Vegetation Monitoring Update

Status of Terrestrial Program and Proposed Projects for FY07- 08

B. Ralston, GCMRC, August 3, 2006

U.S. Department of the Interior
U.S. Geological Survey

Vegetation of Colorado River Ecosystem

- Mix of communities
- Related to multiple resources
  - Wildlife
  - Recreation
  - Cultural/archaeology
- Recognized by stakeholders as separate management objectives.

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Background

- Protocol Evaluation Panel Convened March 2000.
- RFP for Terrestrial Ecosystem Monitoring Released Fall 2000, field work started May 2001.
- May 2002 digital CIR flown for river corridor
- Vegetation Mapping Project Initiated March 2003.

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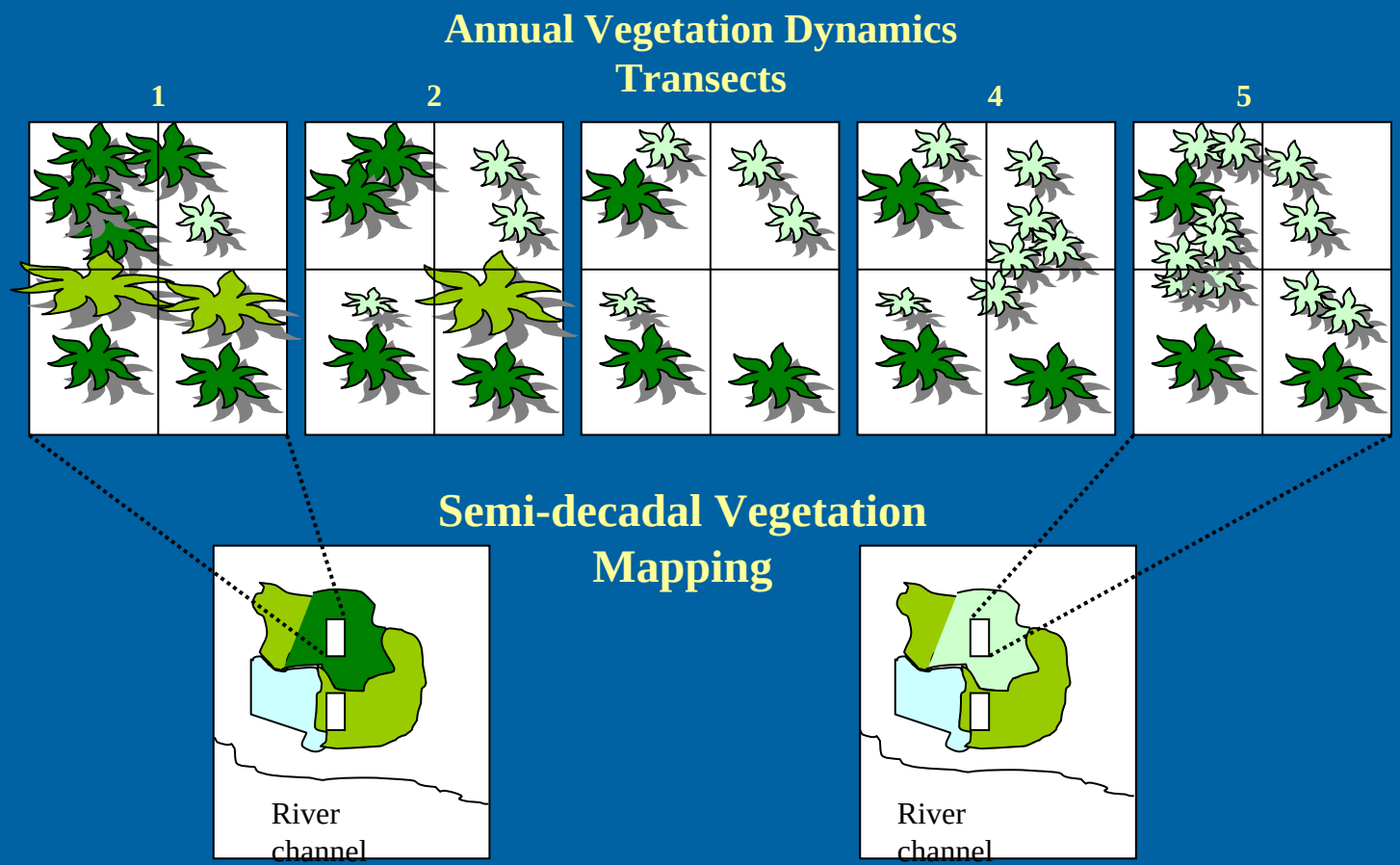
Temporal & spatial scales of change



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Definitions

- **Cover** – amount of ground surface covered by a plant.
- **Biomass** – amount of plant material produced over a given time period
- **Species richness** – number of species within a community.
- **Species diversity** – indication of the relative abundance of species within a community.

