Habitat Assessment In Nebraska
Nebraska Stream Assessments

- REMAP approach – produce unbiased estimates of conditions
- Random site selection
- Measure fish and macroinvertebrate populations, chemistries (water, sediment, fish tissue) and habitat (instream, steam banks, surrounding environ)
Thalweg Measurements

- Thalweg Profile Data: depth, wetted width, habitat class, pools, sand bars, side-channels, sediment type
- Slope and Bearing: primary and supplemental back sites
Channel Measurements

- Channel Cross-sectional Data: wetted and bankfull width, mid-channel bar width, bankfull depth, incision height, bank angle, undercut distance, depth, embeddedness, and substrate size
Fish Cover Measurements

- Areal cover: filamentous algae, aquatic macrophytes, large woody debris, overhanging vegetation, undercut banks, artificial structures
Large Woody Debris Measurements

- Number of wood pieces in 12 diameter and length size classes for wood within and near the bankfull channel
Canopy Cover Measurements

- Canopy density measurements taken at midstream and stream edges
Riparian Measurements – Visual Estimates

- Canopy: vegetation type, large- and small-diameter tree cover
- Understory: vegetation type, woody cover, non-woody vegetation cover
- Ground Cover: wood, herbaceous, barren, duff
Riparian Measurements – Human Influences

- Presence or Proximity of: walls/dikes/revetments, buildings, road/railroads, pavement, influent/effluent pipes, landfill or trash, parks or lawns, row crop agriculture, pasture/range/hayfields, mining activity, logging operations
Stream Width (m) From All Nebraska Basins
1994-95 REMAP, Perennial Sites
• Mean thalweg depth (m) (xdepth)
• **Standard deviation of thalweg depth (cm) (sddepth)**
• Mean wetted width (m) (xwidth)
• Mean wetted width x depth (m²) (xwxd)
• **Mean residual depth (m²/100 m reach length)=cm (rp100)**
• Mean bankfull width (m) (xbkf_w)
• Mean bankfull height (m) (xbkf_h)
• Mean incision height (m) (xinc_h)
• **Channel Sinuosity (sinu)**
• **Water Surface gradient over reach (%) (xslope)**
Physical Habitat Variables (2) Substrate

- $\log_{10}[\text{est. geom. mean substrate diam. (mm)}]$ ($l_{\text{sub dmm}}$)
- Substrate mean embeddedness – channel + margin (%) ($x_{\text{embid}}$)
- Substrate % fine (silt/clay) (%$ (pct_{fn})$
- Substrate % sand (0.6 to 2 mm) (%$ (pct_{sa})$
- Substrate % concrete (%) ($pct_{rc}$)
- Substrate % hard pan (%) ($pct_{hp}$)
- Substrate % sand + fines (< 2 mm) (%$ (pct_{safn})$
- **Substrate % fine gravel and smaller (< 16 mm) (pct_{sfgf})**
- Substrate % coarse gravel and larger (> 16 mm) (%$ (pct_{bigr})$
- Substrate % bedrock (%) ($pct_{bdrk}$)
- $\log_{10}[\text{erodible substrate diameter (mm)}]$ – estimate 1 ($l_{\text{test}}$)
- $\log_{10}[\text{relative bed stability}]$ – estimate 1 ($l_{\text{rbst}_{\text{test}}}$)
- $\log_{10}[\text{erodible substrate diameter (mm)}]$ – estimate 2 ($l_{\text{dmb bw4}}$)
- **$\log_{10}[\text{relative bed stability}]$ – estimate 2 ($l_{\text{rbst bw4}}$)**
Physical Habitat Variables

(3) Fish Cover & Woody Debris

- Filamentous algae areal cover (xfc_alg)
- Aquatic macrophyte areal cover (xfc_aqm)
- Large woody debris areal cover (xfc_lwd)
- Brush and small woody debris areal cover (xfc_brs)
- Overhanging vegetation areal cover (xfc_ohv)
- Sum of cover from large wood, overhanging banks, human structures (xfc_big)
- Sum of cover from large wood, brush, overhanging vegetation, undercut banks (xfc_nat)
- LWD volume in active channel (m³/m²) – size classes 1 to 5 (v1w_msq)
- LWD volume in and above active channel (m³/100m) (v1tm100)
Physical Habitat Variables (4) Riparian Vegetation Cover and Structure

- Mean % canopy density at bank (xcdenbk)
- Mean % canopy density midstream (xcdenmid)
- Riparian canopy (<5 m high) cover-trees > 0.3 diameter) (xcl)
- Riparian ground-layer (<0.5 m high) bare ground cover (xgb)
- Riparian canopy cover (XCL + XCS) (xc)
- Riparian canopy + mid-layer cover (XC+XM) (xcm)
- Riparian wood cover, sum of 3 layers (XC+XMW+XGW) (xcmgw)
- Riparian canopy presence (proportion of reach) (xpcan)
- Riparian canopy and mid-layer presence (portion of reach) (xpcm)
- 3-layer riparian vegetation presence (portion of reach) (xpcmg)
- Coniferous riparian canopy presence (proportion of reach) (pcan_c)
Physical Habitat Variables
(5) Human Disturbances

- Riparian human disturbance – channel revetment (proximity-weighted) (w1h_wall)
- Riparian human disturbance – logging (proximity-weighted) (w1h_log)
- **Riparian human disturbance index** (proximity-weighted) (w1_hall)
- Riparian human disturbance index – non-agricultural types (proximity-weighted) (w1_hnoag)
- **Riparian human Disturbance index – agricultural types** (proximity-weighted) (w1_hag)
Mean Bankfull Height (m) From All Basins In Nebraska, 1994-95 REMAP
CDF of Mean Residual Pool Depth (cm)
From All Basins In Nebraska, 1994-95 REMAP

Perennial Sites = box
Hand-picked Sites = triangle
CDF of Std. Dev. Of Thalweg Depth (m) From All Basins In Nebraska, 1994-95 REMAP

Perennial Sites = box
Hand-picked Sites = triangle
CDF of Mean Bankfull Width (m)
From All Basins In Nebraska, 1994-95 REMAP

Perennial Sites = box
Hand-picked Sites = triangle

Mean Bankfull Width (m) (XBKF_W) vs. Probability
CDF of Channel Sinuosity
From All Basins In Nebraska, 1994-95 REMAP

Perennial Sites = box
Hand-picked Sites = triangle
CDF of Fine Gravel and Smaller Substrate From All Basins In Nebraska, 1994-95 REMAP

- Perennial Sites = box
- Hand-picked Sites = triangle

Substrate % Fine Gravel And Smaller (<16mm) (PCT_SFGF)

Probability

0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00

0 10 20 30 40 50 60 70 80 90 100
CDF of Large Woody Debris Areal Cover From All Basins In Nebraska, 1994-95 REMAP

Perennial Sites = box
Hand-picked Sites = triangle
Questions