

HEFR – Winners, Losers, and Hedge Betting

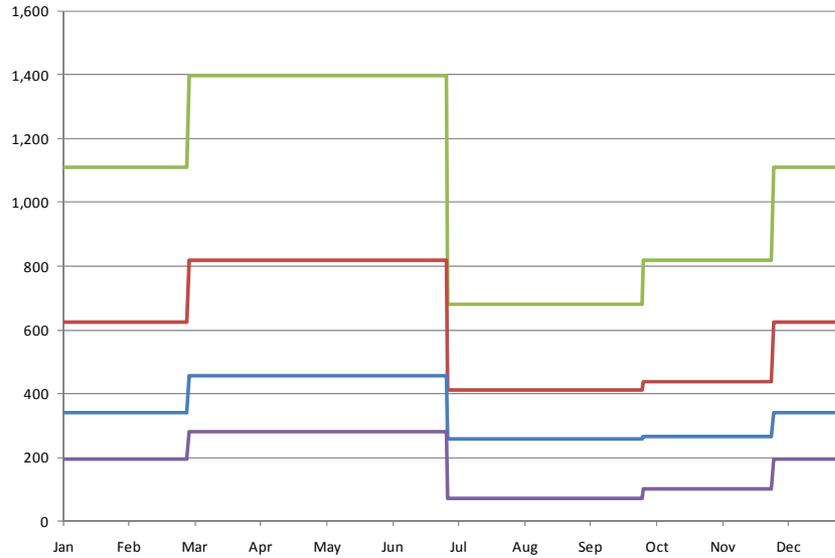
An Ecological Perspective

- Life cycles of plant and animal species have evolved, are adapted to, and depend on dynamic flow patterns.
 - Alligator gar rely on flood events to successfully reproduce.
 - Nesting colonial waterbirds benefit from prey concentration during spring drought conditions.
- Environmental Flow Regime should emulate the variability and repetition that takes place in the historical record.
- Duration, frequency, and magnitude should emulate the record and include droughts events.
- To maintain biological diversity and abundance of organisms, **regime must incorporate the high, medium, and low flows components of a continuum.**

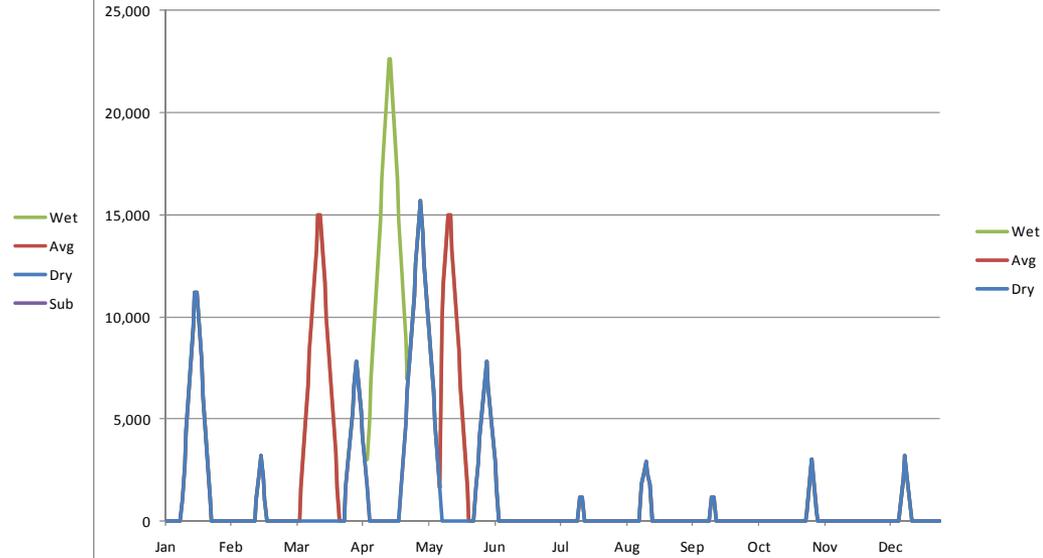
HEFR – An Ecological Perspective

- There is more than one way to skin a cat.
- Environmental Flow is multi- dimensional
- Frequency/seasonality
- Duration
- Magnitude
- Variability with Repeatability
- The link between hydrology and individual species is dynamic, i.e. there are species that are winners and those that losers at any given point in time.

