Purpose of Aquaculture

Commercial Fisheries

- Goal – increase or sustain commercially important species (other than salmon)

Concept

- Being re-considered
  -
  - Offspring – increased survival

Species

- Flounder
- Cod
- Haddock
- Rockfish

Purpose of Aquaculture

Recreational Fisheries

- Goal – Stocking for angling public

Put and take

- Stock catchable size fish that are available immediately
  - Chase hatchery trucks
  - Recreation for the “non” purists
- Provides some states alternative experience
  - Seasons that provide proper environmental conditions
    - Spring – trout in some states (trout stamp)

Purpose of Aquaculture

Recreational Fisheries

Put-Grow-and take

- Stock at small size (fingerlings) allow to grow to large size
  - Close harvest of small fish (size restrictions)

  Ex:
  - Stock fingerling Northern pike in Midwest
  - Coho Salmon and SH in Great Lakes (1980s)
  -

Both approaches provide angling opportunities in waters that may not support sustainable populations

Purpose of Aquaculture

Augmentation

- Used in waters that can support sustainable populations but where fishing pressure results in unbalanced populations
  Ex:
  - Largemouth bass
    - Fishing lowers bass pop. even though forage base is good

Purpose of Aquaculture

Mitigation/supplementation

- Human activities – destruction or alteration of fish habitat

Ex:

-
  - Loss of upstream access by anadromous fishes
  - Decreased access to spawning habitat
  - Change from riverine to reservoir habitat
  - Increased turbidity (Ag and industry runoff)

Purpose of Aquaculture

Mitigation/supplementation

- 1938 – Congress passed legislation that mandated for losses of renewable aquatic resources due to reduction of upstream access for migratory salmonids
  - Results –

"In-kind" mitigation

- Impacted species – re-stocked

May also occur if human activities take water body out of production – filling lake for construction

Purpose of Aquaculture

Pacific Salmon (Coho, Chinook, Chum, Pink, Sockeye)

- Primarily reared and released for mitigation purposes
    - Pacific Northwest, Canada (BC), Alaska
    - Great Lakes (1967) – recreational fisheries

Purpose of Aquaculture

Species Recovery (ESA)

- Habitat
- Hydro
- **Hatcheries**
  - One action taken to enhance recovery

Genetic diversity – important

  -

Ex:

- Sockeye Salmon – 1990s to present (Redfish Lake)
- Lonely Larry
  - Cryopreserved semen for next season
- Offspring survival important

Purpose of Aquaculture

Population assessment

- Cultured fish can be marked and used to assess populations in wild
  -
  - Recapture of tagged/untagged fish used to estimate populations

Examples of marking methods:

-
- External tags
- Fin clips
-
-
- Branding

Purpose of Aquaculture

Research

- Many Scientists are increasingly using fish as laboratory animals
  -
  - Fish may be good models
  - Fast regeneration times

Ex:

- Japanese medaka
- Zebrafish
- KIllifish,
- Goldfish