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Status – Terrestrial Monitoring

- **Simultaneous sampling of multiple terrestrial resources and annual vegetation transects.**

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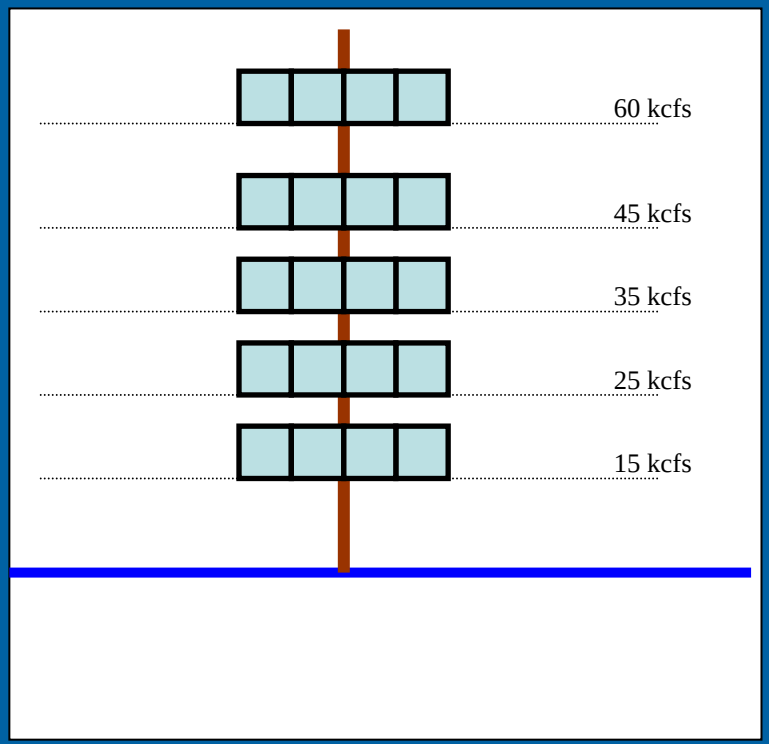

140 locations along the CRE

Probabilistic sample

Tied to specific surface elevations

Record cover, richness, diversity and wetland species score, surface soil texture

Composition annually at specific stage elevations

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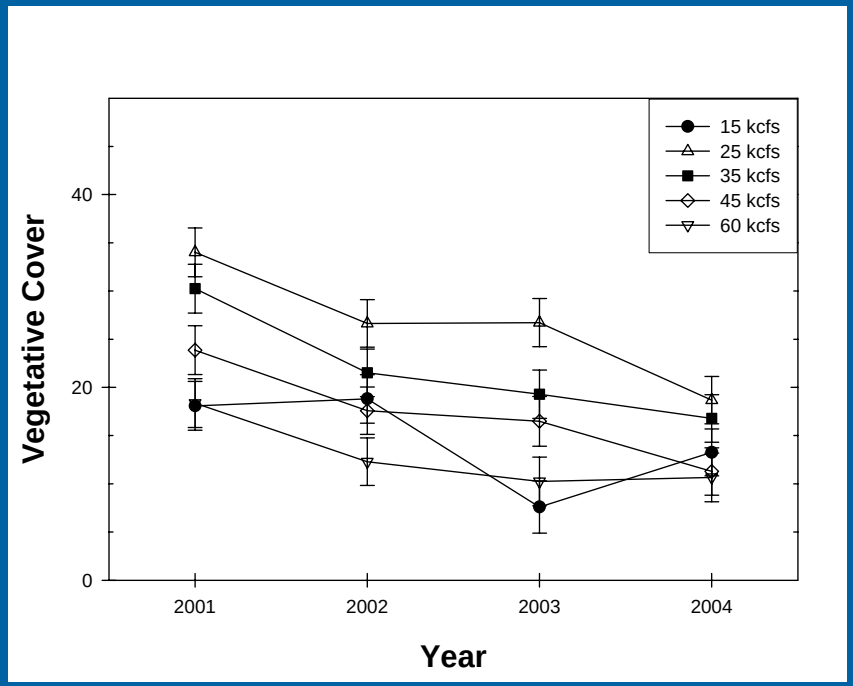
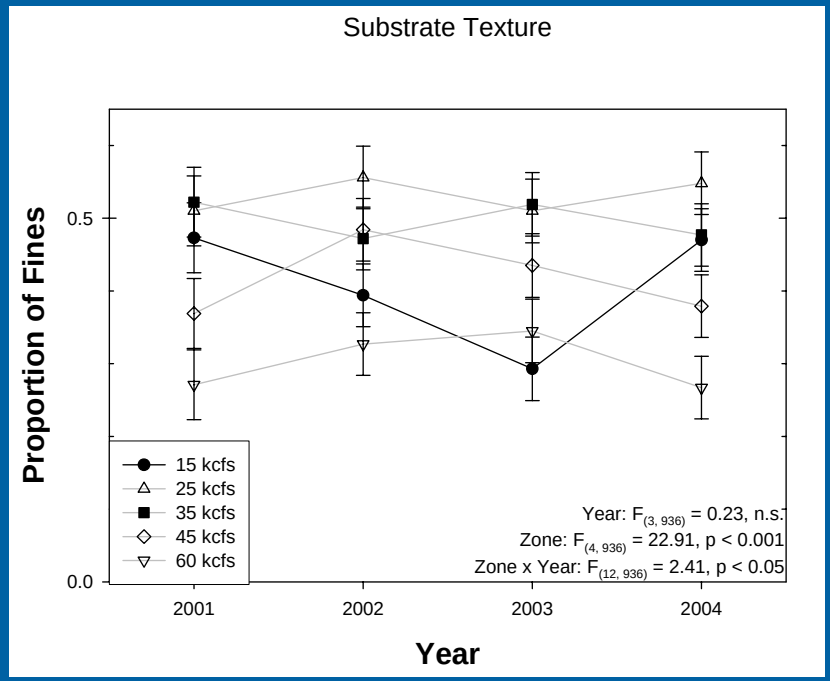
Results: Vegetation transects

Cover and substrate texture by surface elevation





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Proposed FY07 Bio 6.R2.07

- Convene Protocol Evaluation Panel of Terrestrial Program November 2007.
- RFP for Vegetation Transect March 2007, pending PEP recommendations.
- Cooperator identified June 2007
- Field work initiated September 2007.

