Lecture 11b

Spawning Tilapia

Spawning Broodfish

- Tilapia
  - Breed easily in captivity, mouth brooders
    - Can breed when small – unwanted breeding
  - Broodfish should be between 150-300g
    - Keep breading populations separated
  - Females can be spawned every 1 – 2 months
    - Sex-reversal

Fish husbandry

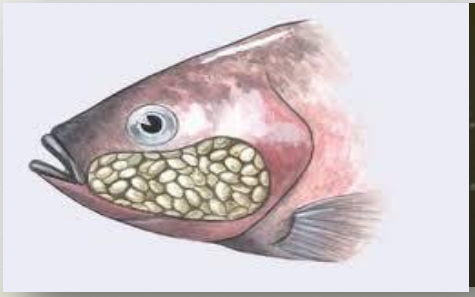
- Step 1 – Choose your fish
  - Breeding populations of should be stocked with a sex ratio of 10 females for every 1 males
    - If you have 50 females you will need 10 males
    - A single female will produce 500 eggs
  - The maximum stocking density for broodstock is 10kg/m^3
    - Your pond is 2m long and 1.5m wide and 0.5m deep
    - Volume = L x B x H = 2 x 1.5 x 0.5 = 1.5 m^3 = 1500 L
    - 1500L/10kg/l = 15kg of fish
    - 15kg of fish / 250g per fish = 60 fish
  - A tank with 60 fish (50 Female 10 Male)
    - 50 fish x 500 eggs = 25 000 eggs every 2 months
    - Assume 20% survival = 1250 fingerlings per month

Fish husbandry

- Step 2 – Conditioning the broodfish
  - Maintain a constant water temperature between 26°C and 28°C
  - Ensure a good flow with clean good quality water
  - Feed with a high quality protein rich diet
    - Feed the broodstock fish at a rate of 1.5% body mass per day
      - 60 fish @ 250g = 15kg
      - 1.5% of 15k = 225g * 15kg x (1.5/100) = 0.225kg
      - You will need to feed 225g per day
    - Feed the fish once per day in the morning
      - Do not over feed as this will reduce breeding

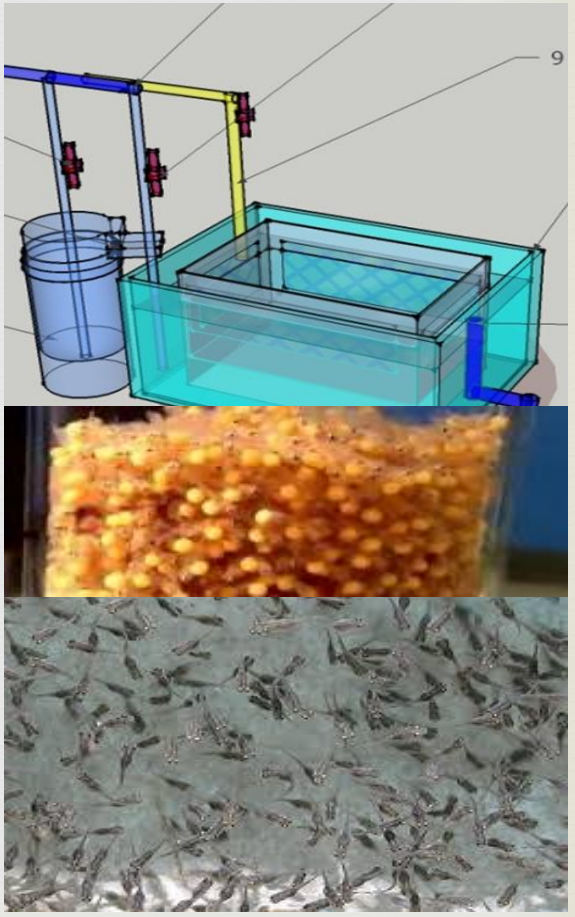
Fish husbandry

- Step 3 – Collect eggs
  - Check the fish regularly
    - With experience you will get to know your fish and begin good at predicting the right time
      - The fish should be inspected and eggs collected at least once per week.
    - Catch the fish in a net
      - Gently pick up the fish and inspect her buccul cavity (mouth)
      - If there are eggs gently wash the eggs out into a bowl or bucket.
      - Collect eggs from all the fish in this way.
        - Fish without eggs are simply returned to the tank or pond.



