1. Introduction:

1.a. What is aquaculture:
- ‘‘The farming or husbandry of aquatic plants and animals, and implicit in the activity is some degree of human intervention’’ (FAO 1992).

1.b. Importance of fish:
- Vital protein source for many countries – fish accounts for >60% protein in Indonesia.

1.c. Importance of aquaculture:
- Relieves fishing pressure
- Fisheries landings have increased by 80 million tonnes until 1990, then stabilised.
- 10 species of fish account for >32% total annual landings – lots of pressure on a few species.
- Top 3 UK species – Atlantic herring (19%), Nephrops (13%) and Atlantic mackerel (13%).

2. Aquacultural methods:

2.a. Extensive:
- Reared for part of the life cycle.
- Less effort
- Most shellfish/crustacean/macroalgae farms.

2.b. Intensive:
- Reared for the whole of the life cycle.
- Greater control and greater yield.
- Most fish farms.

3. Aquacultural issues:

3.a. Paradox of aquaculture:
- Aquaculture may decrease wild fisheries stocks
- E.g. In the case of shrimp and salmon farming which damage the environment along with other issues.
- Other farming such as carp and molluscs which are herbivorous may be contributing to food security (Naylor *et al*. 2000).

3.b. Eutrophication:
- Waste food from feeding fish.
- Fish produce nitrogen – causes increased algal growth.
- Algae grow on the side of the cage – reduces flow of water through cage, reducing O_2 and waste removal.

3.c. Antifouling paints:
- Used to remove algae by painting cage bars – Antifouling paint is toxic.
- E.g. Tributyltin.

3.d. Disease:
- Animals farmed at high densities.
- Causes stress
- Increases disease risk.