

# The Lake Mead sport fishery and effects of changing lake levels

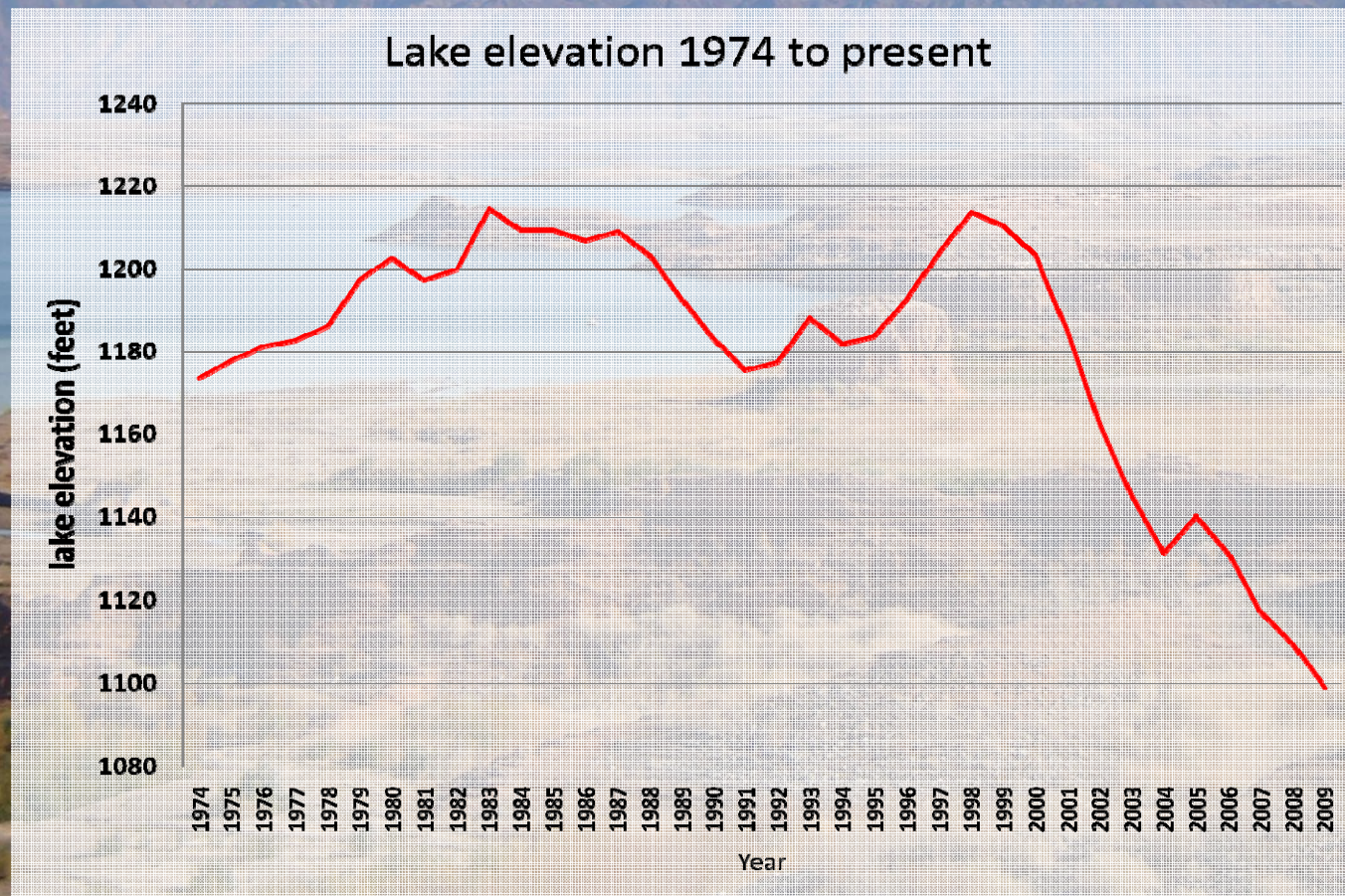
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Current lake levels and trends represent an unprecedented change of conditions in context of the modern, multi-level fishery





