Soil Hydrology Conditions in Occupied SWFL and YBCU Habitat

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Research Purpose

- ID and describe the range of soil hydrology conditions that are present in occupied SWFL and YBCU habitat

- Provide information to aid Reclamation in the creation of breeding habitat
Methods

• Measurements Taken at subplots:
  – Soil Moisture
  – Litter Depth
  – Soil Texture
  – Air Temp
  – Relative Humidity
Methods, Con’t.

- Measurements taken within site:
  - Standing water (depth and area)
  - Depth to water table (select sites)

- Data collected electronically for analysis:
  - Distance of each site to flowing water
  - Vegetation data
  - River discharge from nearest recording station
SWFL Results

- Standing Water: 84% (16 sites)
- Depth to groundwater: 0m to 2.8m
- Soil moisture: 4%-57% (µ=34%)
- Percent sand (texture): 21%-84% (µ=43%)
- Distance to flowing water: 0m-446m
SWFL Regression Results

- Soil moisture vs. texture
  - $R^2=0.57$, $p<0.01$

- Soil moisture vs. distance to flowing water
  - $R^2=0.27$, $p=0.02$

- Canopy height vs. relative humidity
  - $R^2=0.67$, $p<0.01$
YBCU Results

• Standing water: 16% (3 sites [2 irrigated]); 6 sites had flood irrigation
• Depth to ground water: 0m-4.7m
• Soil moisture: 1.2%-53.5% (μ=13%)
• Percent sand (texture): 22%-95% (μ=66%)
• Distance to flowing water: 5m-2200m
YBCU Regression Results

- Soil moisture vs. soil texture
  - $R^2=0.51$, $p<0.01$

- Other variables had either $p$-value $<0.05$ and low $R^2$ or $p$-value $>0.05$

- No significant relationship between temp/Rh and vegetation
Comparison of SWFL and YBCU Sites

• Two-Sample T-tests

• Significant differences were identified in all areas except:
  – Distance of sites to flowing water
  – Canopy height
  – Ground cover
Soil Moisture

- SWFL sites had significantly higher levels of soil moisture than YBCU
  - Saturated soils increase difference

- Soil moisture related to soil texture
  - YBCU sites sandier
  - Microhabitat conditions
  - Importance to SWFL versus YBCU site selection
YBCU sites had generally deeper groundwater than SWFL sites
- Some YBCU restoration sites more than 1,000m from flowing water
Standing Water

• More observed standing water in SWFL sites than at YBCU sites
  – 16 sites vs 3 sites (observed standing water)
  – 16 sites vs 7 sites (including unobserved irrigation)

• Supports previous research of SWFL soil hydrology needs
Air Temp and RH

- YBCU sites had higher air temp than SWFL
  - Measurement bias

- SWFL sites had higher RH than YBCU
  - Likely related to differences in standing/flowing water
Vegetation

• No significant differences in canopy height or ground cover

• Percent canopy cover higher at SWFL sites than at YBCU
  – Mean of 70% for YBCU and 90% for SWFL
  – YBCU more likely to utilize less dense canopies than SWFL
Summary

• SWFL and YBCU site differences. SWFL has:
  – Denser Canopy cover
  – More Saturated soil
  – Higher soil moisture

• Data collection to continue in 2011
Thank You!

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