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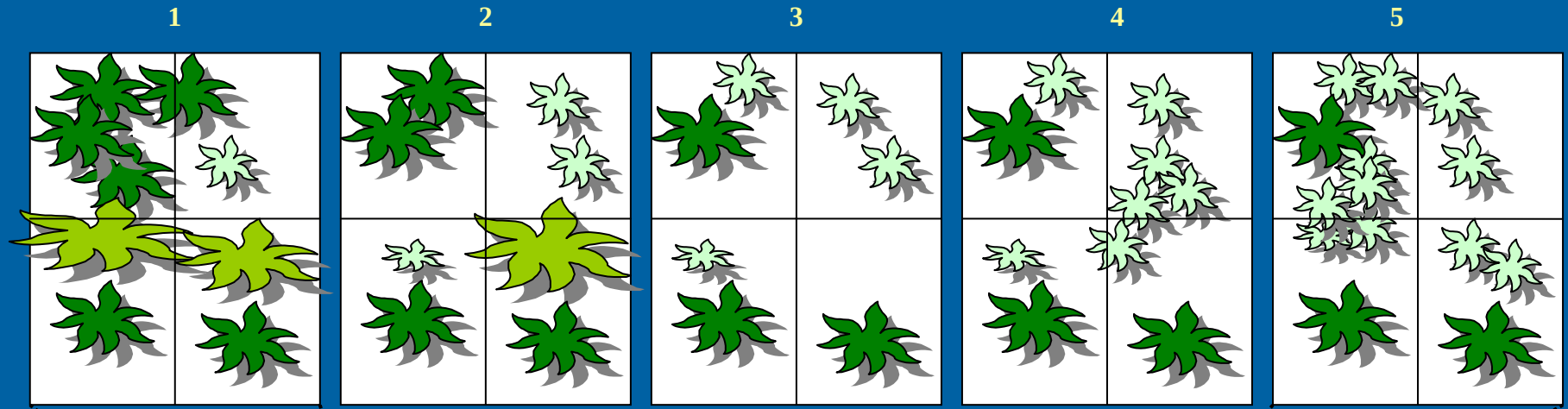
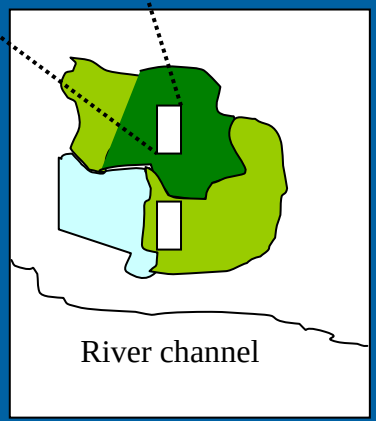
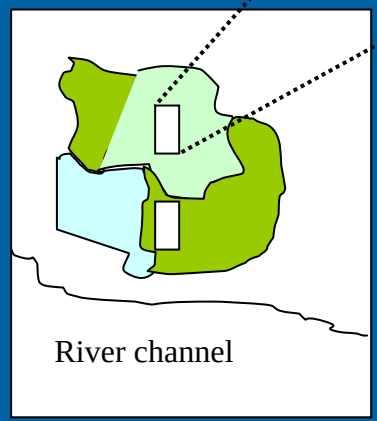
Annual Vegetation Dynamics Transects



Semi-decadal Vegetation Mapping





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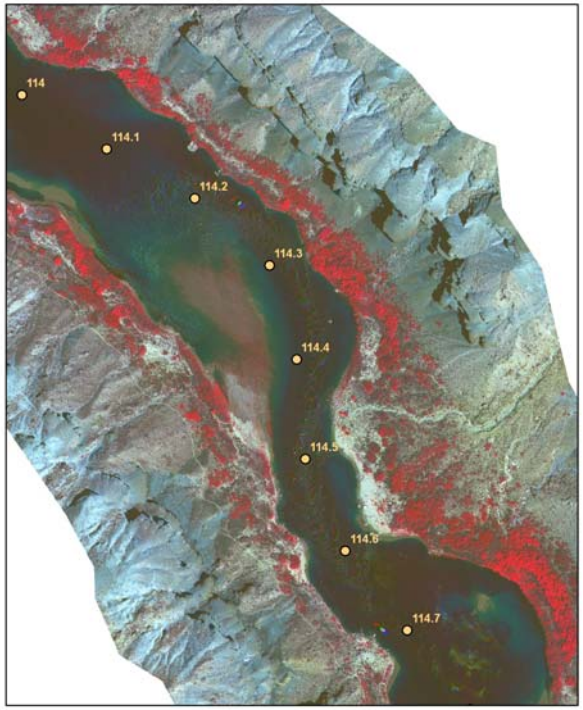
Vegetation Map

