East African Highland Forms:** Found in northern Rift Valley lakes and highland lakes.
3. **Endemic Forms:** Unique to Ethiopia, including about 38 species like Barbus in Lakes Tana and Chamo.

**Major Fish Families in Ethiopia:**

- **Cichlidae:** Includes species like *Oreochromis niloticus* (Nile Tilapia), which is common in Ethiopian waters.
- **Centropomidae:** Includes *Lates niloticus* (Nile Perch), found in lakes like Chamo and Abaya.
- **Claridae:** Includes *Clarias gariepinus* (Catfish), commonly found in Lake Tana.
- **Cyprinidae:** Includes species like *Barbus* and introduced carp species.

**Fish Feeds and Feeding Practices:** Fish feed varies by species, and they employ different feeding methods:

- **Ram Feeding:** Capturing prey by swimming with open mouths.
- **Suction Feeding:** Drawing in water and prey.
- **Biting:** Grabbing prey with their teeth.

Fish can be herbivorous, carnivorous, or detritivorous (feeding on decomposing organic material).

**Fish Culture Techniques:**

1. **Monoculture:** Raising a single fish species.
2. **Polyculture:** Raising multiple fish species together.
3. **Mono-Sex Culture:** Rearing only male or female of a single species.
4. **Poly-Sex Culture:** Rearing male or female of two or more species.

**Fish Rearing Management:**

- **Hatching:** Involves breeding and caring for fish eggs.
- **Rearing:** Growing fish to maturity.
- **Harvesting:** Collecting fish when they reach market size.

**Fishing Methods:**

- **Passive Fishing Gear:** Stationary devices like nets and traps.
- **Active Fishing Gear:** Mobile devices like trawl nets and seine nets, actively moved through the water to capture fish.

## GERD's Potential for Fish Farming

The Grand Ethiopian Renaissance Dam (GERD) is expected to significantly boost fish production, with a potential yield much greater than other Ethiopian lakes due to its vast reservoir capacity.

## Handling of Fish and Fish Products

Fish is a highly perishable food, meaning it spoils quickly if not handled properly. To ensure fish remains safe and high-quality for consumption, proper handling, processing, and distribution are essential. Here's a summary of key points:

1. **Minimizing Losses:** Proper handling of fish helps to reduce waste and increase productivity in the fishing industry.
2. **Slaughter and Evisceration:** Fish should be slaughtered in specialized facilities (fishery abattoirs) that are equipped with the necessary tools. After slaughter, the fish should be eviscerated (removal of internal organs) immediately to prevent spoilage. The fish should then be preserved until it is ready for consumption.
3. **Fish Processing Methods:**
    - **Preliminary Processing:** This involves basic steps such as grading, washing, scaling, gutting, and filleting the fish.
    - **Main Processing (Preservation):** Techniques like chilling, freezing, smoking, drying, and canning are used to prevent fish spoilage by controlling temperature, moisture, and microbial activity.
4. **Types of Fish Products:**
    - **Cooked Fish:** Ready for immediate consumption, with a short shelf life.
    - **Frozen Fish:** Preserved for longer periods but requires expensive equipment.
    - **Cured Fish:** Includes dried, smoked, and salted fish, which have reduced water content to prevent spoilage.

- **Canned Fish:** Has an extended shelf life due to the canning process.
- **Fermented Fish:** Produced by allowing beneficial bacteria to lower the pH, discouraging spoilage.

5. **Local Fish Processing in Ethiopia:**
    - Most Ethiopian consumers prefer fresh fish, and frozen filets are becoming popular in urban areas.
    - **Quanta:** A traditional dried fish product made by filleting and air-drying fish for 2-3 days. It can be stored for up to a month but is often prepared under poor hygienic conditions, which can affect its quality.

Understanding these concepts is crucial for ensuring that fish products are handled in a way that maximizes their quality and safety for consumers.