

# IMPACTS OF DROUGHT ON WILDLIFE



# Impacts at a Glance – It's all about Habitat

- Habitat for wildlife is food, water, cover, and useable space
- Drought causes poorer habitat suitability
- Lower habitat suitability leads to increased mortality through starvation, predation, reduced production and recruitment (fewer young survive)
- Continued drought accelerates negative impacts to all wildlife populations because habitat gets worse
- Impacts tend to be cumulative = fewer critters

# Drought Impacts to Habitat

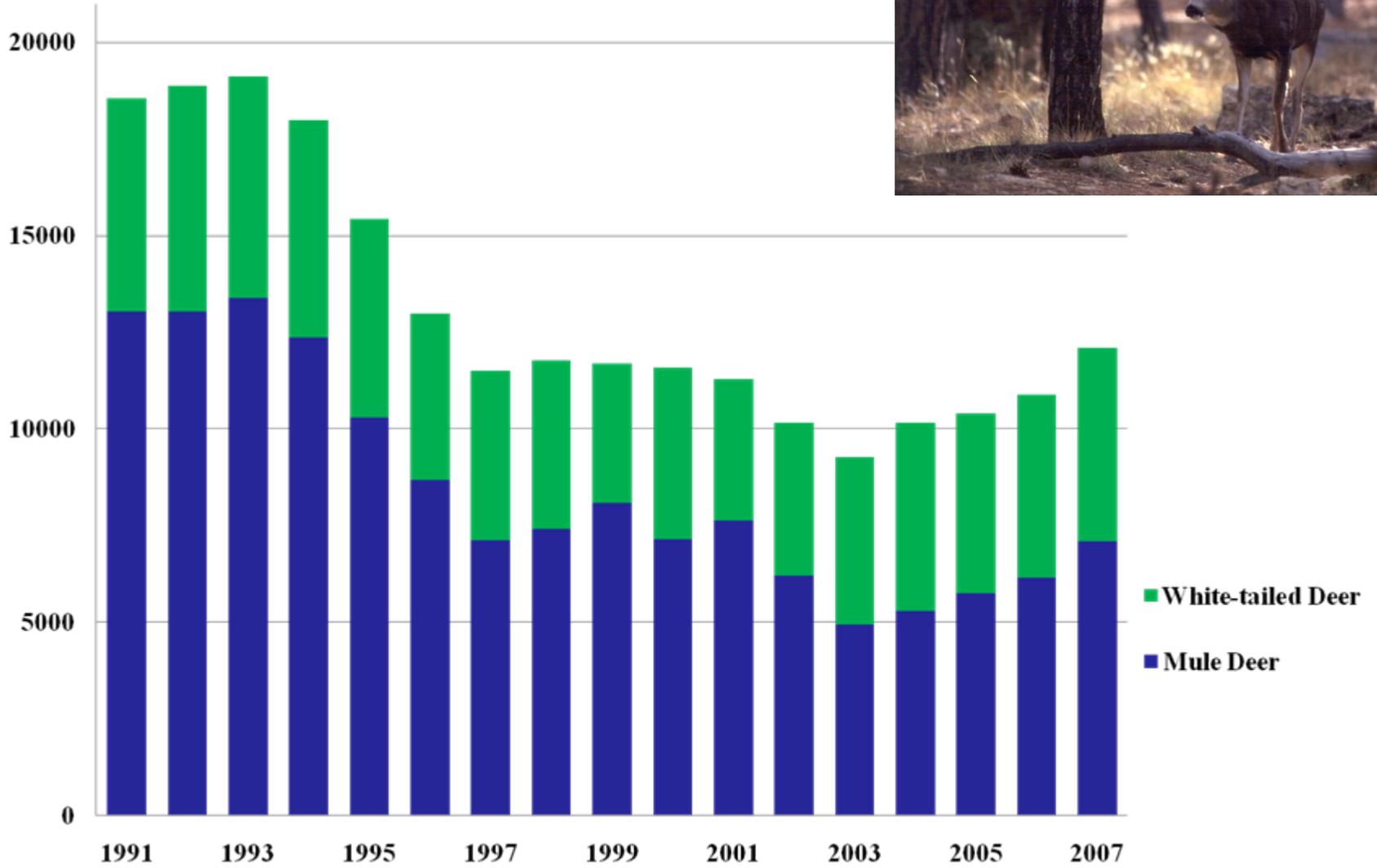


- Dry habitats like those in the Southwest deserts are more sensitive to slight variations in rainfall than wetter habitats.
- Many impacts are indirect, such as drought stress and increased susceptibility of plants to insect damage.
- Because the Southwest is so dry, habitats recover at a much slower rate than in wetter areas of the country
- Drought lowers ‘carrying capacity’ of habitat, so wildlife populations decline