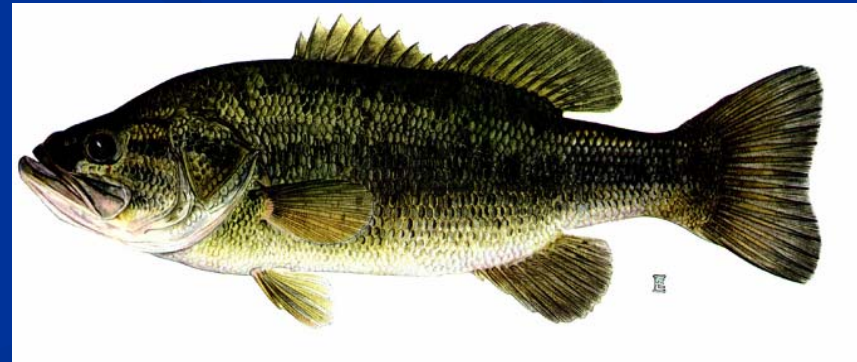
# The Lake Mead fishery

- Striped bass
- Largemouth bass
- Smallmouth bass
- Channel catfish
- Panfish
- Winter rainbow trout
- Threadfin shad as the primary forage fish (for now)



- Striped bass make up over 80% of the annual angler harvest

- Black bass are primarily catch and release but comprise a significant % of angler use days



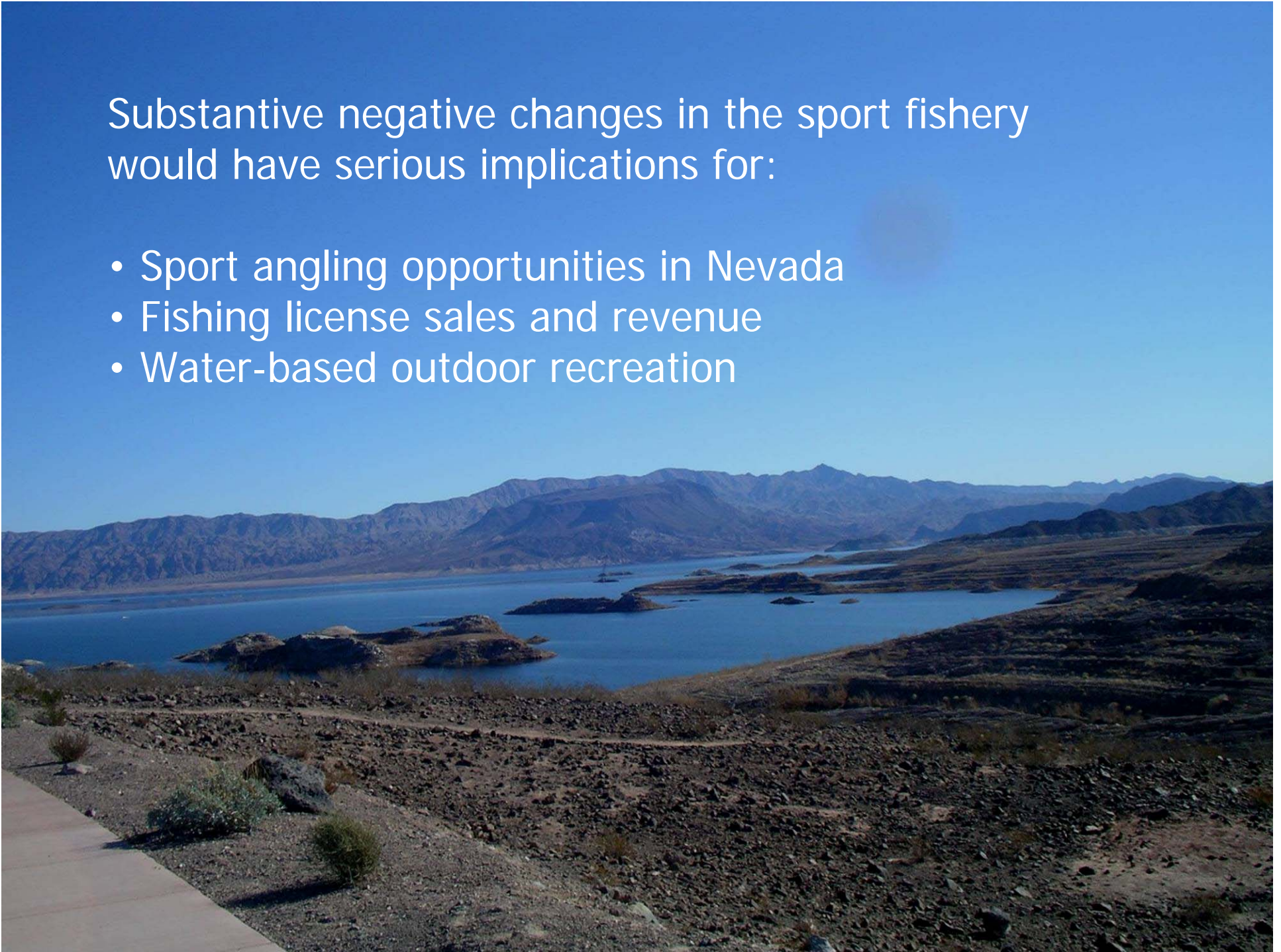
# Importance of the fishery

- Lake Mead is the single largest fishery in the State of Nevada (angler use days)
- Average use is >200,000 AUD per year (2004-2008)
- Average annual harvest is > 675,000 fish
- Angler success exceeds 3.5 fish per angler day in most years