Vegetation Map 5 years later

Vegetation Mapping of CRE

Color Infrared image of CRE from RK 114 - 114.7



0 37.5 75 150 Meters

1 centimeter equals 33.625768 meters

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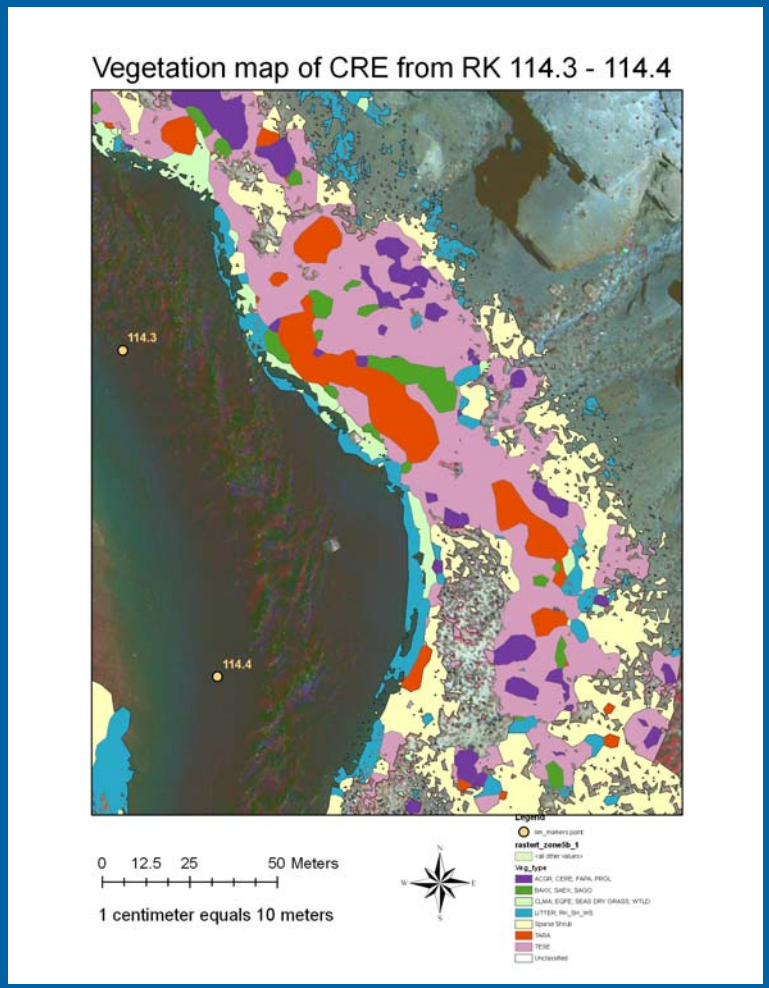
Vegetation Mapping of CRE



- Accuracies of 80% or better.
- Ground truth from 2002 and additional training areas anticipate increased accuracies for 2005 imagery.
- Comparisons between years
  - **Area**
  - **Community composition**

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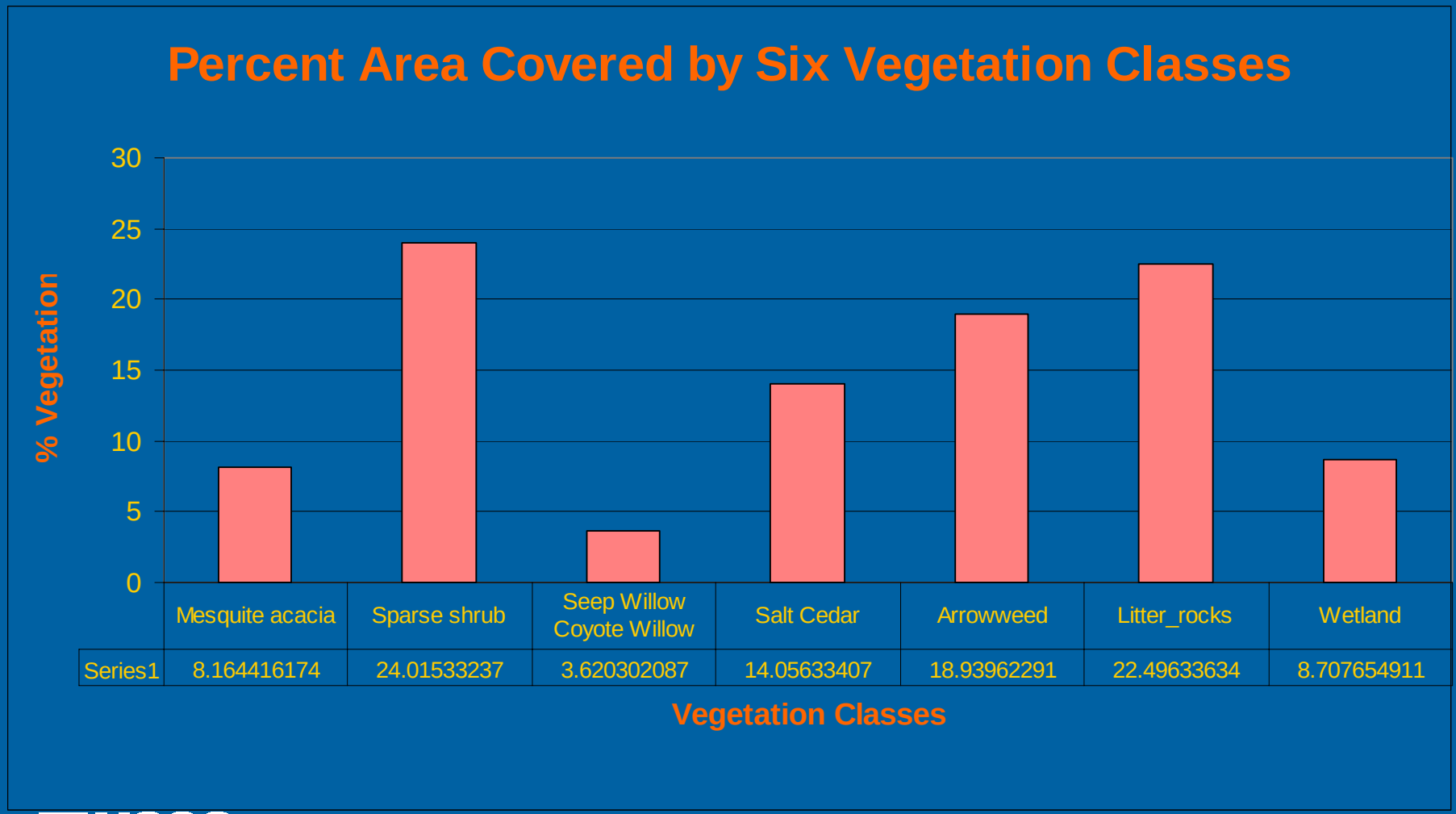
Vegetation Cover of CRE