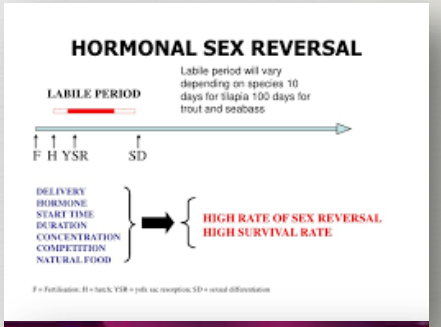

Fish husbandry

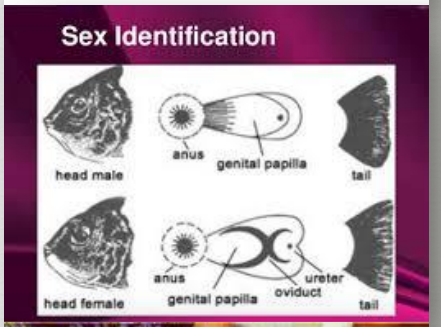
- Step 4 – Incubating the eggs
  - The eggs should be kept in an incubator at 26-28°C
  - The flow should be such that the eggs are kept in suspension
    - But not so fast that they flow over the top…
  - As the eggs hatch they are collected in the tank below.
  - Moved to the nursery for sex-reversal



Fish husbandry

- Step 5 – Sex reversal
  - To farm Tilapia well you need use mono-sex populations
    - Sex-reversal - 17-alpha Methyl-testosterone
      - Added to feed at a ratio of 60mg/kg
      - From first feeding for 21 days
    - Fish should eat aprox. 20% body mass / day
      - Feed over 4 feeding during the day
      - Ad lib feeding is best – feed for 5 min adding a small amount at a time, keep adding food until the fish stop eating.
    - BUT – Do not over feed.





Fish husbandry

- Step 6 – Rearing fingerlings
  - Once the fish have been sex-reversed they can be moved and sorted according to size.
  - Fingerlings can be stocked at 5Kg/m^3 (1000L)
    - In 1500L you could have 7.5Kg of fingerlings (23days)
      - About 2 fish/per gram = 15 000 fingerlings
    - Feed at 15% Body mass per day
      - 15 000 x 0.5 = 7.5kg x 15% = 2.25kg
      - 560g of feed 4 times per day
    - But fish grow… ?
  - Feeding charts are a good guide
    - Use on farm data collected over time to develop your own charts

Fish Husbandry

Tilapia Growth and Feeding Rates

Month	Start Weight (g)	End Weight (g)	Growth Rate g/day	Feeding Rate (% weight)
1	1	5	0.2	15 - 10
2	5	20	0.5	10 - 7
3	20	50	1.0	7 - 4
4	50	100	1.5	4 - 3.5
5	100	165	2.0	3.5 - 2.5
6	165	250	2.5	2.5 - 1.5
7	250	350	3.0	1.5 - 1.25
8	350	475	4.0	1.25 - 1.0
9	475	625	5.0	1.0

Starting with one gram fry at month one, fingerlings would be starting at month two or three.
Growth is approximate and is based on 84°F water temperature.

Fish Husbandry

- Size Sorting
  - Size sorting is a good way to keep on track of how many fish you have and how big they are.
  - Use a fish grader to quickly sort the fish into size classes
  - Take this opportunity to examine your fish
    - What is there general condition?
    - Are they growing as fast as they should be?
    - Is the growth uniform?
    - What is the condition of the fins and eyes?
    - Are there any wounds or abnormalities?

Fish Husbandry

- Counting Fish
  - To count the fish we will estimate according to weight.
    - Carefully count out 100 fish
    - Weigh them
    - Repeat this 2 to 3 time
  - Add the weights of the 3 samples together
    - Eg 100 fish = 254.5g
    - 100 fish = 249.3g
    - 100 fish = 247.9g
    - Total 300 fish = 751.7g

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Fish Husbandry

- Now divide 751.7 by 300 fish to estimate the weight of a single fish
  - 751.7/300 = 2.506 grams per fish
  - Now weigh all the fish in the tank
    - Lets say it is 12.5kg
    - Divide the total weight of the tank by the weight per fish to estimate the total number of fish.
      - 12 500g/2.506g = 4988 fish
  - For tilapia you need to do this every month.