

A vibrant photograph of a garden scene. In the foreground, there's a dense patch of green ivy and some red-leafed plants. Behind them, a white building with a blue-tiled roof has several solar panels installed on its surface. Several tall, green pine trees stand behind the building against a clear blue sky with a few wispy clouds.

The Gardener's Footprint

How to make your garden “greener”

Environmental impacts



Reduce production of CO₂

- Give up automobiles
- Fewer offspring
- Buy green energy
- Less air travel
- Eat a plant-based diet



Increase sequestration of CO₂

- Buy carbon offsets
- Plant lots of trees



Reduce, reuse, recycle



Reduce consumption, reduce waste



HOME NEWS WEATHER TALKERS TRAFFIC

Green algae blooming along Caloosahatchee River

People said the algae appeared two weeks ago when officials first released water from Lake Okeechobee.

Monday, June 25th 2018, 6:39 PM EDT by Meghan Bragg

Updated: Monday, October 15th 2018, 3:09 PM EDT



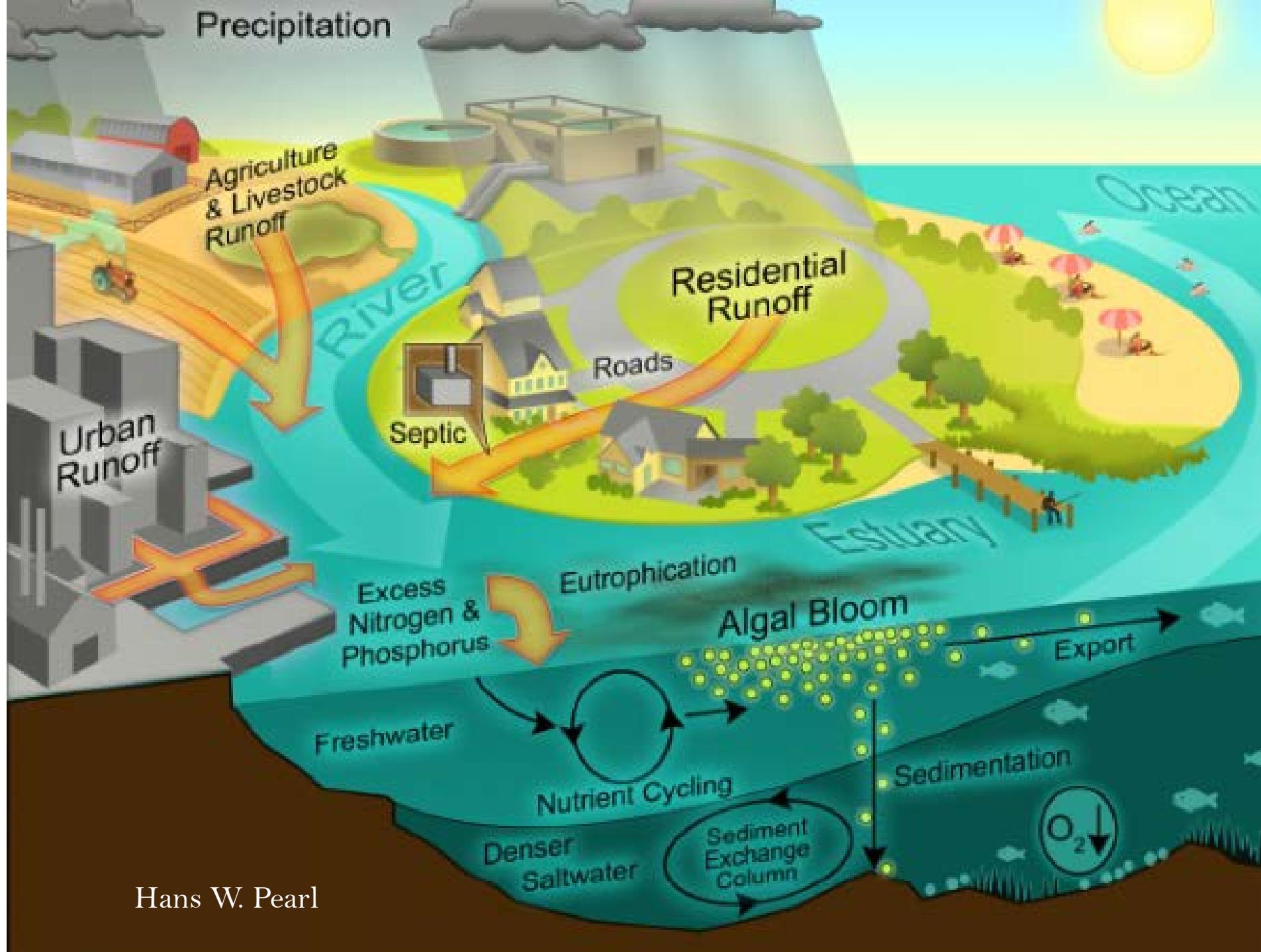
Scientists Battle Red Tide That Turned Florida Coast Into Wildlife Killing Field