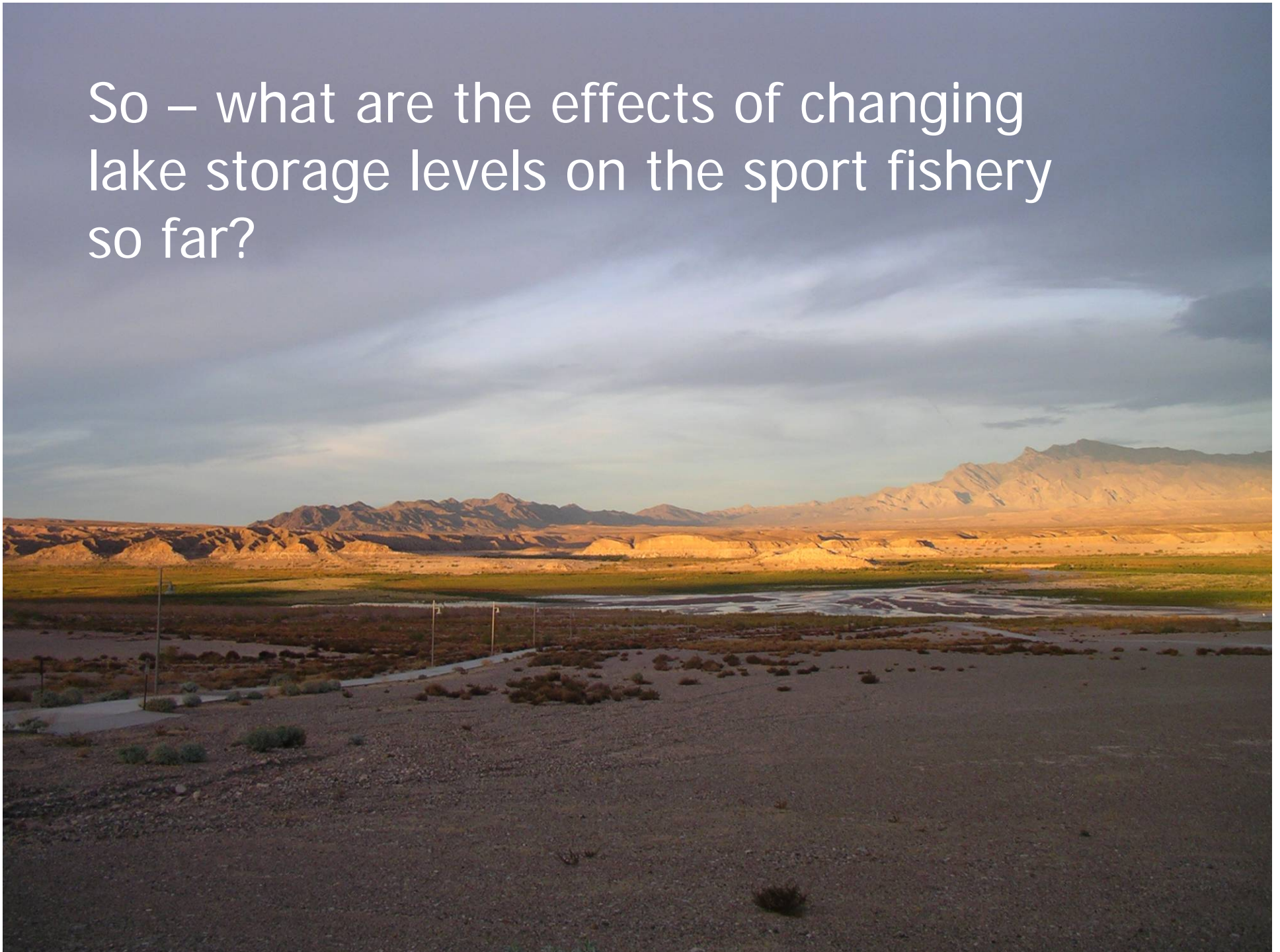
Substantive negative changes in the sport fishery would have serious implications for:

- Sport angling opportunities in Nevada
- Fishing license sales and revenue
- Water-based outdoor recreation





