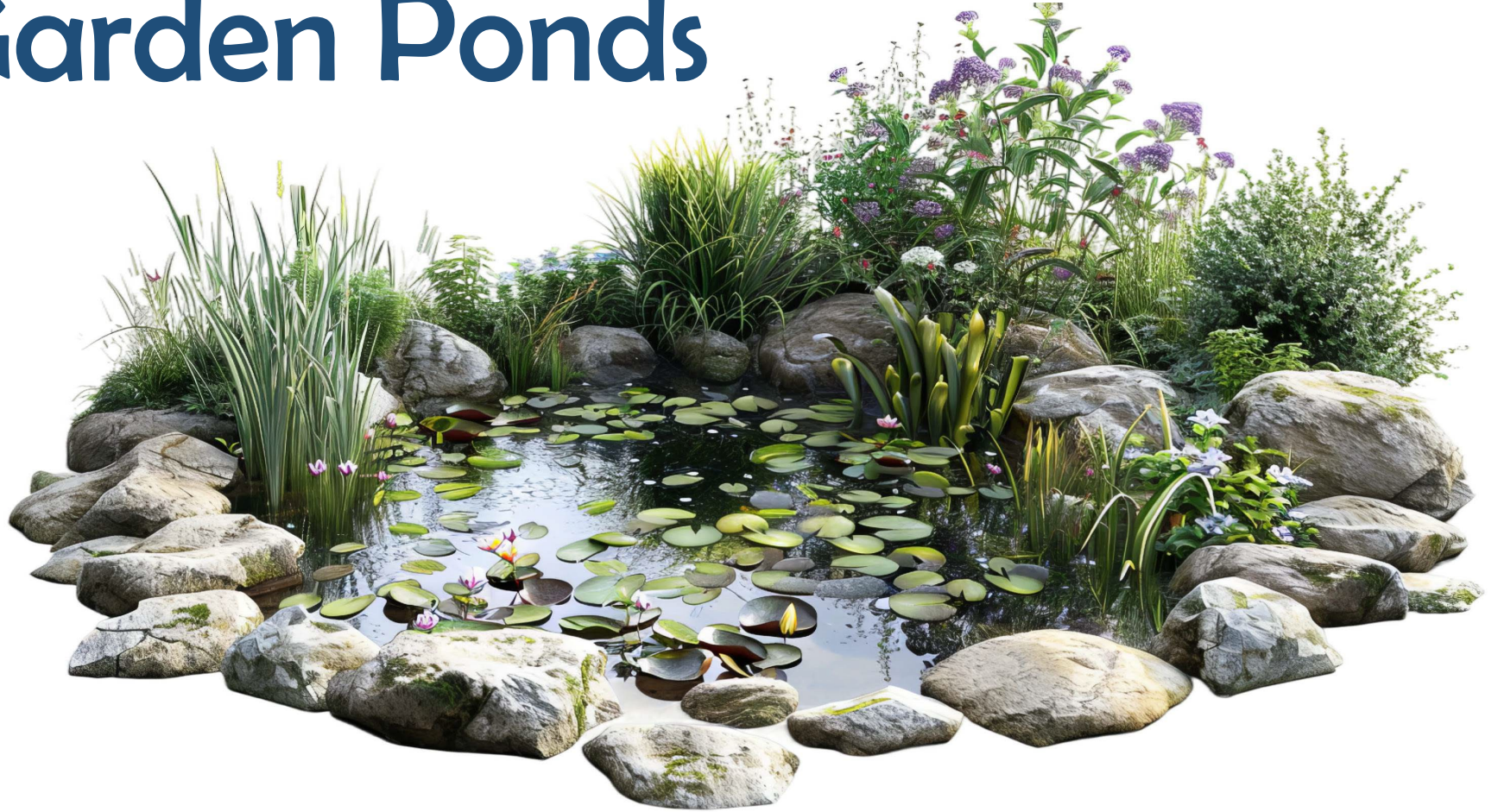


A Beginner's Guide to Garden Ponds





College of Agriculture,
Food and Environment
Cooperative Extension Service

**Campbell County Cooperative
Extension Service**

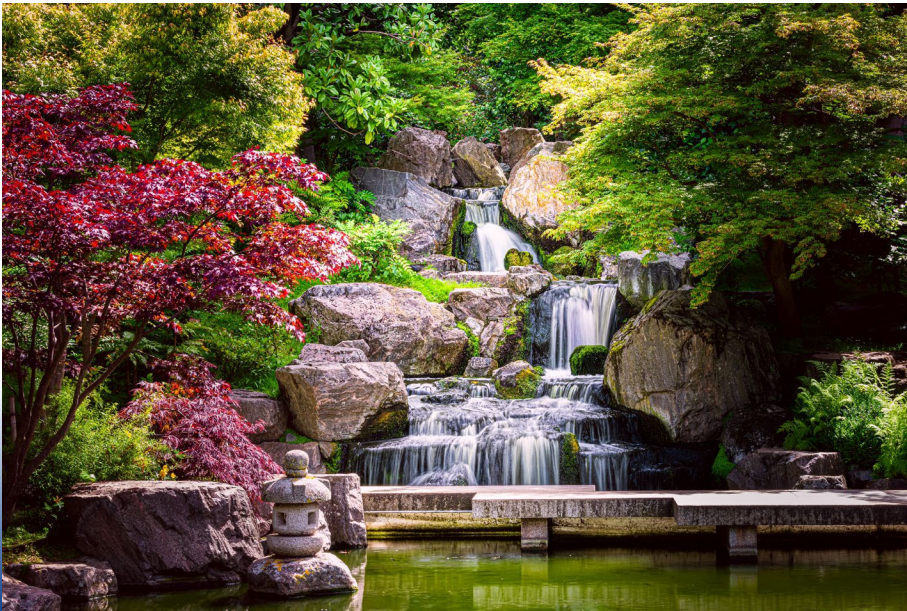
**3500 Alexandria Pike
Highland Heights KY
859-572-2600**

Sarah Imbus
sarah.imbus@uky.edu
Horticulture Agent

Terri Turner
tturner@uky.edu
Horticulture Technician



Dream VS Reality



Planning: Site Selection

- Near a water source.
- Near an electrical outlet.
- Underground lines?
- Any city limitations?