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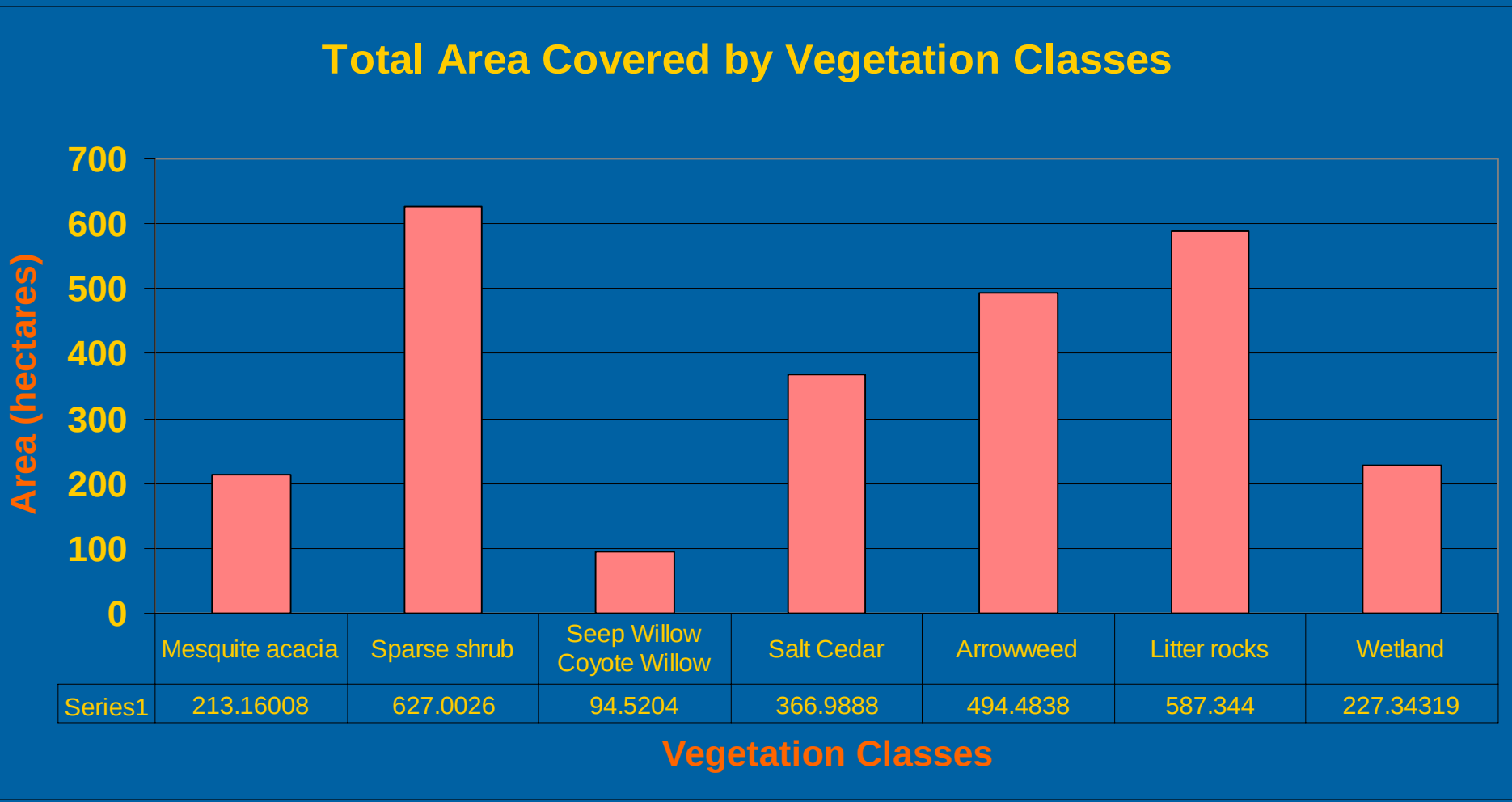