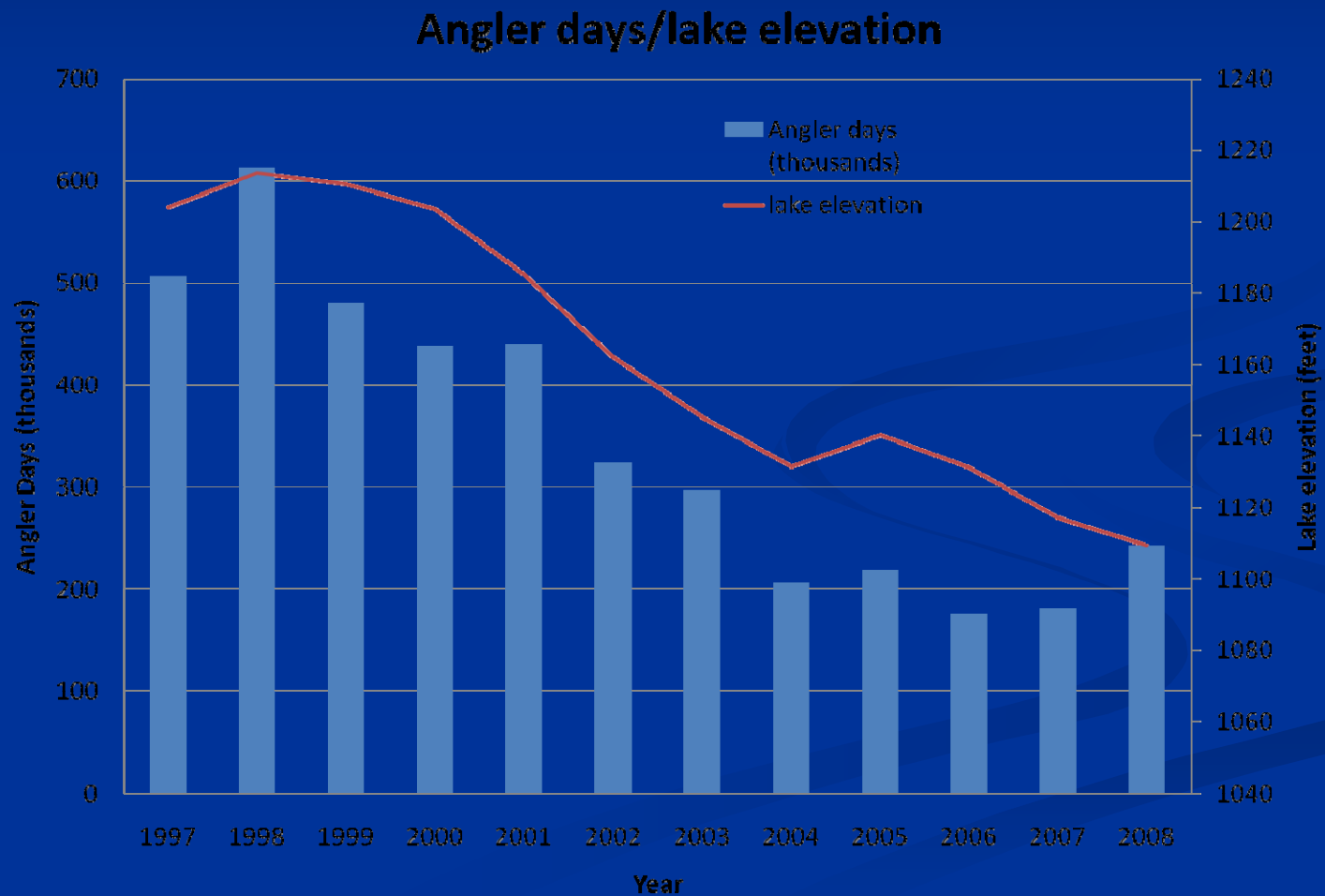
So – what are the effects of changing lake storage levels on the sport fishery so far?