 - Some require anything deeper than 18" be enclosed by fence.



Planning: Site Selection

- Avoid planting near large trees.
- Roots damage liner.
- Leaf cleanup.



Planning: Site Selection



- Full sun promotes algae growth.
 - If in sun, cover water with floating plants.
- Filtered light or half sun/half shade is ideal.

Planning: Size

- Water Depth: 1.5-2' minimum for goldfish to overwinter.
- Deeper than 3' may be hard to maintain.



Liner Choice



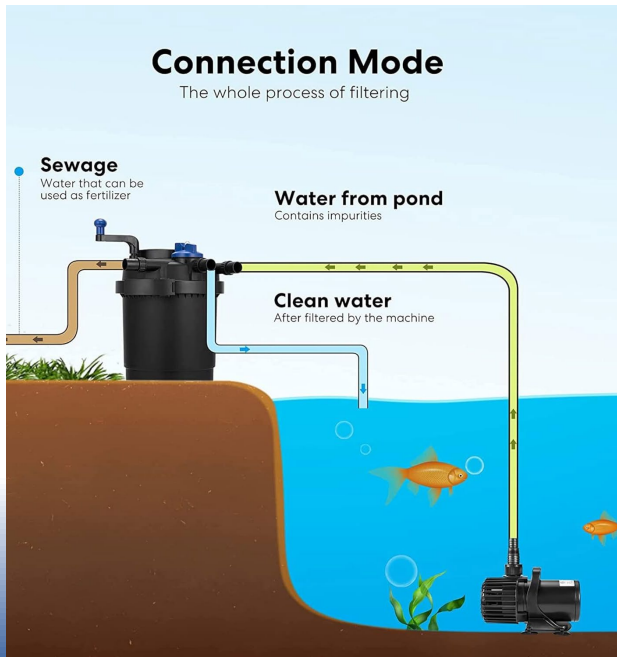
Liners

- Don't try to save \$ on liners.
- Felt underlayment (optional?)
 - Carpet?
- Liner: 45mil, EPDM material.