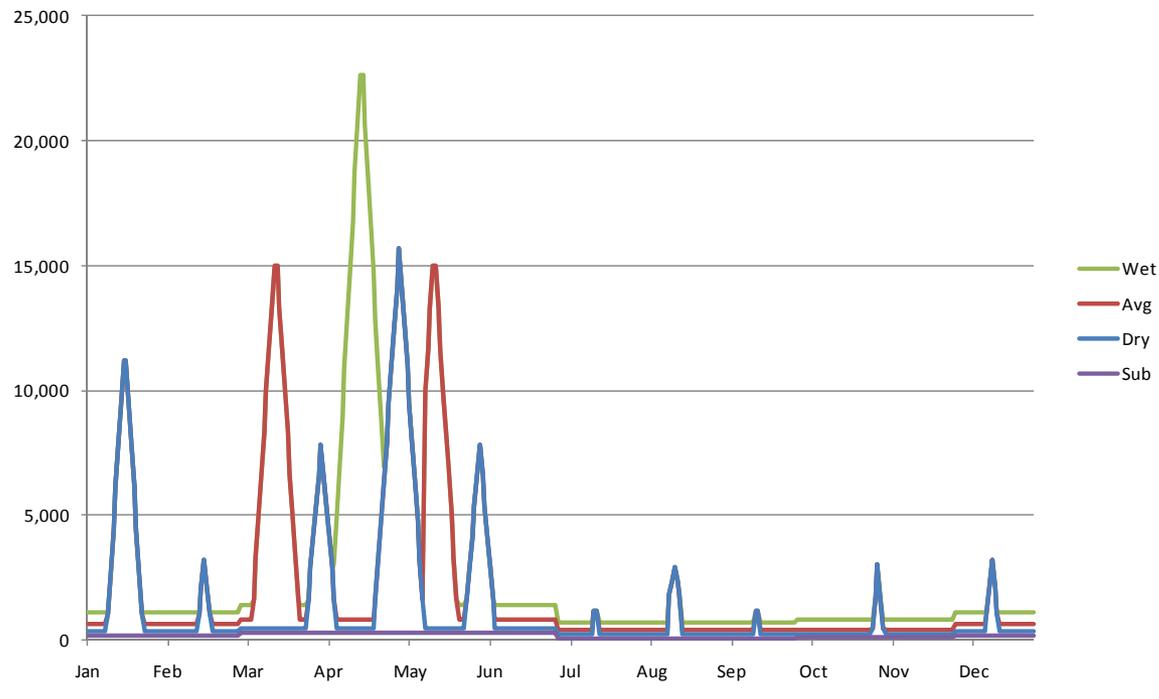
Base



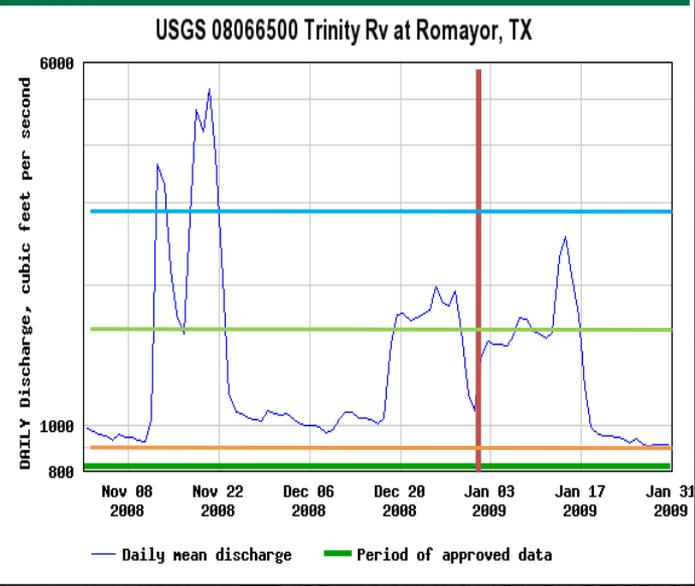
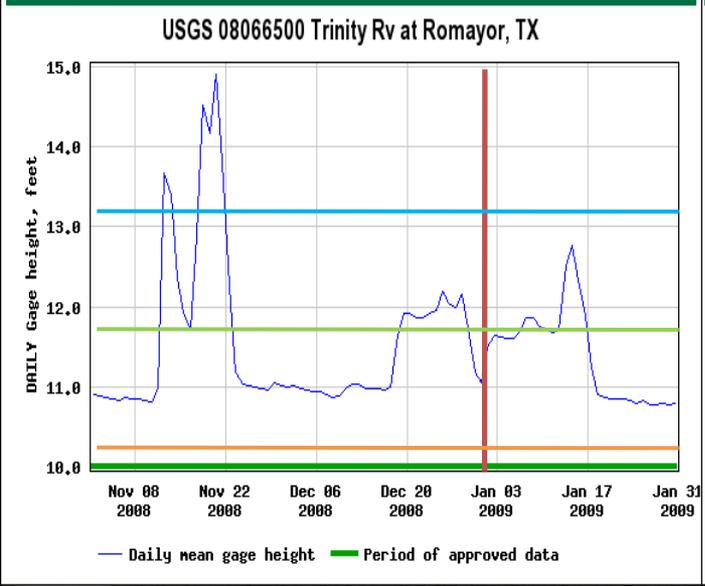
Pulse