August 23, 2018 · 3:44 PM ET

SAMANTHA RAPHELSON



Hundreds of fish killed by red tide are washed ashore in Sanibel, Fla., this month. The current red tide has stayed along Florida's southwest coast for around 10 months, killing massive amounts of fish as well as sea turtles, manatees and a whale shark swimming in the area.



Hans W. Pearl

Lake Okeechobee Inflow

WY2014-WY2018
Phosphorus

LAKE ISTOKPOGA

14% Water; 8% TP Load

TP Load	TP FWMC
48 mt	95 µg/L

INDIAN PRAIRIE

13% Water; 17% TP Load

TP Load	TP FWMC
103 mt	219 µg/L

FISHEATING CREEK

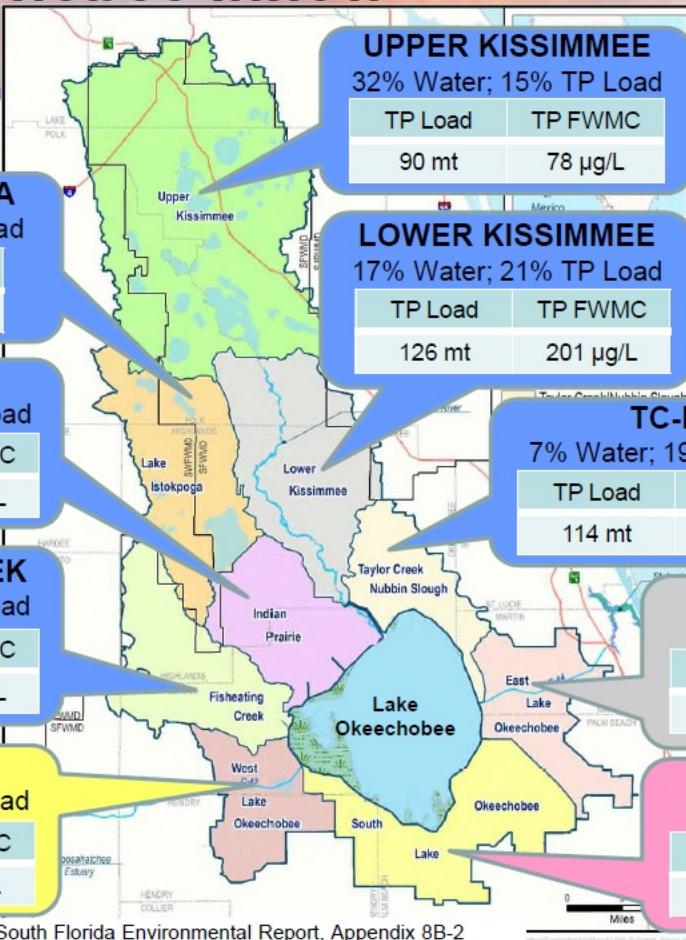
11% Water; 12% TP Load

TP Load	TP FWMC
72 mt	177 µg/L

WEST LAKE O.