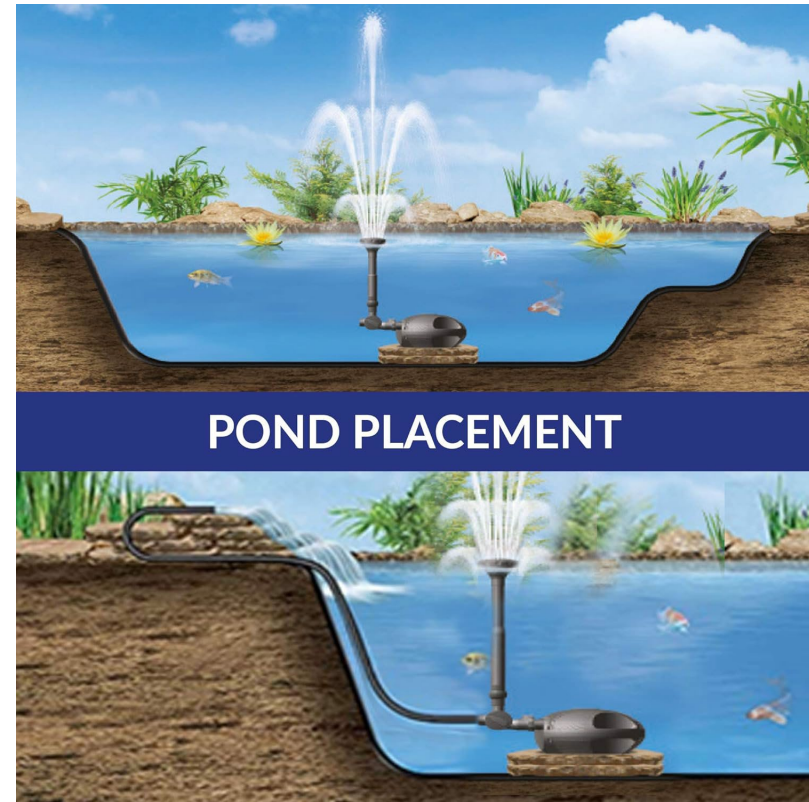
Filter

- Good water filtration is key for a healthy pond.
- Several styles available.



List of materials: Water Pump

- Waterfall
- Fountain
- Both?



List of materials: Air Pump

- Fish need oxygen.
- Important if pond freezes over.
 - Won't need heater.



Planning

- Draw out on ground
- Start digging
- Where will you put the soil that you are digging?



- Consider leaving space for plant shelves.