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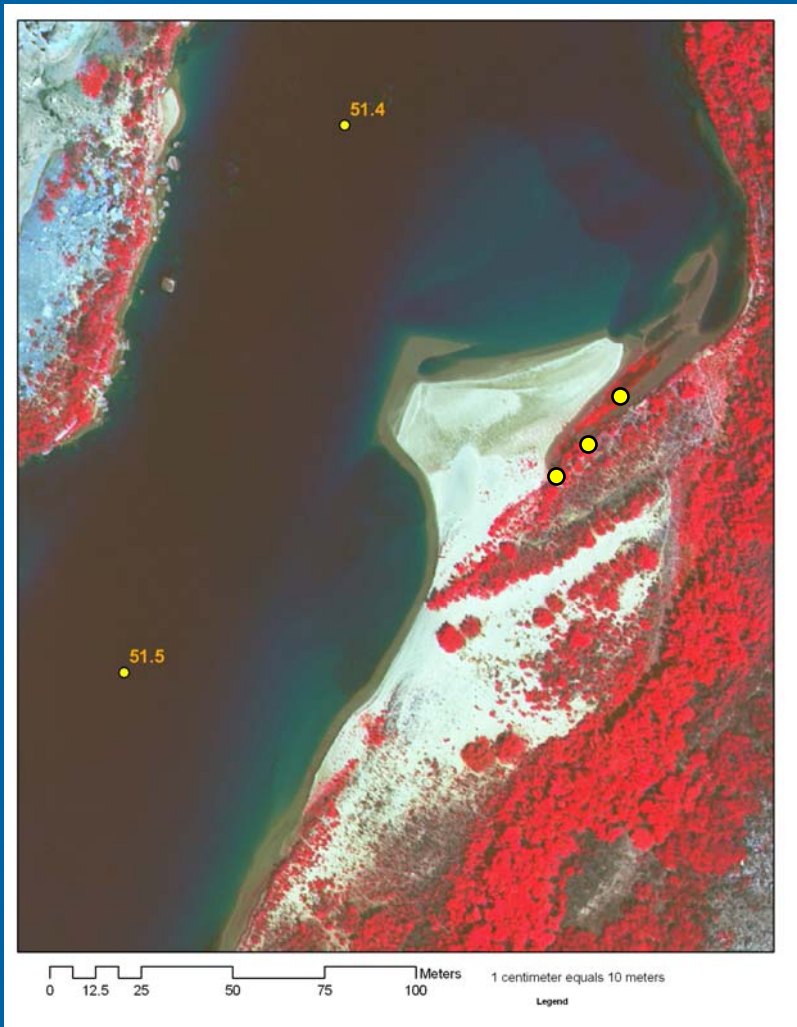
Vegetation Map Uses



- Biomass and terrestrial vegetation input estimates

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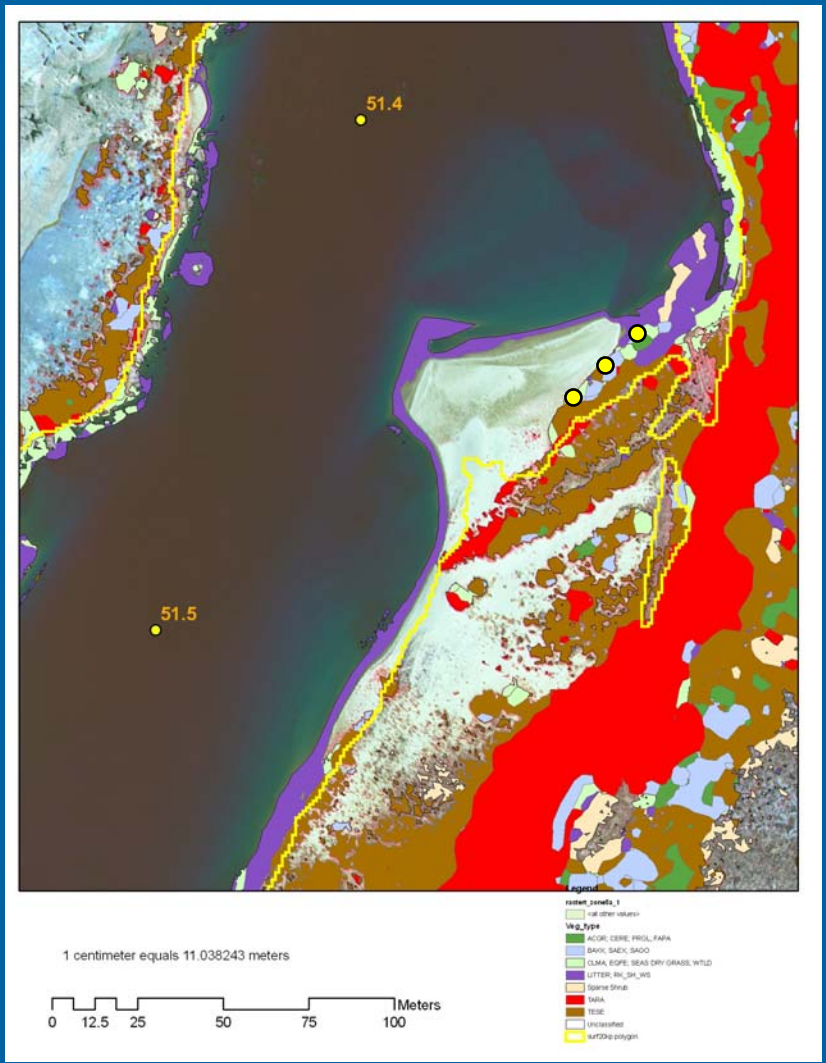
Vegetation Map Uses



