

# Biological Modeling for the Edwards Aquifer Recovery Implementation Program

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# Goal

Develop a biological model through the Edwards Aquifer Recovery Implementation Program that will be used to determine take and jeopardy for Edwards species. This biological model will be compatible with the Structured Decision Making Process providing stakeholders with open and inclusive process to develop their Habitat Conservation Plan.

**EDWARDS AQUIFER MINIMUM SPRINGFLOW FOR MAINTAINING LISTED SPECIES AT  
COMAL AND SAN MARCOS SPRINGS  
(Minimum springflow determined by USFWS)**

<b>SPECIES</b>	<b>MINIMUM FLOW (cubic feet/second)</b>
<b>"TAKE" LIMITS</b>	
<b>Comal Springs</b>	
Fountain Darter (without snail control)	200
(with snail control)	150
<b>San Marcos Springs</b>	
Fountain Darter	100
San Marcos Gambusia	100
San Marcos Salamander	60
Texas Blind Salamander	50
<b>"JEOPARDY" LIMITS</b>	
<b>Comal Springs</b>	
Fountain Darter (without snail control)	150
(with snail control)	60
<b>San Marcos Springs</b>	
Fountain Darter	100
San Marcos Gambusia	100
Wild Rice	100
San Marcos Salamander	60
Texas Blind Salamander	50

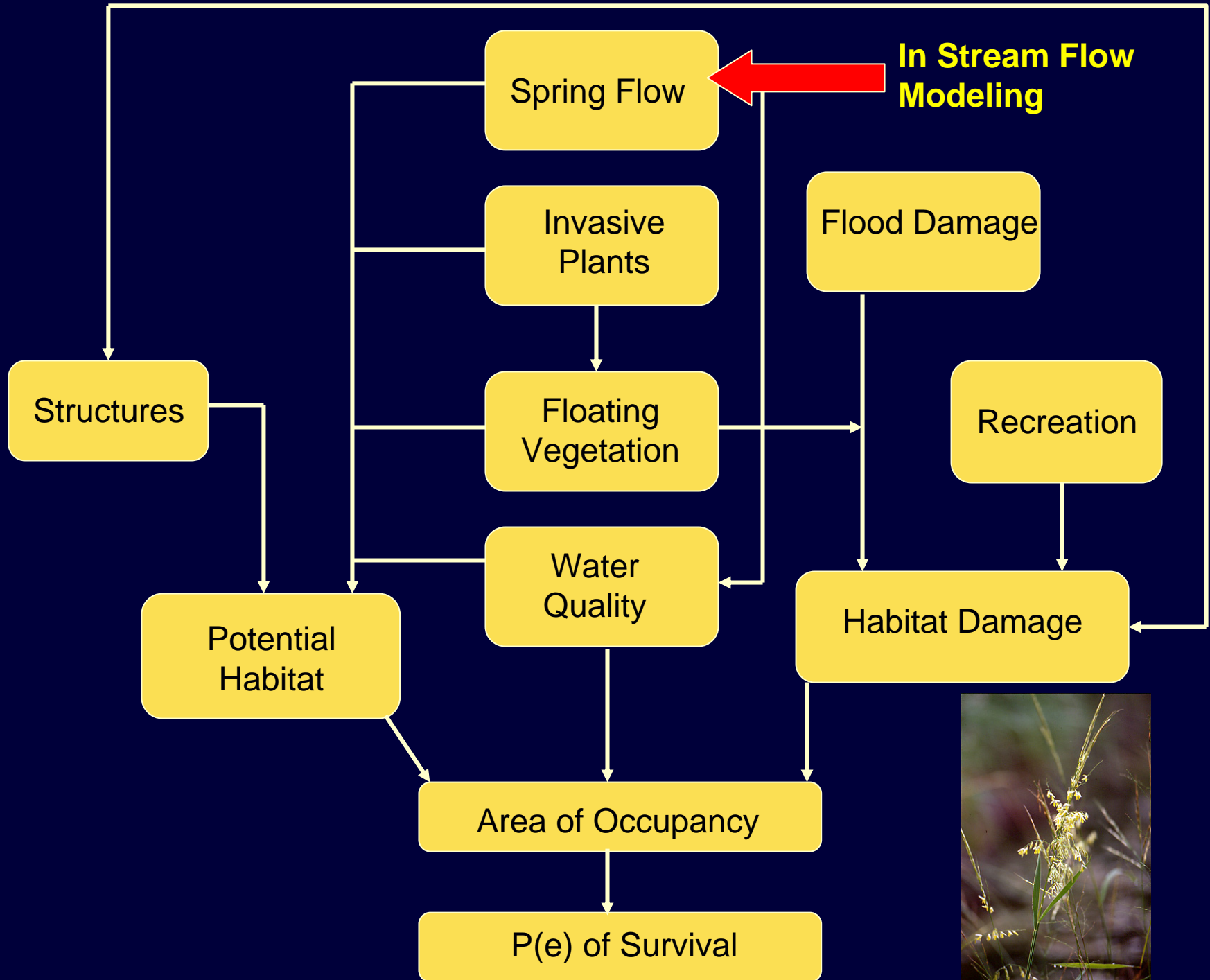
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- Prefers the SDM process to determine take and jeopardy levels through the RIP
- Do it right, so time is not wasted
- SDM provides for possible flexibility in developing management alternatives
- SDM process is compatible with the Recovery Planning process