Underlayment



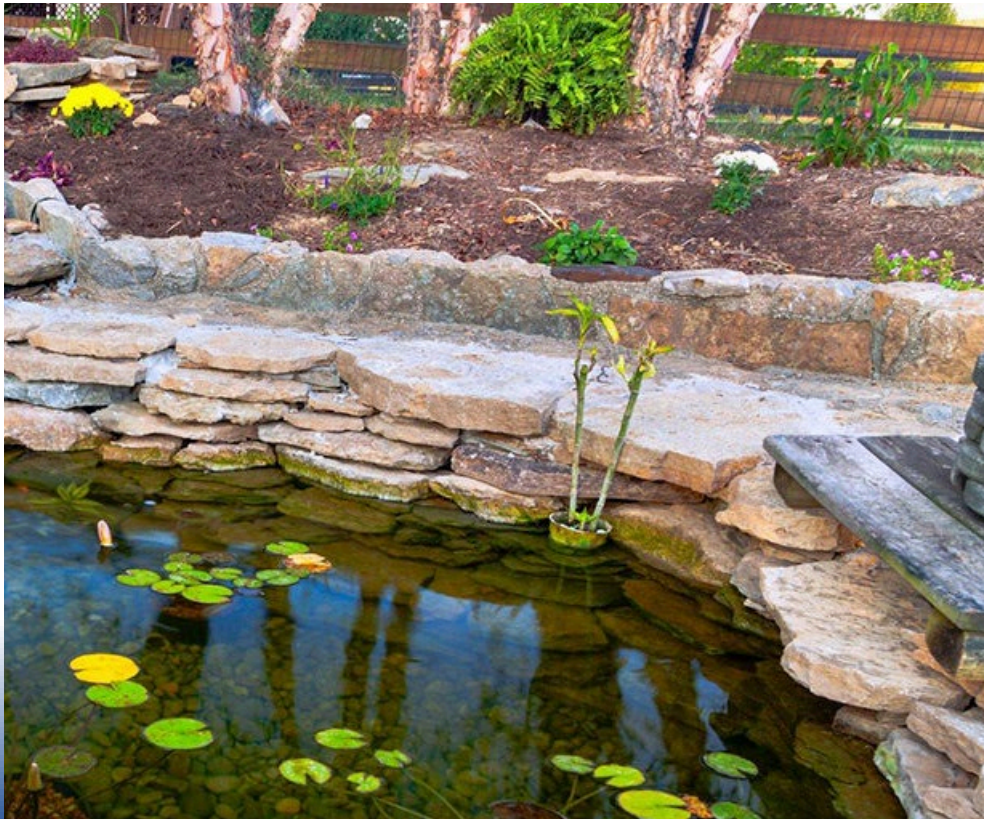
Pond Liner



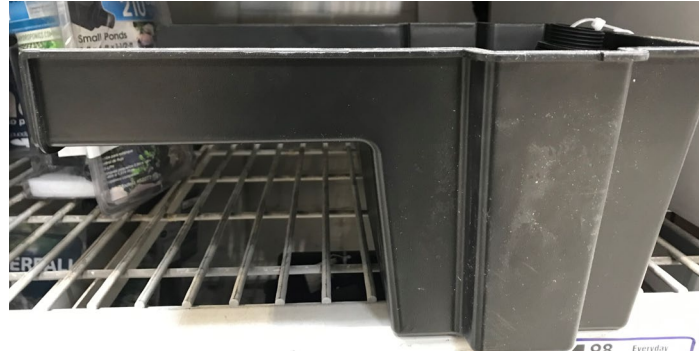
- Will have some creases in liner.
- Fold over.
- Make sure you have several inches extra.
- Liner make “settle” when filling.



- River rock in bottom is optional. **Rinse rock first.**
 - Hide bottom of liner.
 - Surface for beneficial bacteria growth.
- Adding rock to sides is optional.
 - **Damage to female fish during spawning?**



Waterfall Construction



Waterfall Construction









How much water is in my pond?

- Took a 1-gallon container and timed how long it took to fill.
 - Took 13 seconds
- 3,600 seconds in an hour.
- How long did it take my pond to fill? 2hrs, 20min
- $8400 \div 13 = 646$ gallons?





Didn't cut extra liner
and underlay until
pond was full.





Wildlife





Water Quality

- **Chlorine is harmful to fish.**
 - Burns the gills.
 - Destroys protective mucus coating on body.
 - Kills beneficial bacteria.
- Add chlorine remover when adding tap water to pond.



Water Quality

- Fish pH: 7.0-8.4
 - Most tap water: 7.4-7.6
- Fish produce ammonia. Harmful to fish.
- Strive for low ammonia and nitrate levels.



Water Quality: Test Kits



String Algae

- **Causes:**
- Excess nutrients in water.
- Overfeeding fish
- Fertilizer runoff
- Decaying leaves in pond.
- Sunlight.
- Stagnant water.



Pond Scum

- Grows on the bottom of pond and rises due to oxygen.
- Excessive algae can reduce oxygen levels in water.



Pond Plants: submerged plants

- Provide oxygen
- Absorb excess nutrients from water.
- Ex.) Anacharis, hornwort



Anacharis

Pond Plants: emergent plants

- In pots underwater.
- Foliage and flowers emerge over water.
- Flowering plants need at least 6 hours of sun.
- Supplemental fertilizer.
- Help shade water.
- Ex.) water lilies, lotus, water hawthorn