<1% Water; <1% TP Load

TP Load	TP FWMC
0.02 mt	115 µg/L



Source: Draft 2019 South Florida Environmental Report, Appendix 8B-2

5-YEAR AVERAGE

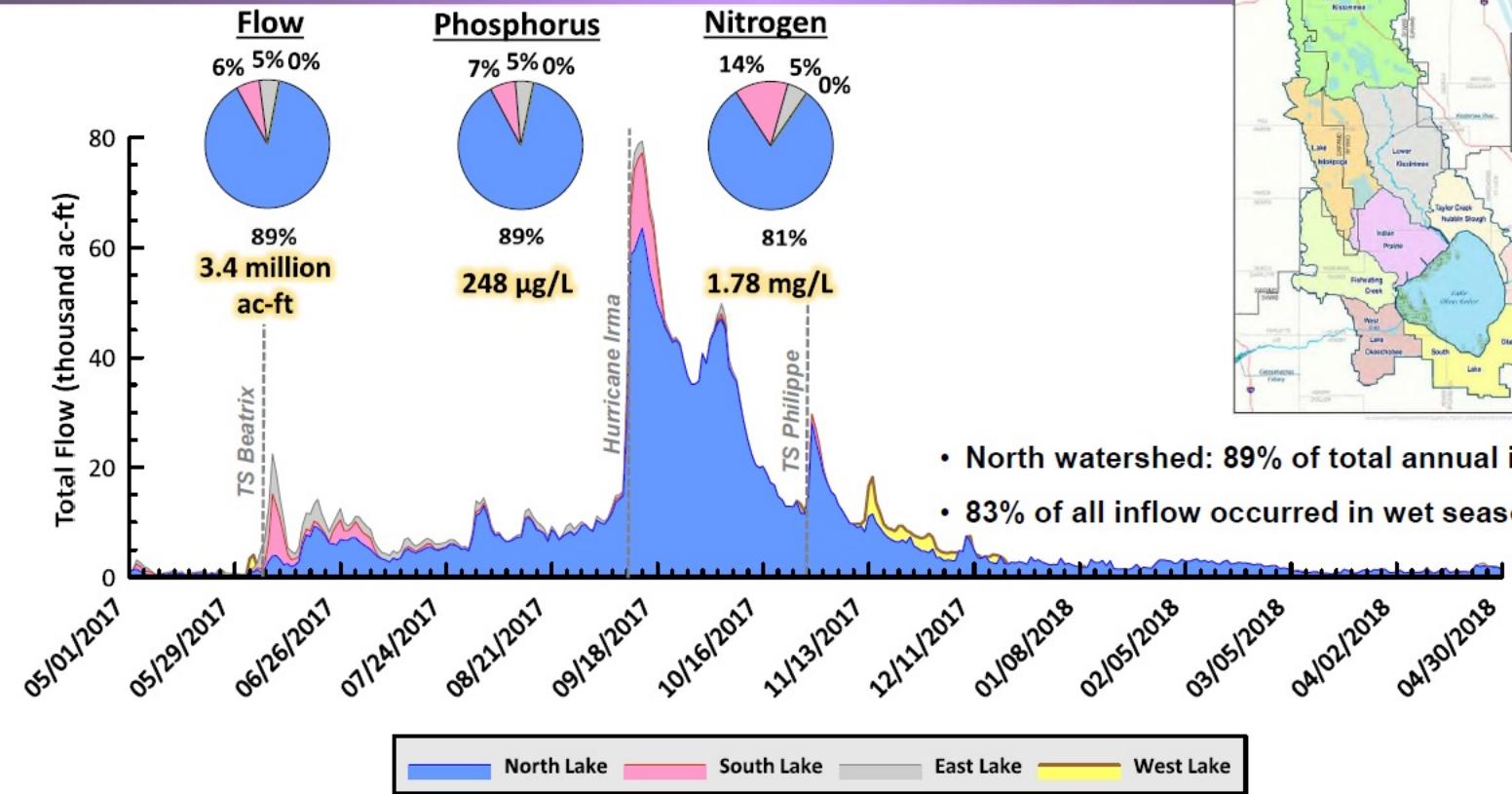
Northern watershed contributes:

- ~ 95% of flow and
- ~ 92% TP load

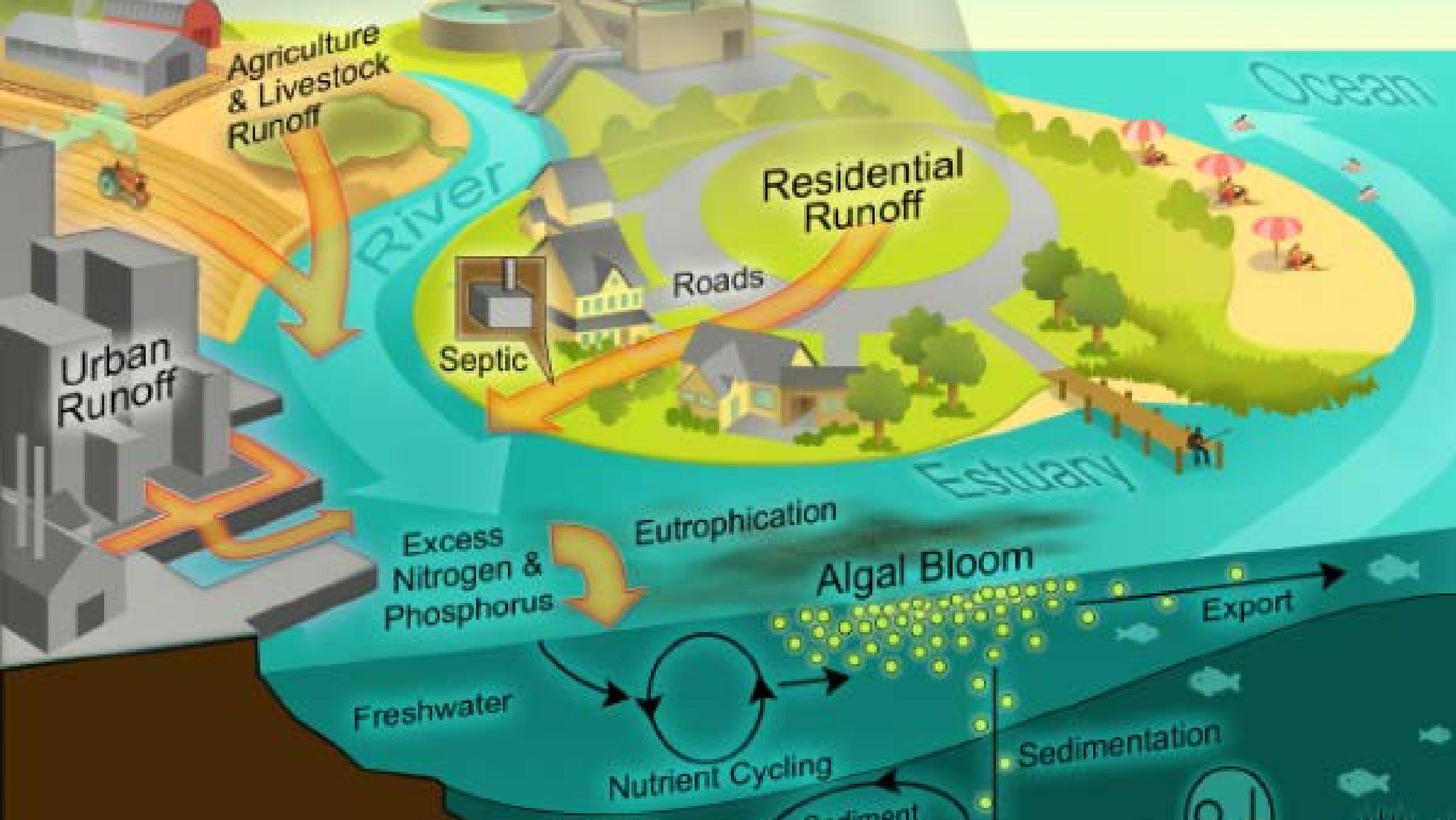
µg/L = ppb

Lake Okeechobee Inflows

Water Year 2018



$\mu\text{g/L}$ = ppb
 mg/L = ppm



Synthetic fertilizer

- Mining process: Phosphate- destructive, toxic waste
- Nitrogen: natural gas
- Carbon footprint-travel
- Soil effects
- Runoff

Organic fertilizers

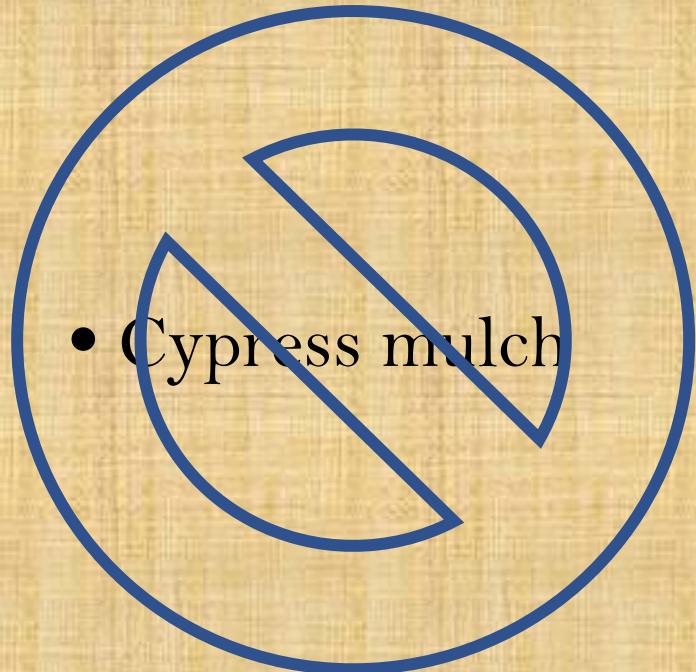
- Organic matter
 - Compost
 - Cow manure
 - Mulch