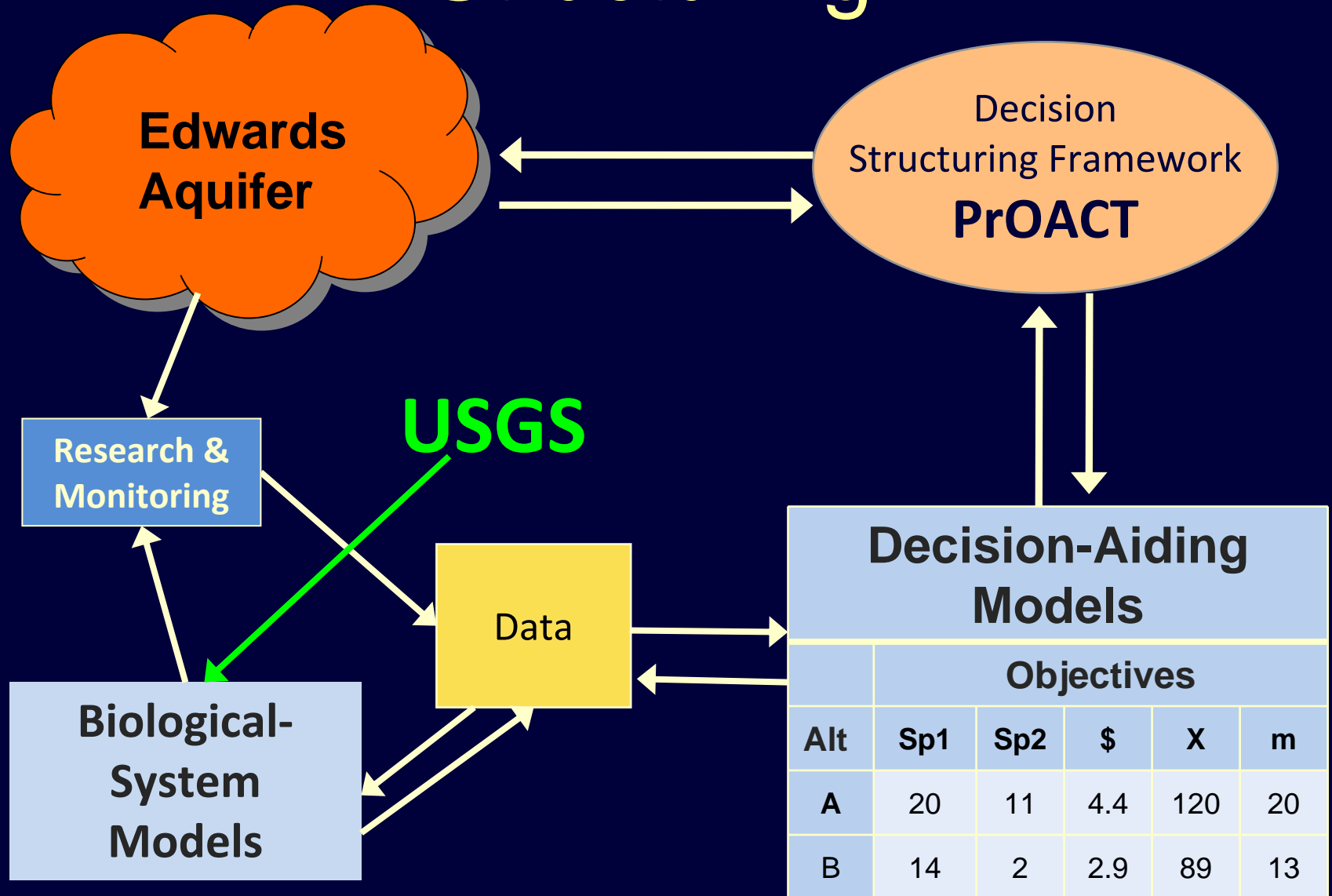
# Biological Modeling - Role of USGS

*USGS is uniquely qualified:*

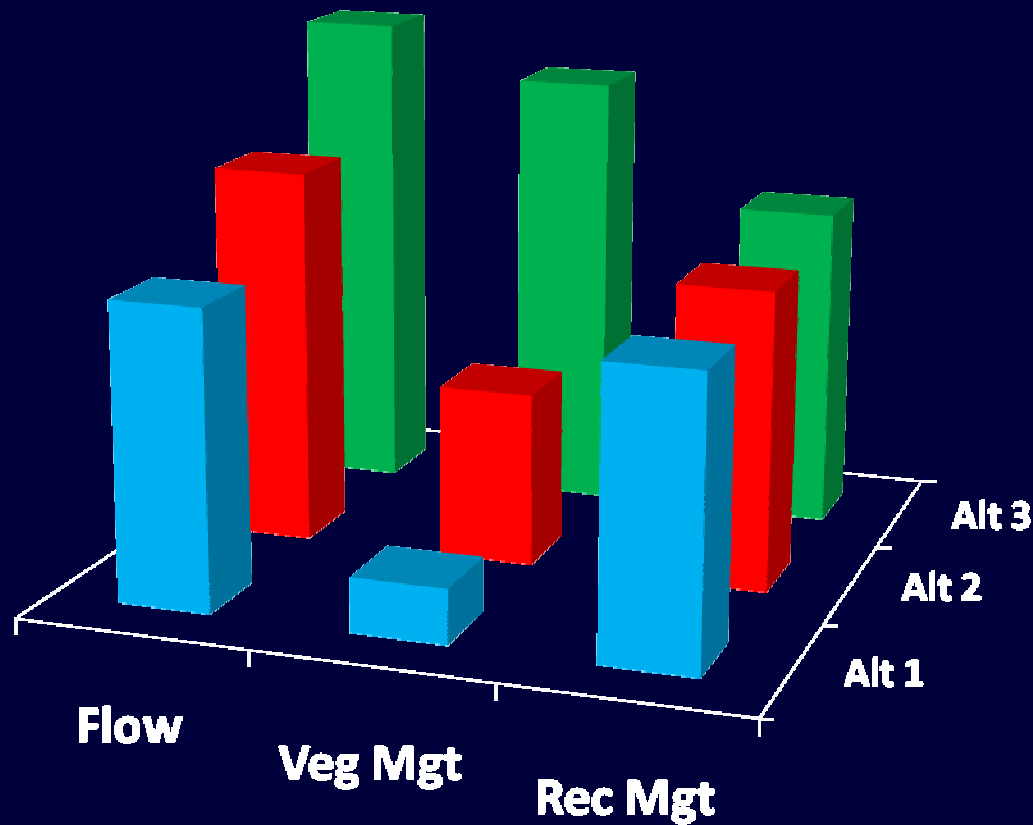
- Provide for an open and inclusive process
  - collaborative modeling that involves all stakeholders
  - transparency
- Expertise with endangered species requirements – jeopardy and recovery
- Expertise with Structured Decision Making
- Scientific Quality – Control Assurance



# Edwards Aquifer RIP Structuring



# Finding Factor *Combinations* Delineating RECOVERY



**Blue, Red, Green**  
Management  
Alternatives

equivalent reduction  
in extinction risk



# Summary

- SDM -> USGS -> provides a framework for RIP
- USGS uniquely qualified for biological modeling
- Interim flow numbers are OK for planning purposes – SB-3
- SDM / USGS biological modeling compatible with Revised Recovery Plan