Pond Plants: floating plants

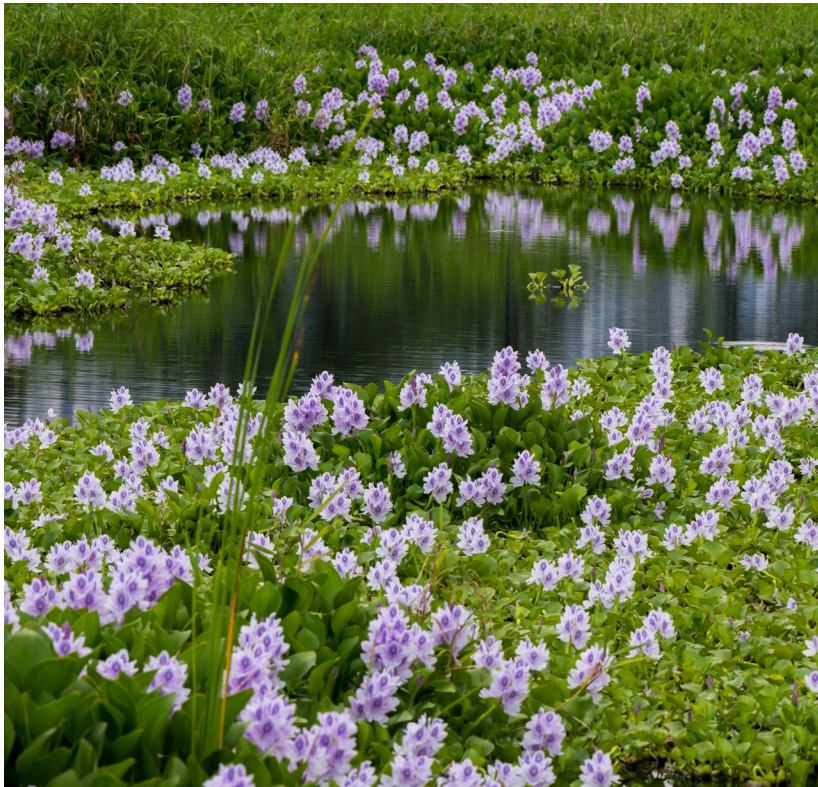
- Roots grow in water.
- Good place for fish to lay eggs.
- Help shade water.



- Ex.)
- Water hyacinth
- Water lettuce



Invasive in the wild



Pond Plants



PURCHASING FISH



Goldfish or Koi?



Koi?

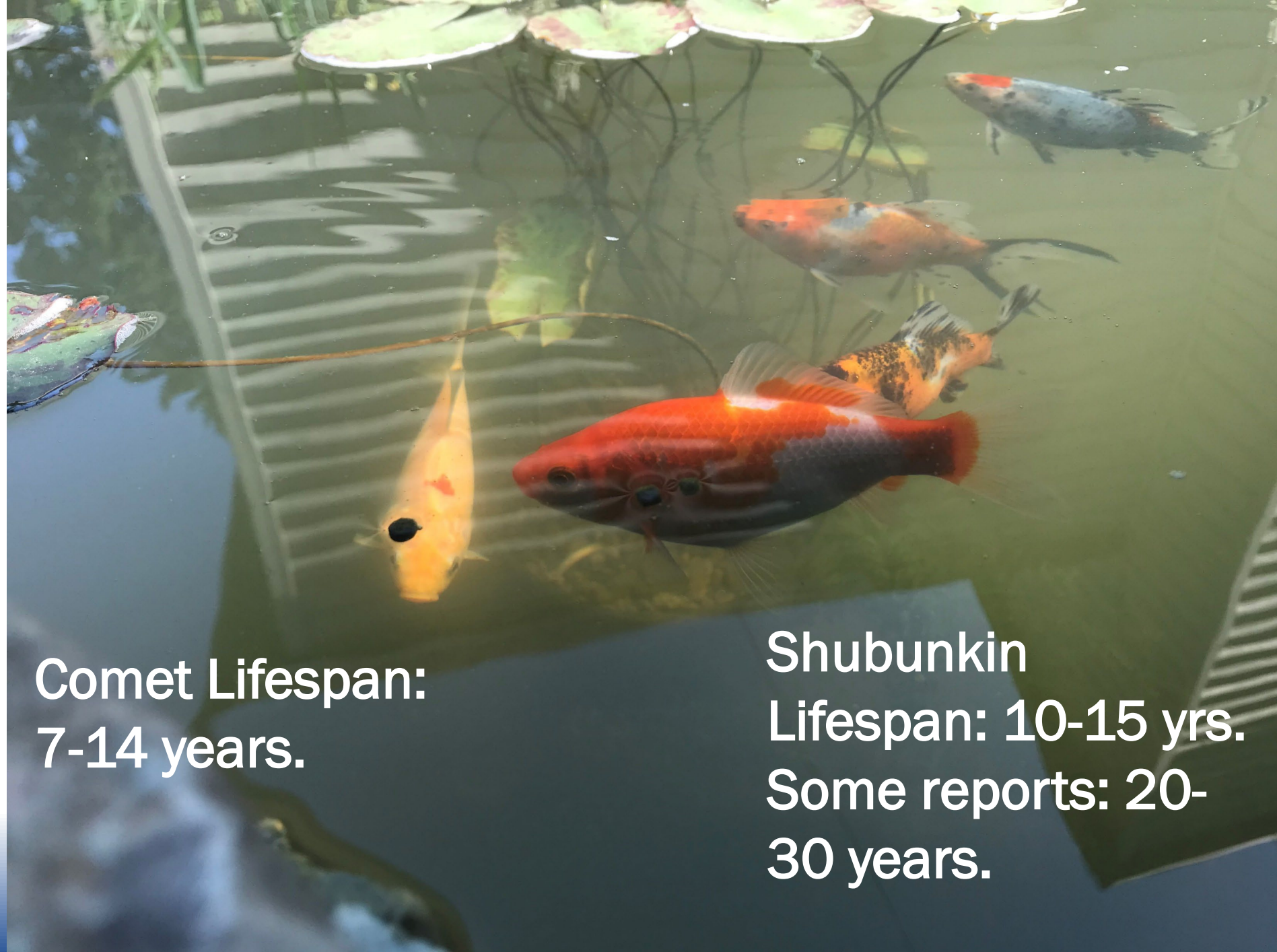
- Colorful variety of carp.
- Koi have barbels (whiskers). Goldfish do not have barbels.
- Japan
- Dig more in pots. Messy.
- In Japan: a Sign of luck, prosperity and fortune.
- Can be expensive