BROWN
MULCH

W Horticulture Organic Compost



Mulch



- Melaleuca mulch- Flori Mulch
- Mixed mulch
- Raked leaves
- Pine-needle mulch
- Free mulch
- Crushed shell
- Crushed glass

Chop N' Drop

- Nutrient equilibrium
- Pruning
- Raking
- Mowing
- Weeding
- Compost
- Craigslist
- NOT the landfill



The Dirt on Dirt



Sand shortage

Concrete, foundations, roads, buildings, glass, beach renourishment, etc



Top soil loss

Erosion, chemicals, not rebuilding, no amending
Base of the terrestrial foodchain
Healthy soil=healthy plants, healthy air, healthy humans

Potting soil

- Mined materials:
 - Synthetic fertilizers
 - Peat
 - Vermiculite
 - Perlite
- Compost, coconut coir, mulch: better

This is where peat comes from.



Water

- Year-round restrictions (2x/week)
 - Drought-stricter
 - Watering schedules
- Gray water
- Rain barrels
- No watering in rainy season
- Sprinkler height- foliar diseases
- Organic matter
- Water deeply, infrequently (1 inch/week)
- More canopy=less water loss

Trees

- Carbon sequestration
- Water filtration, conservation, transpiration
- Canopy for cooling
- Wildlife habitat
- More room for orchids and bromeliads
- Hurricane resilience
- Erosion control

Lawns

- Water
- Fertilizer
- Herbicides
- Mowing
- Fungicides
- Pesticides
- Wasted space

Lawn equipment

- <https://www.scientificamerican.com/article/how-to-pick-a-lawnmower/>
- “Using one of them for an hour generates as many volatile organic compounds—dangerous airborne pollutants known to exacerbate human respiratory and cardiovascular problems—as driving a typical car for 350 miles.” Beyond that, homeowners spill some 17 million gallons of gasoline every year just refueling their lawn mowers.”
- Lax regulations
- Noise pollution
- Maintenance
- Battery problems: mining, production, recycling

Xeriscaping?