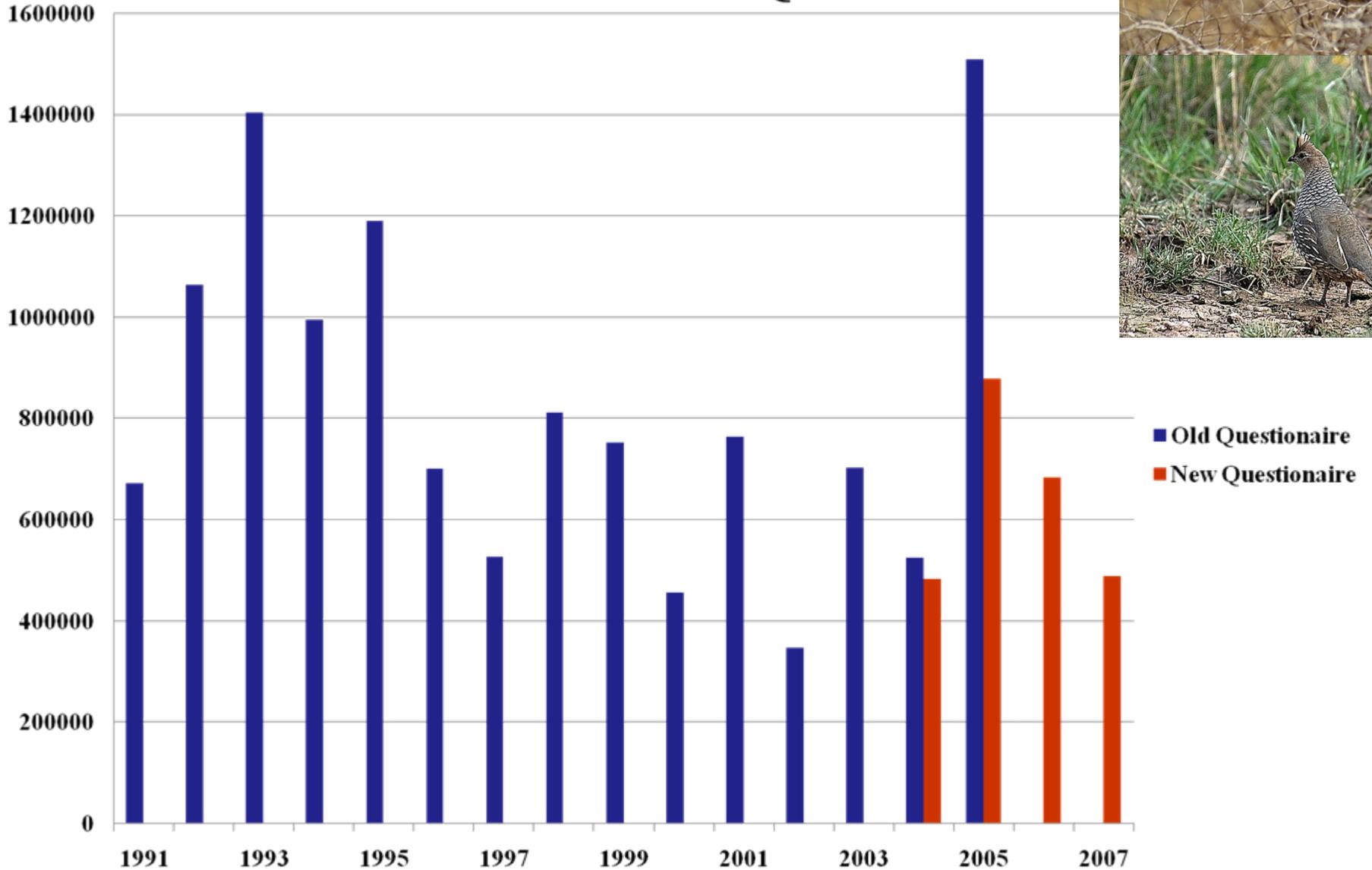
# Variation of Impacts on Wildlife

- Severity of impacts varies by wildlife species
- K-selected species (long-lived, few large well-developed young, good parental care) and sensitive species populations are typically impacted more drastically. Abundance tends to show definite trends in response to habitat condition. Habitat carrying capacity can dictate population size (e.g., deer, elk, predators).
- r-selected species populations (short-lived, many young, less parental care) are more resilient to annual impacts. Show wide variation year-year in abundance. Carrying capacity for these species is rarely (if ever) achieved (e.g., quail, rodents)