- Biomass and terrestrial vegetation input estimates
- Incorporation into camp site area changes
- Incorporation into shoreline habitat mapping

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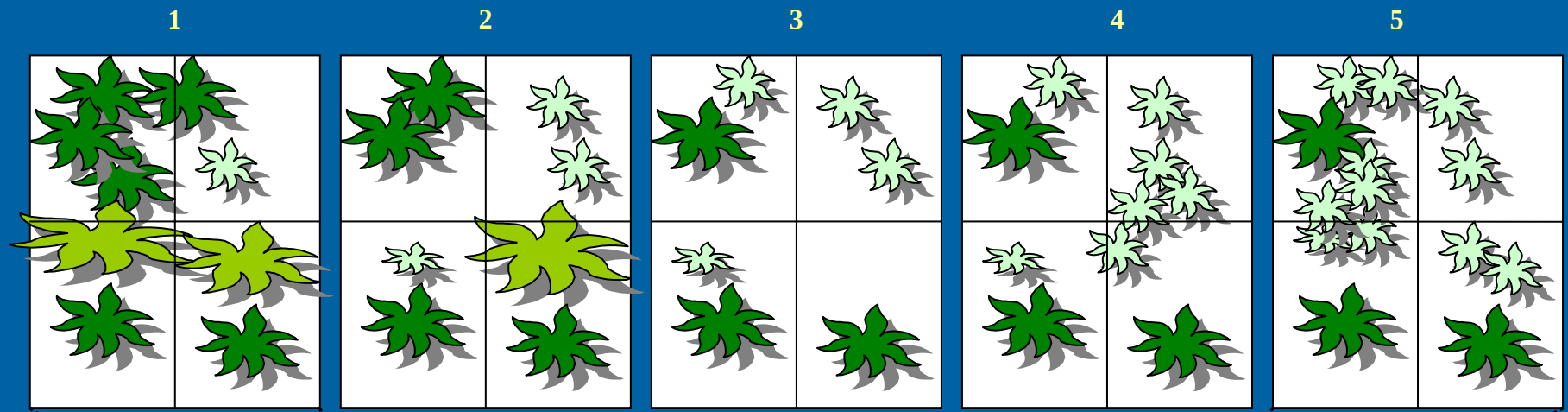
Annual Vegetation Dynamics Transects



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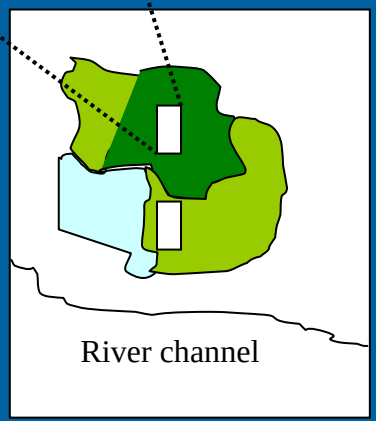

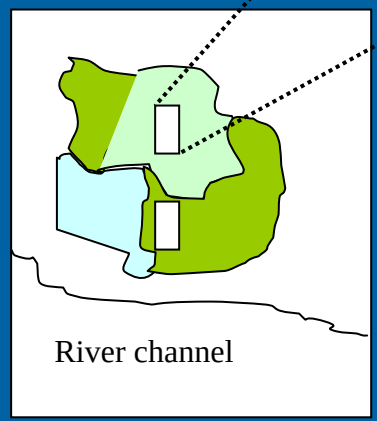

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Vegetation Map

Vegetation Map 5 years later

Proposed FY07 Bio 6.R1.07

- Convene Protocol Evaluation Panel of Terrestrial Program November 2007.
- Initiate computer analysis of 2005 imagery
- Field based data collection June 2007
- Data entry and community analysis by fall 2007.
- Ground – truth map accuracy June 2008.
- Change detection and reporting fall 2008.