Shubunkin Goldfish

Comet Goldfish



Comet Lifespan:
7-14 years.

Shubunkin
Lifespan: 10-15 yrs.
Some reports: 20-
30 years.

Can Goldfish & Koi Breed?



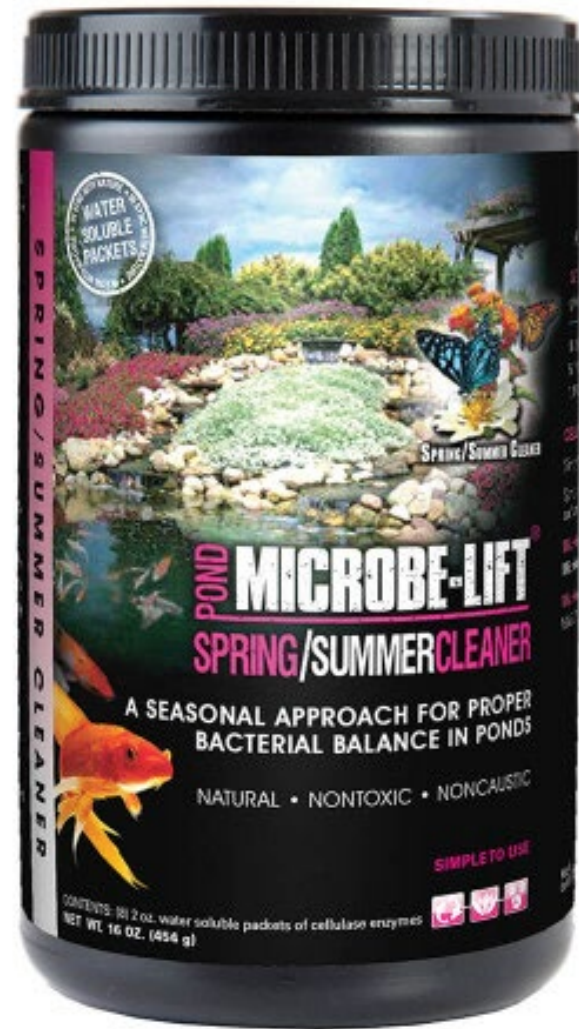
Yes. They are different species so offspring will be sterile.





Spring Cleanup

- Cleanout filter
- Skim pond for debris
- Consider products to replace winter bacteria loss.
 - Helps breakdown leaves and debris that have accumulated over the winter.
 - Nontoxic.



Questions?