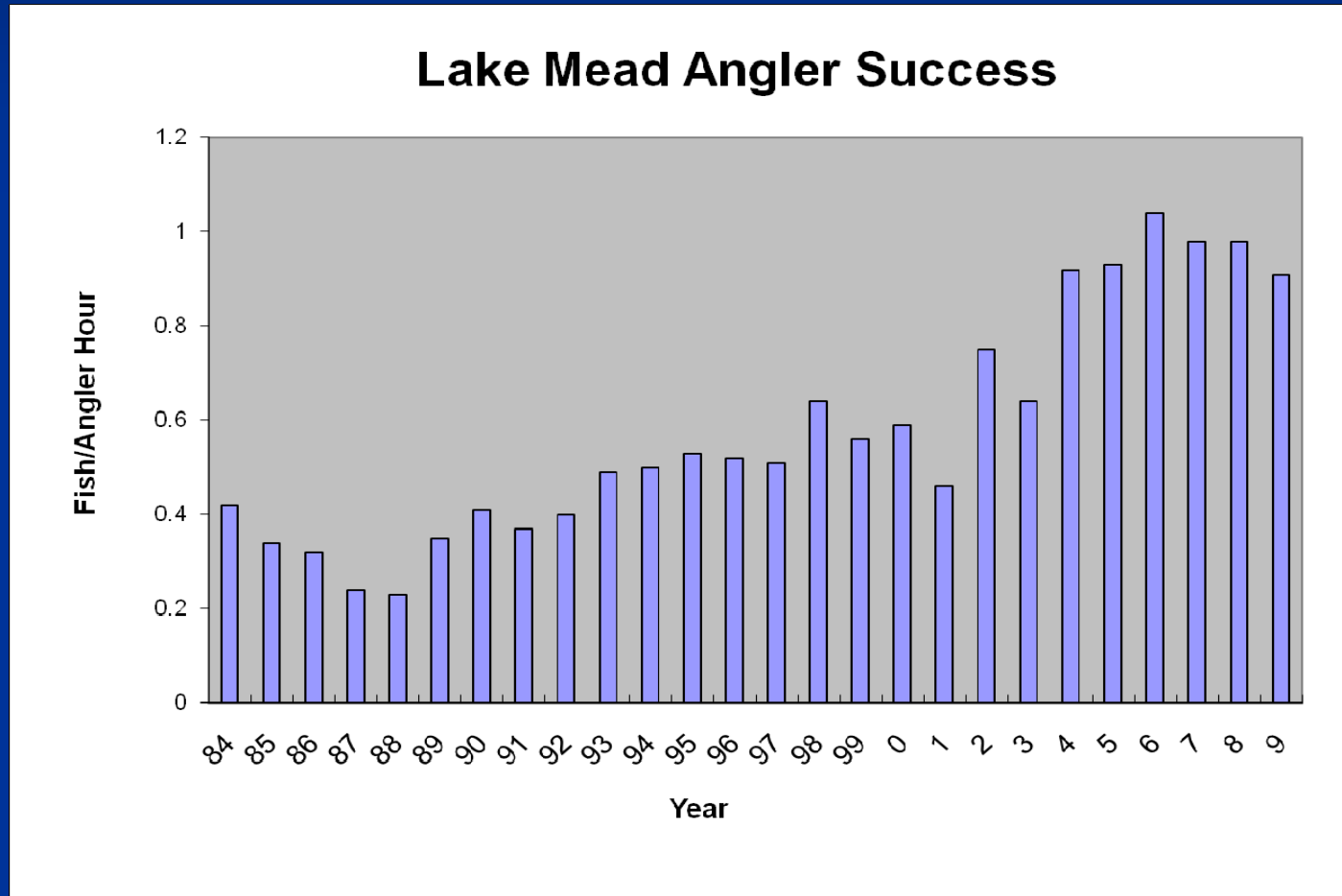
- The Lake Mead sport fishery is substantially different than the one subject to previous extremely low storage levels in the 1960s:
  - Pelagic striped bass fishery
  - Winter put-and-take rainbow trout stocking
- Have these changes increased resiliency of the reservoir fishery to radical changes in lake levels?



Angler use has declined substantially since 2000 but in part because of factors *unrelated to changes in the fishery*