Roundup Xeriscaping



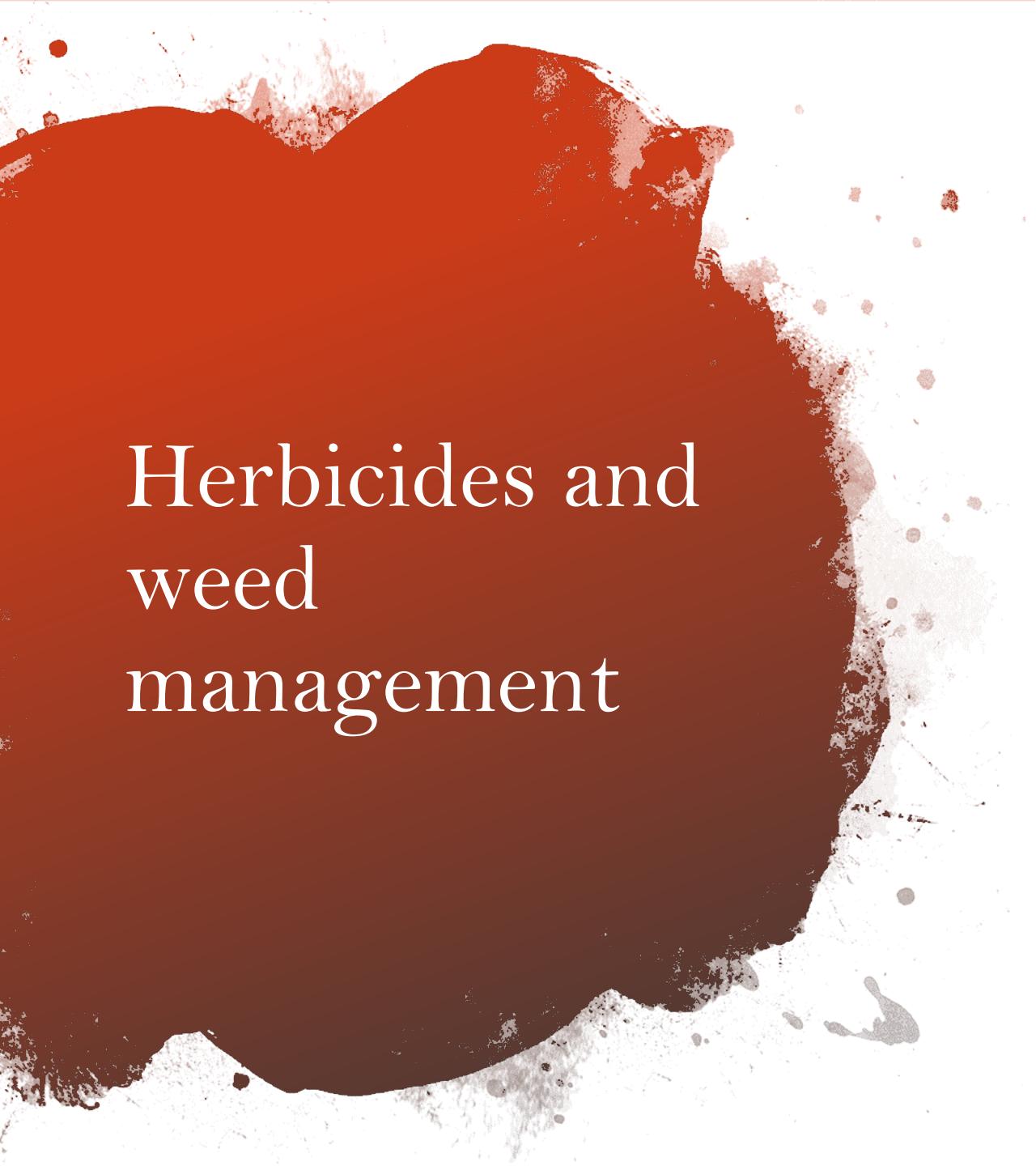
Florida Xeriscaping



Foodscaping/permaculture

- Great way to reduce carbon footprint
- No mowing
- Lower grocery bill
- Better taste





Herbicides and weed management

- Roundup is least toxic but what about breakdown products?
- Must always rotate MOAs to avoid resistance
- Label is the law!
- No new products
- Homemade herbicides: effectiveness, soil acidity, soil salinity

Weed Management Alternatives



Weed barriers

Don't biodegrade, don't allow soil to breath, lock out organic matter, no soil movement, don't work in the long run