Total



Oxbow on Trinity River near Romayer

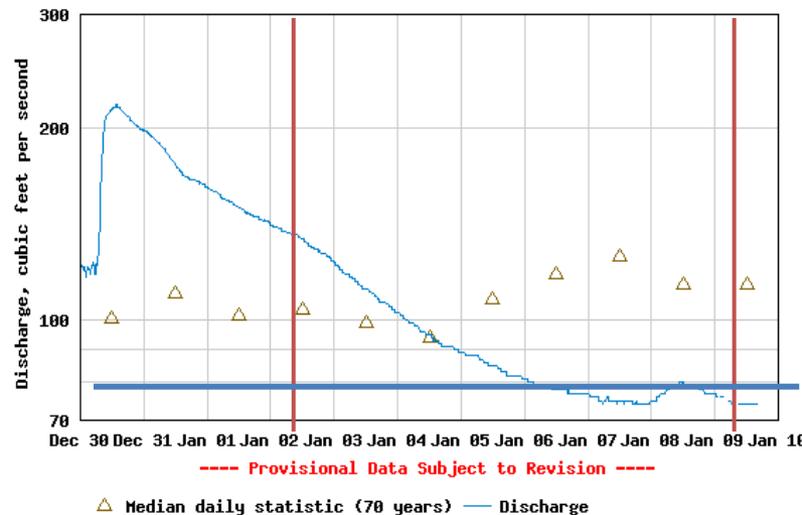


This is a large easily identified feature, there are similar but smaller features that cannot be detected via aerial imagery associated with the river and its tributaries that are influenced by changes in base flow.