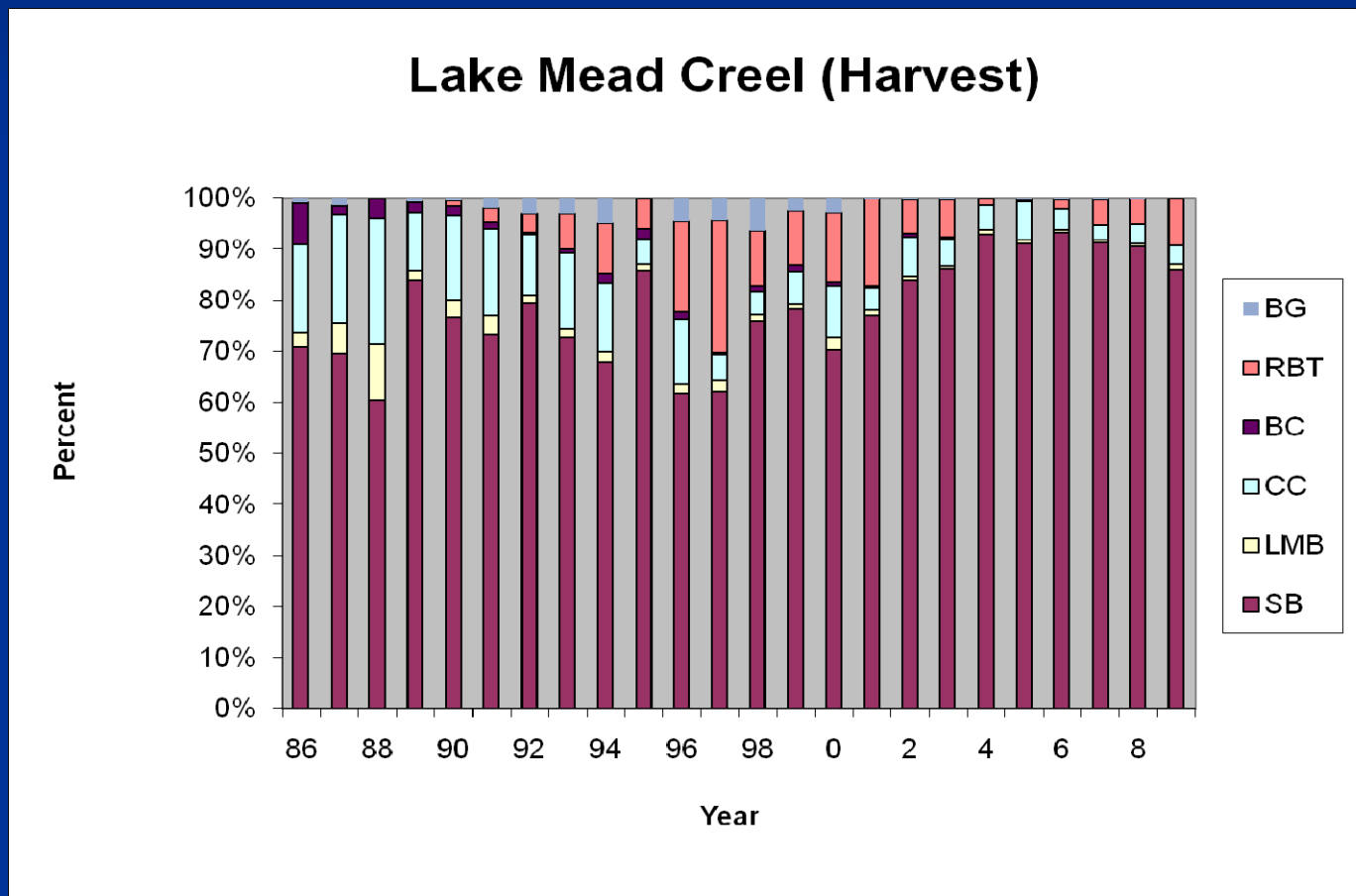


Angler success has remained at record high levels despite changing lake conditions