Alternative weed barriers

Cardboard
Newspapers/magazines
Old cotton sheets
Get creative



Thick mulch



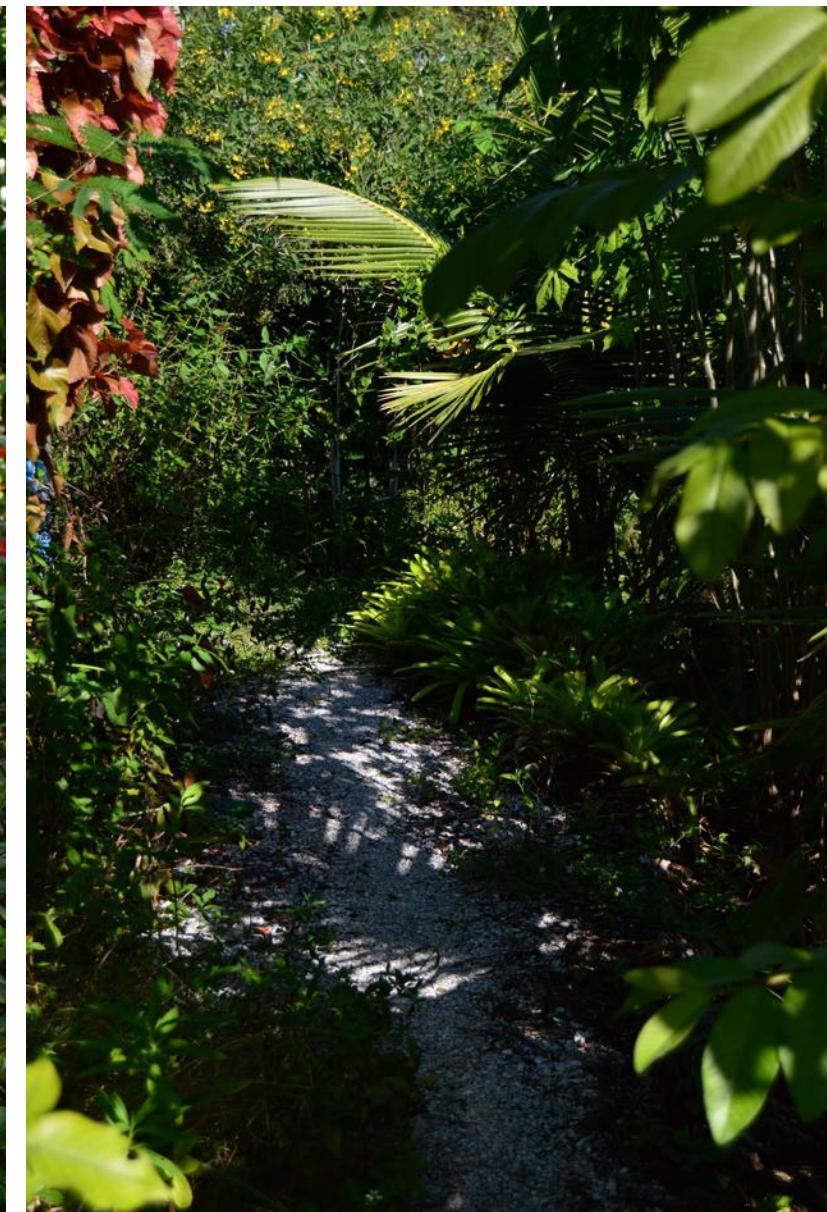
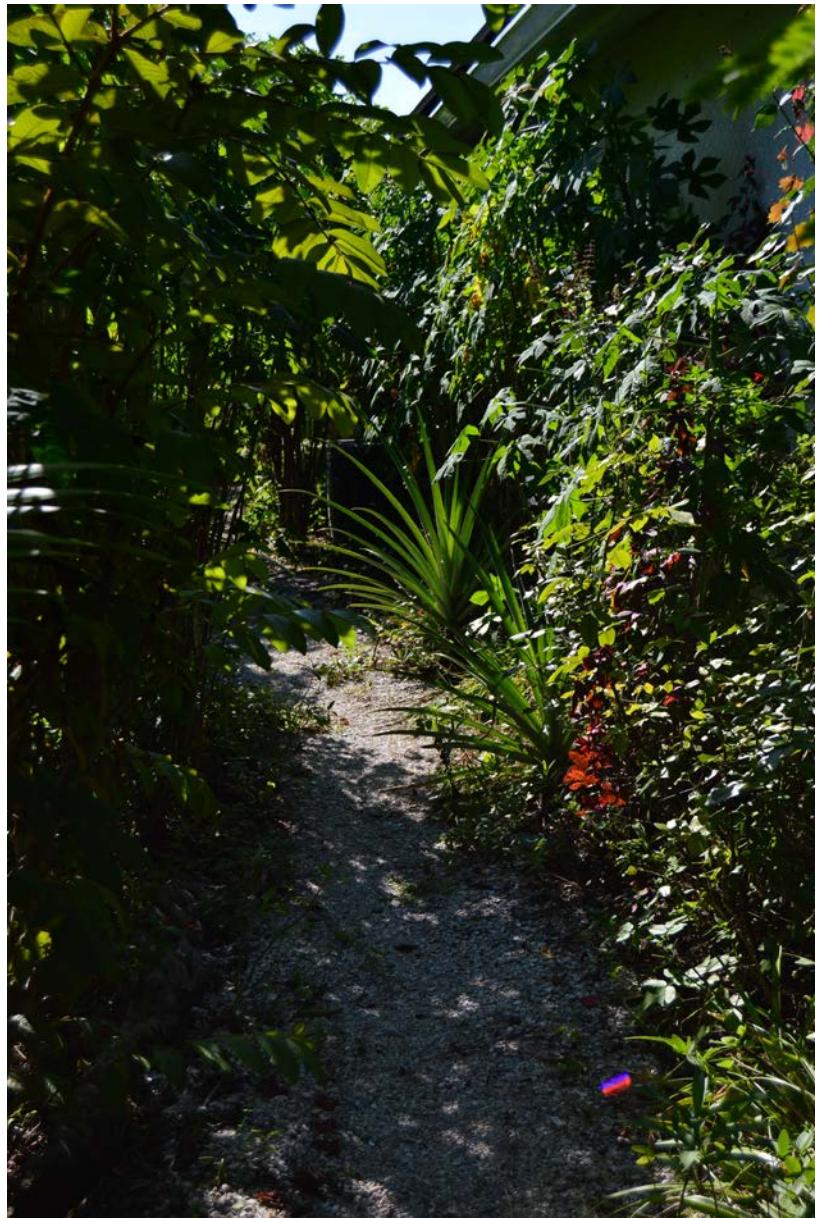
Dense plantings and groundcover