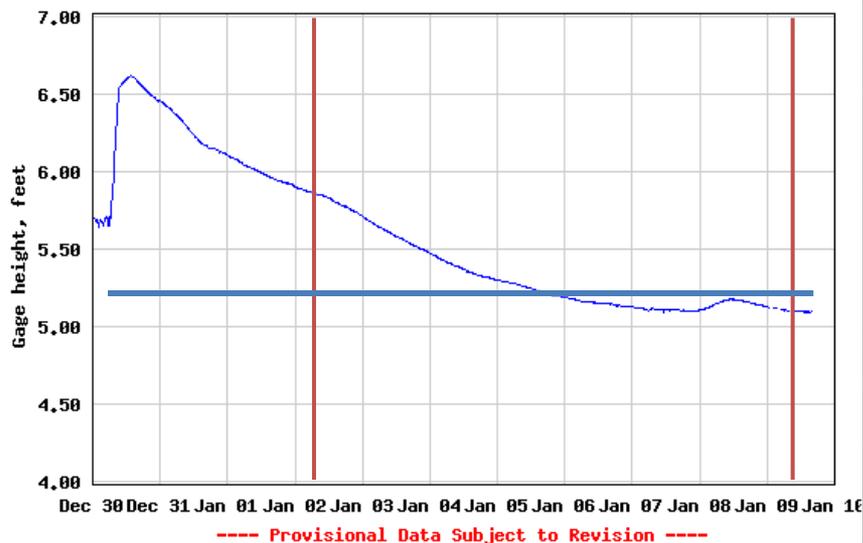
EF San Jacinto River at FM 2090



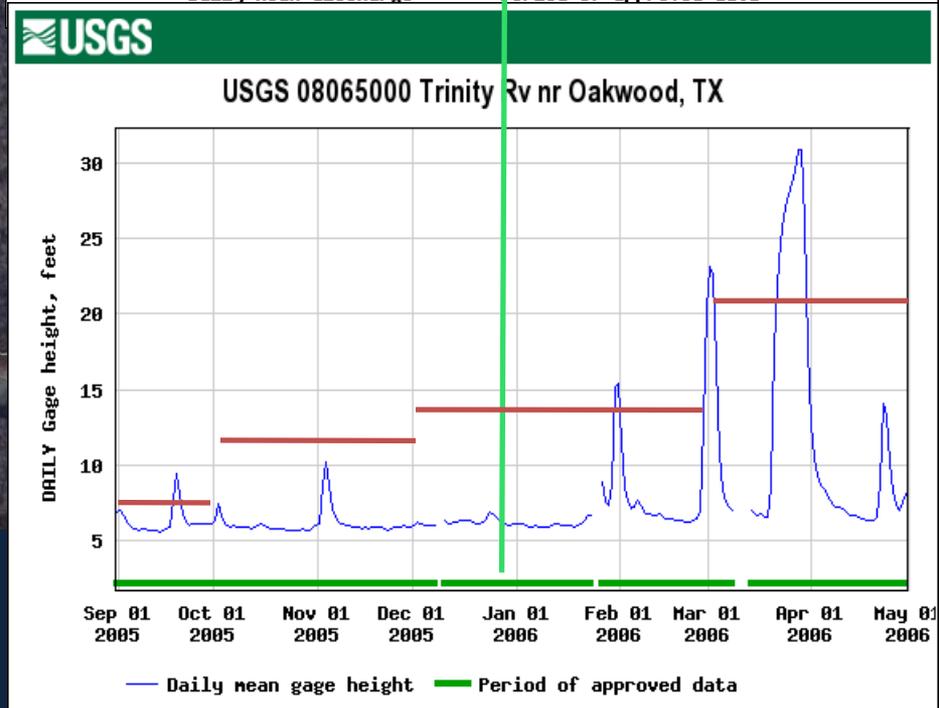
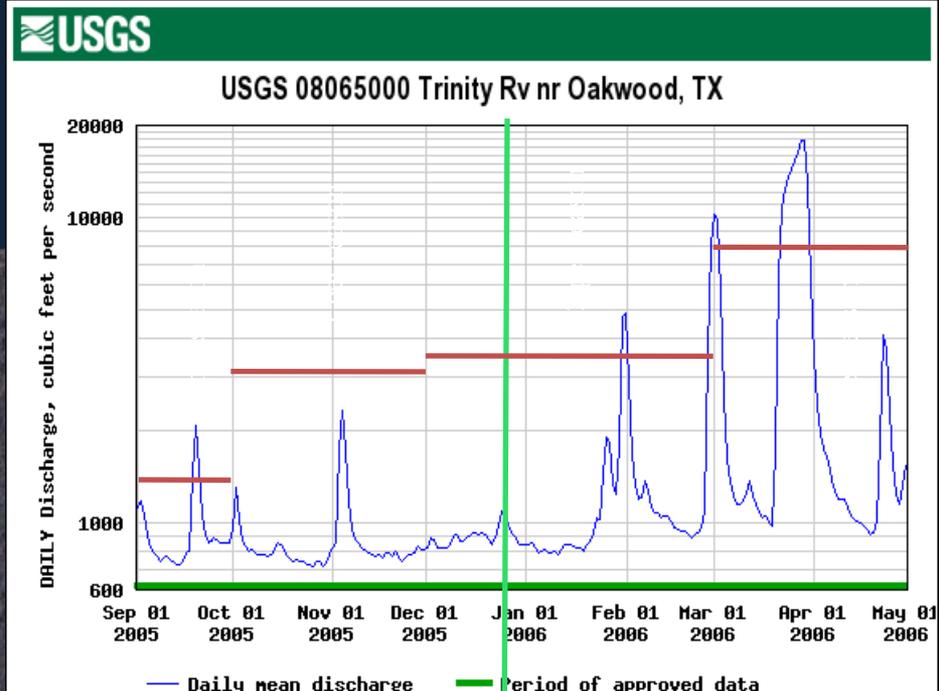
USGS 08070000 E Fk San Jacinto Rv nr Cleveland, TX