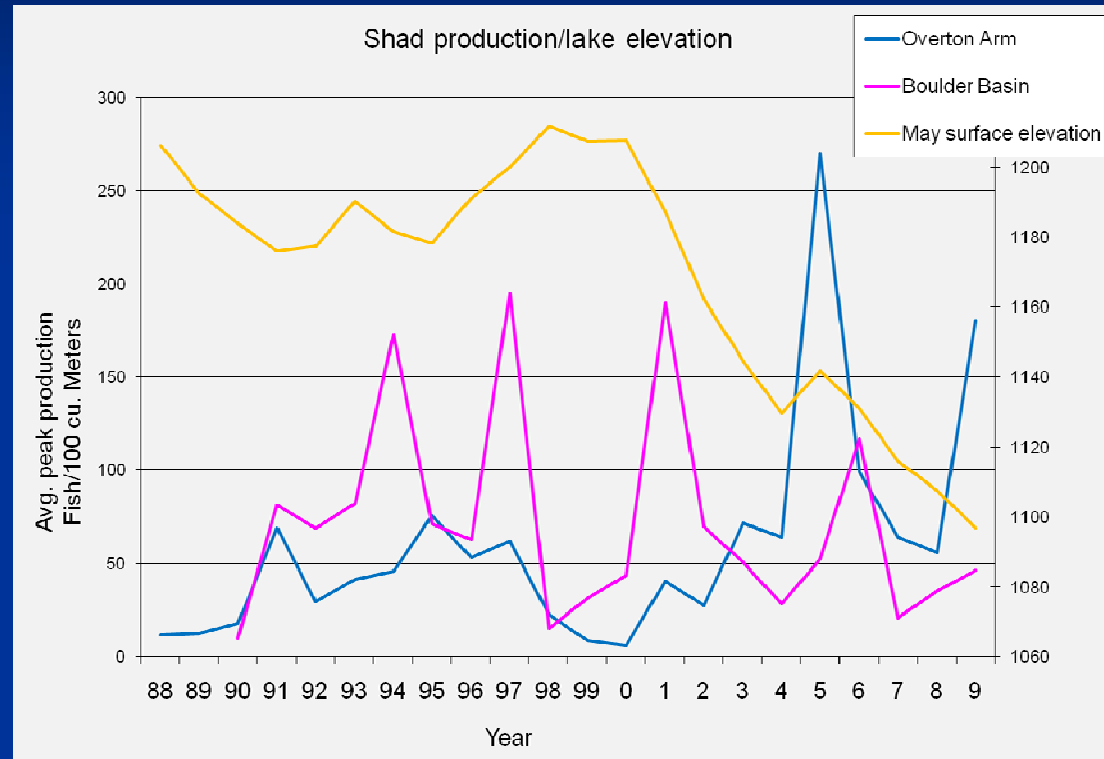




However – striped bass have increased as a percentage of angler creel (observed harvest)



Striped bass continue to show good average condition factor in excess of 1.1  $K^f$  with normal seasonal and spatial variation



Threadfin shad continue to show acceptable production with no change from typical annual fluctuations, maintaining the pelagic forage base



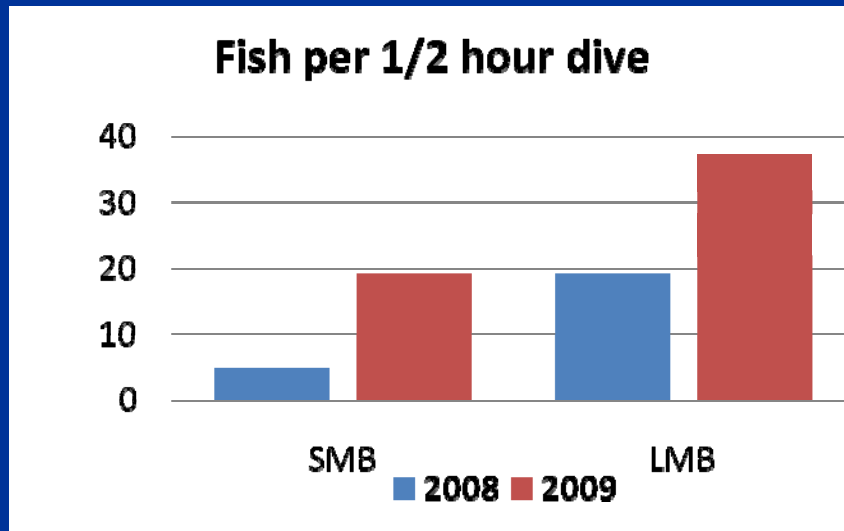
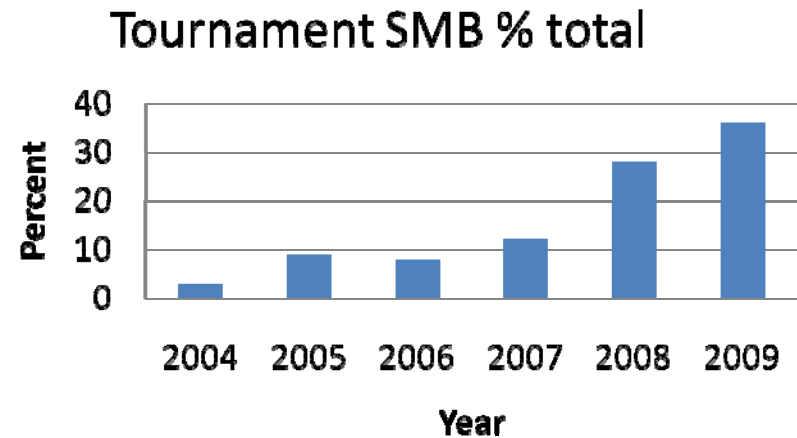
- Changes in littoral zone dependent species have not clearly occurred based on both NDOW monitoring and angler harvest
  - Black bass, catfish, panfish
  - Gill net and electrofishing catch rates for several species actually increased in 2009
  - Angler harvest for these species has been relatively consistent since 2004 as a percentage of observed creel

The one significant change – Smallmouth bass?





Smallmouth bass have increased significantly lake wide in all sampling methods and as a percentage of harvest and tournament creel, in total numbers and in proportion to largemouth bass



A function of habitat changes as lake levels decline?

- more coarse high gradient substrates
- loss of near shore cove habitats

Tournament movements accelerate distribution changes

In summary...