Hand-pulling



Herbicides for emergencies



Pesticides

- Pest identification
- Label is the law
- Broad-spectrum vs specific
- Non-target impacts
- Toxicity: bees, pets, humans
- Natural enemies: patience is a virtue
- 4 Rs: Replacement, reduction of predators, resurgence, resistance





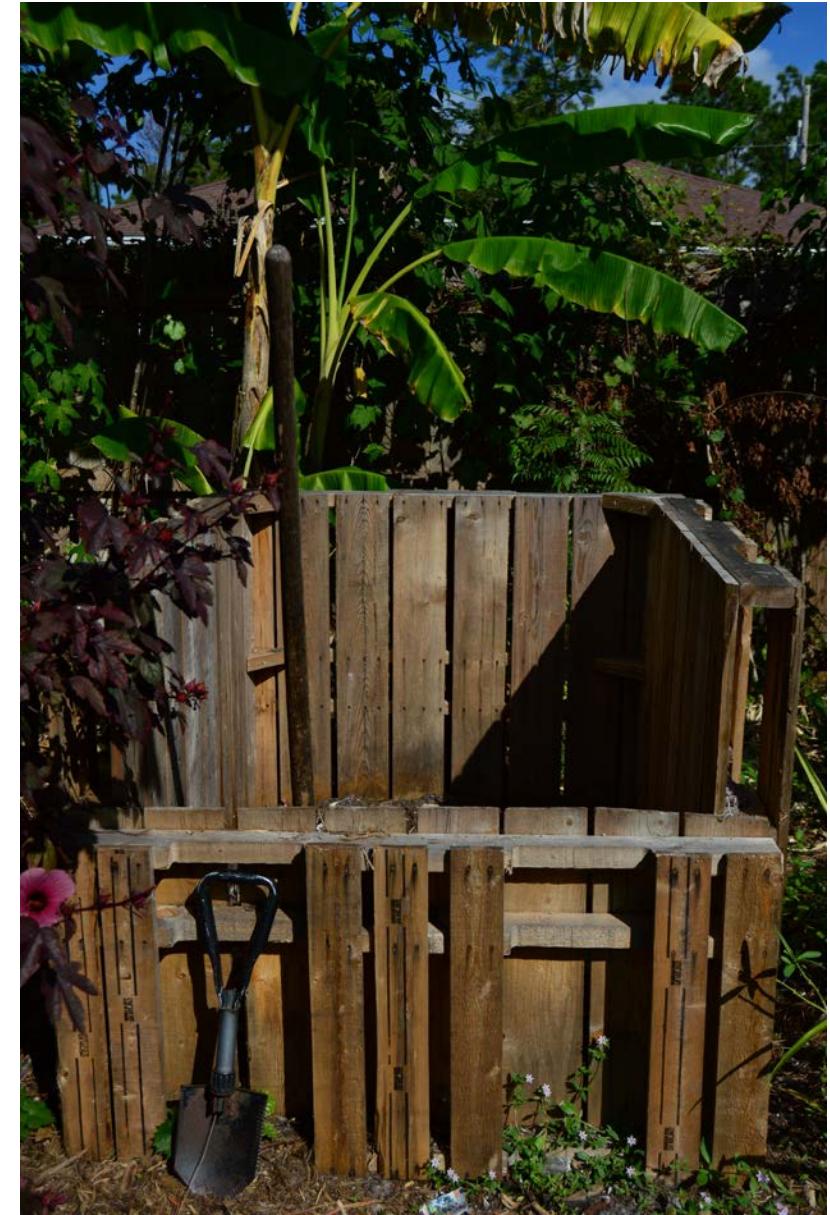




Reuse in the garden

Borders, pots, beds, get creative!







A dense, lush tropical forest scene. In the foreground, there is a shallow pool of water reflecting the surrounding trees. The water is a mix of dark and light blue/green. The forest is filled with various tropical plants, including palm fronds and broad-leaved plants. The trees have thick trunks and are covered in vines and epiphytes. The lighting suggests it's either early morning or late afternoon, with sunlight filtering through the canopy.

Questions, comments, suggestions?