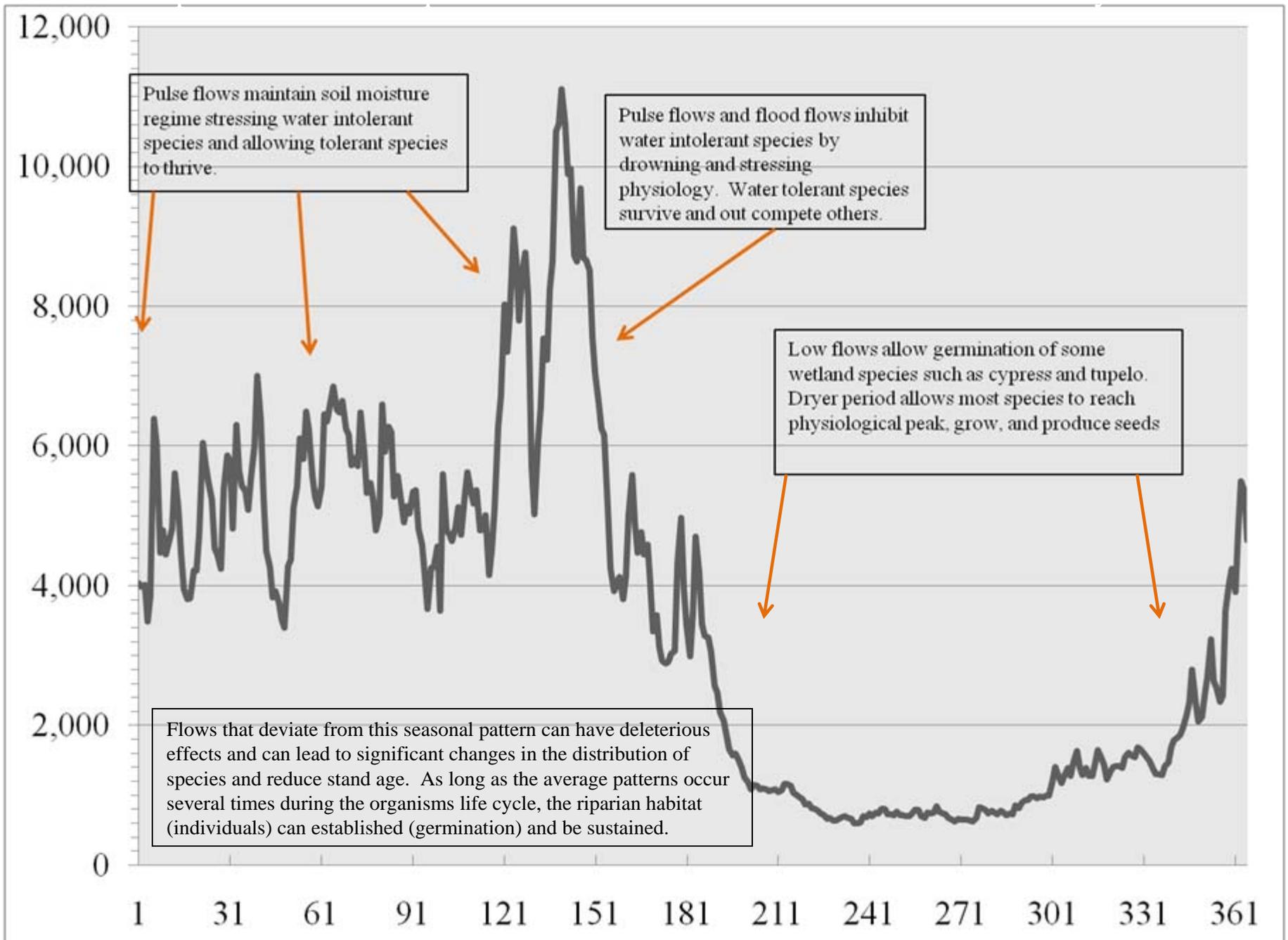


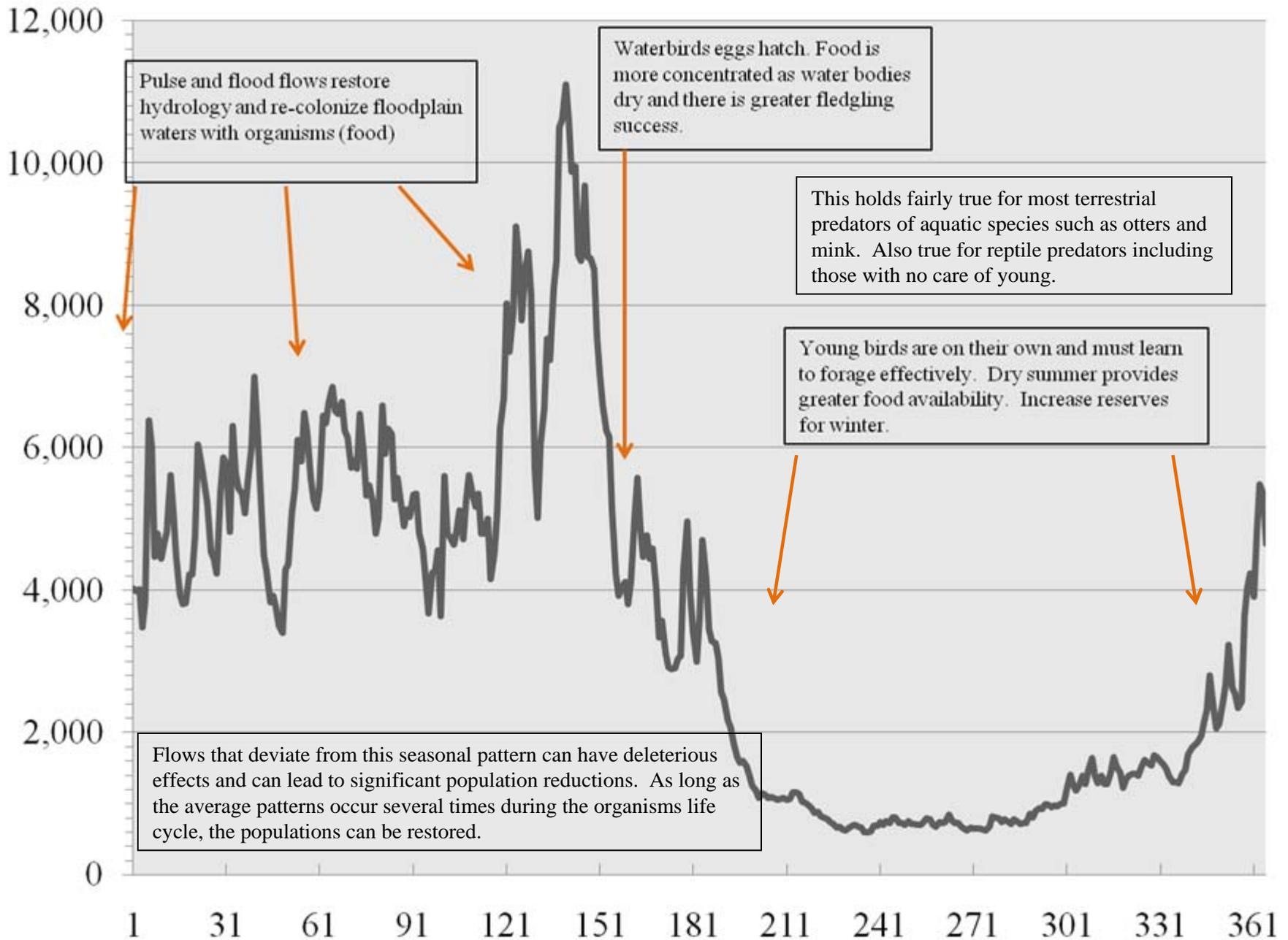
USGS 08070000 E Fk San Jacinto Rv nr Cleveland, TX



Backwater slough on Big Lake WMA – Pulse Flows







Conclusion

- Environmental Flow Regime should emulate the variability and repetition that takes place in the historical record.
- Duration, frequency, and magnitude should emulate the record and include droughts events.
- To maintain biological diversity and abundance of organisms, regime must incorporate the high, medium, and low flows events.
- HEFR appears to approach that goal. However, assessing the reach of river for habitat components is extremely important.