There has been little substantive change in the sport fishery so far, *however...*



# Several changes and trends suggest uncertainty for the future

## ■ Striped bass dynamics

- Angler harvest and fish condition has remained good through 2009 but...
- Average length and weight declined in creel surveys
- Decrease in catch per unit effort in 2009 monitoring

## ■ Prey base and pelagic forage resources

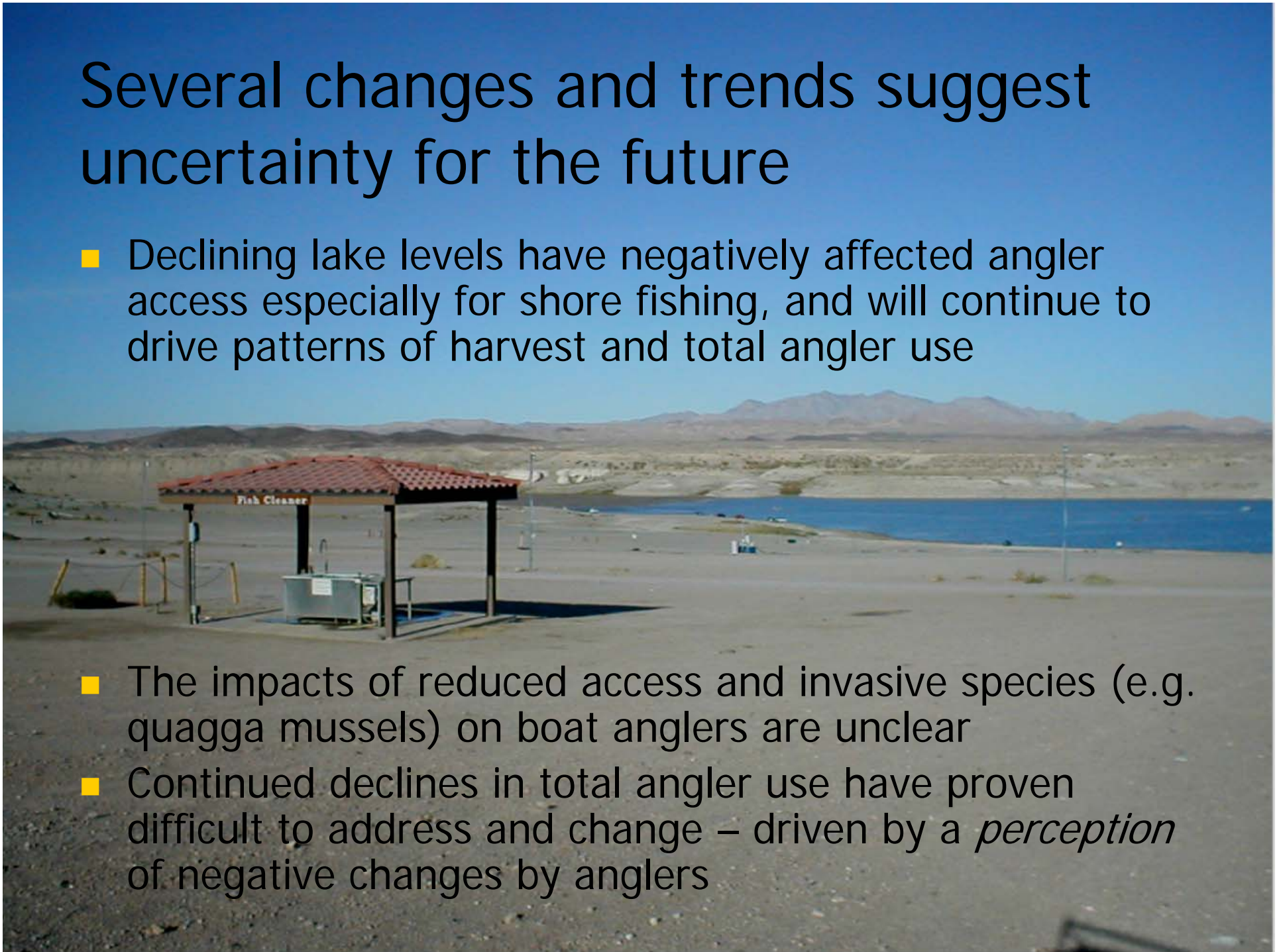
- Continued lake declines could shift or alter patterns and abundance of threadfin shad production
- Huge increases in gizzard shad abundance and distribution are an unknown factor
- Quagga mussel effects on the zooplankton community and prey base are still unclear



# Several changes and trends suggest uncertainty for the future

- Declining lake levels have negatively affected angler access especially for shore fishing, and will continue to drive patterns of harvest and total angler use

- The impacts of reduced access and invasive species (e.g. quagga mussels) on boat anglers are unclear
- Continued declines in total angler use have proven difficult to address and change – driven by a *perception* of negative changes by anglers





Thank you!

Questions?

