Chapter 6

Passive Capture Techniques
Passive Capture Techniques

- Fish caught by
  - Entanglement
  - Entrapment
  - Angling gears

- Gear is not moved through the water
Entangling devices

- Fish are snared or tangled in fabric or mesh

- Examples
  - Gill nets
  - Trammel nets
Entrapment devices

- Capture fish that go through small openings in gear
- May be more than one opening
- Fish can't find their way out
- Examples
  - Hoop nets
  - Trap Nets
  - Lobster Pots
Angling devices

- Use baited hooks on lines
- May be unattended
- Examples
  - Trot lines
  - Long lines
  - Jugs and yo-yos
Problems with passive gear

• Gear selectivity - bias for or against certain species, sizes or sexes of fish.

• Example - trap nets catch crappie, but usually not largemouth bass
Problems with passive gear

- Gear efficiency - number of target animals collected for a given amount of effort expended

- Example - gill nets catch fewer crappie per net night than trap nets
Advantages of Passive Gear

- Simple design and construction
- No mechanical assistance (except boat)
- Same gear each year ... CPE \sim = Population Abundance
Disadvantages of Passive Gear

- Gear selectivity influences
  - Encounter
  - Caught
  - Retained
Capture efficiency influences

- Season
- Turbidity
- Current
- Time of day
- Water Temperature
Other Considerations

- Animal Behavior
- Movement
- Schooling
- Fish morphology

See Fish Swim
Swim Fish Swim
Gill Nets - Fish caught by...

- Wedged
- Gilled
- Tangled
Gill Nets - Construction

- Wall of Netting
- Floats, Weights
- Anchors, Bouys
- Hanging Ratio
- Mesh size (Bar or stretch)
Gill Nets - Materials

- Net
- Cotton
  - Linen
  - Nylon
  - Monofilament
- Floats
  - Wood
  - Cork
  - Plastic
- Lead weights on bottom
Gill Nets - Set Procedure

• **Deployment**
  - Drop anchor, play out untangled net, drop anchor

• **Retrieval**
  - Start from downwind, remove fish, into tub in coils
Gill Nets - Types of Sets

• Standard - anchored on bottom like a fence
• Midwater - suspended mid-depth by lines
• Surface - strong floats
• Vertical - for determining vertical distribution (windowshade)
• Drift - not anchored
Gill Nets - Biases (cont.)

- Mesh size, elasticity, hanging ratio, strength, visibility
- Movement of fish
- Duration (soak-time)
Gill Nets - Biases

- Optimal girth . . . 1.25 x mesh perimeter
- Few smaller or larger fish than optimal
Movement of Fish

- Season
- Weather fronts
- Currents
- Water temperature
Movement of Fish

- Thermocline location
- Water depth
- Fluctuations in water level
- Turbidity
Trammel Nets - Construction (cont.)

- Three panels of netting
  - small mesh sandwiched between two large mesh
- Float line
- Lead line
- Fish in a pocket made of small mesh poked through large
Trammel Nets - Material

- Cotton or nylon
- 2-m deep
- 250-mm bar
- 25-mm bar
Trammel Nets - Sets

- Same as gill nets
- Standard sets
- Floating sets

• Common in commercial fisheries
Hoop Nets - Construction

• Cylindrical or conical
• Frames covered by mesh
• Square or finger throat
• Cod end
• Anchor
• Bouys
Hoop Nets - Material

- Hoops - wood, plastic, fiberglass, steel
- 0.5 to 3m diameter
- Cotton or nylon mesh
- 10 to 100mm bar mesh
Hoop Nets - Sets

- Riverine habitats - good in strong currents
- Anchor upstream, stretch out, mouth downstream
- Baits - cheese, soybean cakes, chicken livers
Hoop Nets - Biases

- Hoop size
- Mesh size
- Escape rates
- Season, temperature, current, turbidity, habitat type
Fyke and Trap Nets - Construction

- 1-3 wings or leaders (guide fish)
- enclosure with throat
- float
- anchor
Fyke and Trap Nets - Materials

- Hoops or rectangular frames - metal
- 0.5 to 2m diameter
- Cotton or nylon mesh
- 10 to 100mm bar mesh
Fyke and Trap Nets - Sets

- Lakes and reservoirs
- Perpendicular to shore
- Leader onshore, anchor away
- Floating trap nets
Fyke and Trap Nets - Biases

- Species and size selectivity - good for crappie
- Live releases - mostly larger sport fish
Pot Gears - Construction

• Rigid traps with throats
• Widely variable for different species
• Box or cylinder with conical funnel
• Usually with door for easy removal
Pot Gears - Materials

- Wood
- Metal
- Partial mesh
- Plastic
Pot Gears - Sets

- Usually over the side of boat, with float attached
- Suspended in midwater - minnow traps
Pot Gears - Biases

- Same as other gear
- Ghost fishing
- Overcrowded traps
Angling Gear

- Trot lines
  - Floats, lines, drop hooks, weights.
  - Mostly warm water inland fisheries.
Angling Gear

- **Long lines**
  - Floats, lines drop hooks
  - Mostly oceanic fisheries (miles/longline)