# Deer Harvest



# Gambel's and Scaled Quail Harvest



# Impacts to all Wildlife

- Similarities exist regarding impacts to game and nongame, terrestrial and aquatic, predators and prey
- Sensitive species (T&E, others) are greatly impacted by long-term drought since this represents another major limitation to population increase
- Some species of fish, birds, mammals, reptiles, and amphibians have lost crucial habitats as a direct or indirect result of long-term drought.
- Drought tends to concentrate wildlife, making them much more susceptible to disease and predation
- Drought + Habitat Fragmentation = reduced wildlife populations and increased challenges for Wildlife Agencies

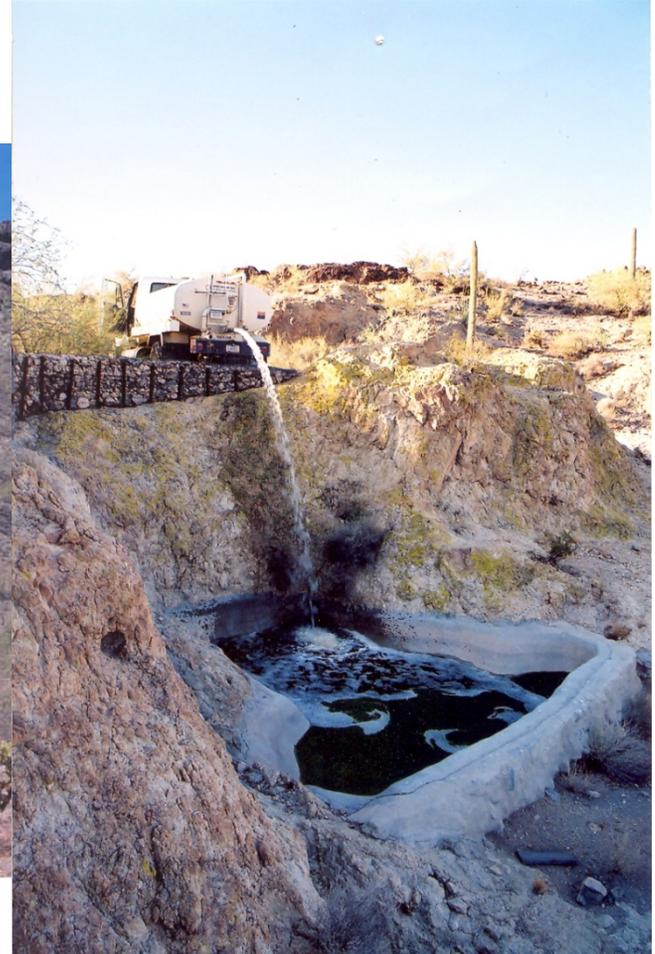
# Economic Impacts of Declining Wildlife

- Loss of direct and indirect \$ for local Arizona communities from hunters and non-hunters alike
- Reductions in customer outlay for sporting goods, etc.
- Fewer Federal \$ for Wildlife Management
- Represents a direct loss to Arizona Game and Fish Department in license revenues
- Times of poor habitat quality require increased management actions from AZGFD and others, despite reduced \$

# Increased Management Actions

- During periods of low wildlife abundance, survey efforts must increase
- More effort and \$ for population maintenance
- Water catchment maintenance/water hauling costs increase
- Habitat maintenance costs increase
- Many species move into town in search of water and food
- ‘Nuisance’ wildlife calls increase as human-wildlife conflicts in urban settings increase

# Water Developments and Water Management



# Tucson Electric Power Helping Out in Region 5



# Total Number of Department Water Developments

Development Type	
Typical Collection Catchments	617
Pot Holes	100
Storage Tank/Drinker Only	5
Spring	86
Well/Windmill	9
<b>TOTAL</b>	<b>817</b>

# Water Hauling Comparison Data

- 1996 and 2002-hauled approximately 1.4 million gallons of water per year to wildlife by every conceivable source (Game and Fish, Utilities, Private Contractors and Volunteers)
- A typical year sees approximately 600,000 gallons of water hauled to wildlife
- 2008 is shaping up to be a very good year although September and October were hot and dry. AGFD has only hauled 173,200 gallons so far!