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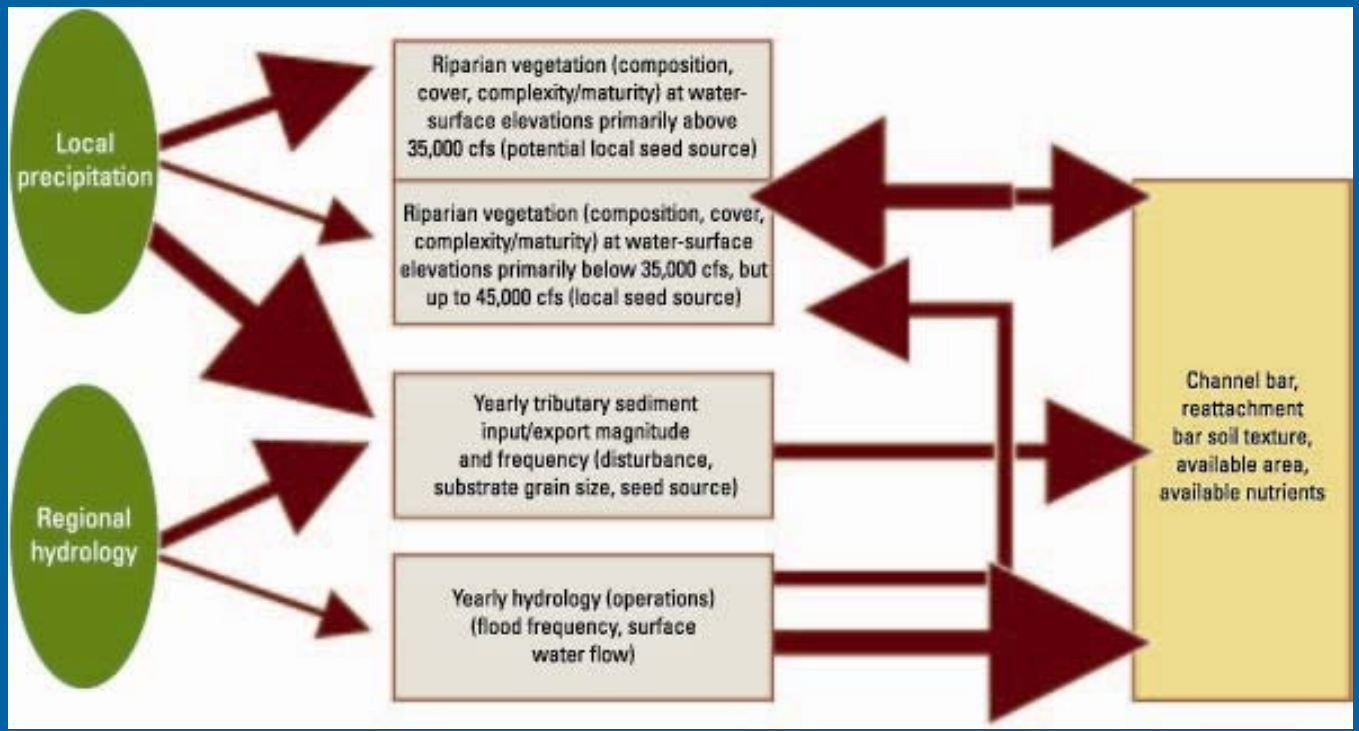
Project BIO 6.R.3.07 Vegetation Synthesis

Conceptual model of riparian vegetation dynamics



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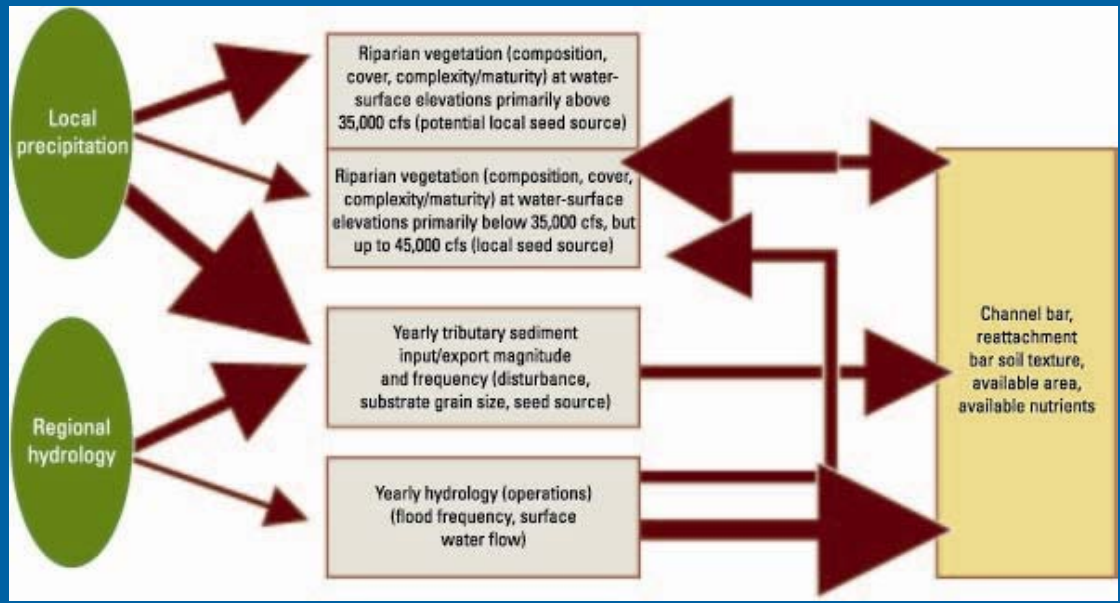
Project BIO 6.R.3.07 Vegetation Synthesis

- Geomorphology synthesis completed 2004 (Schmidt et al. 2004).



Multiple studies of vegetation since 1980's & earlier

- Transects, plots
- Vegetation Maps

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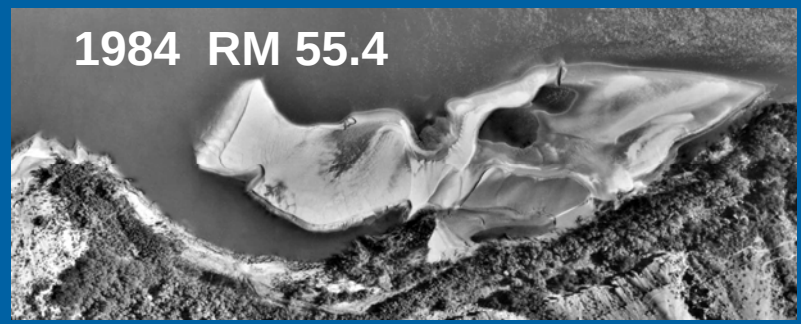
- Determine rate of change estimators for particular vegetation classes
  - Life history information
  - Incorporate frequency of disturbance information from physical resource program
  - Validate hypotheses - vegetation mapping information & scanning project



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