# Bighorn Ram at Water



# Ram at Waterman Mountains 2008



# Ewes and Lambs Watering in GMU 15 C

## July 2007



# Sheep Watering in GMU15 C in July 2007



# Sonoran Pronghorn at Water



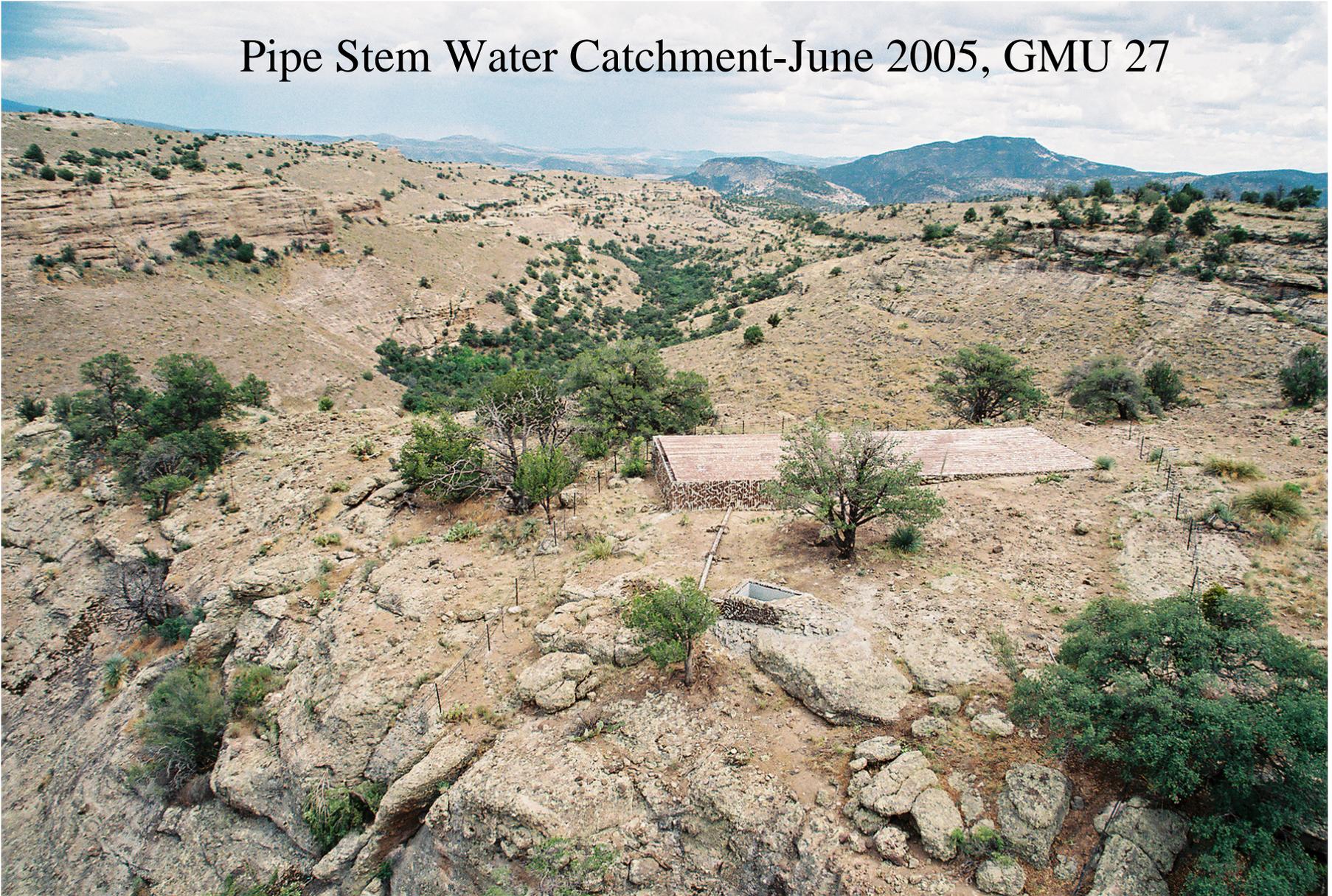
# Mule Deer Buck at Water



# Buzan Catchment - 2008, GMU 31



# Pipe Stem Water Catchment-June 2005, GMU 27



# Hauling Water to Pipe Stem



Questions?

