Southern Cooperative Soil Survey Conference
Gainesville, FL
July 14-18, 2008

Standards and Taxonomy Committee

Co-chairs

- ✓ Charles Love – State Soil Scientist/MO-15 Team Leader
- ✓ Dr. Joey Shaw – Associate Professor, Auburn University

Members of the Committee

Pam Thomas, South Carolina State Soil Scientist
John Kelley, MO-14 SDQS
Doug Slabaugh, Tennessee State Soil Scientist
Scott Anderson, MO-15 SDQS
Rick Robinns, Florida Soil Scientist

Standards and Taxonomy Committee Charges

Soil Taxonomy

***Charge # 1*: Review the existing proposal for new taxonomic classifications and provide recommendations to NSSC for adoption in *Soil Taxonomy*.**

Four groups of proposed Soil Taxonomy revisions were submitted to the committee for review.

Proposal #1:

1. **Normal Years** (NSSC Proposal) -- Statement added: "When **evaluating precipitation data to determine if the criterion for the presence of aquic conditions, or number of days that the moisture control section is moist, or number of days that some part of the soil is saturated has been met, it is permissible to include data from periods with below normal rainfall.** Similarly, when evaluating precipitation data to determine if the criterion for the number of days that the moisture control section is dry have been met, it is permissible to include data from periods with above normal rainfall. It is assumed that if the criteria are met during these periods, they will be met during normal years also."
2. **Natraquerts** (NSSC Proposal) -- Statement Added: Other **Aquerts** that have **a natric horizon within 100 cm of the mineral soil surface. (Low Priority for the South)**
   - Southeast Texas
     - **Aransas – Fine, Smectitic, Hyperthermic Typic Natraquerts**
     - **Franeau - Fine, Smectitic, Hyperthermic Typic Natraquerts**
3. **Subaqueous Soils** (Northeast Region) – This proposal was submitted through the Northeast Standards Committee by Mark Stolt, University of Rhode Island. The proposal is an extensive revision of the subaqueous soils proposal submitted in 2002. It addresses the concerns that were raised with the original proposal. **Two new suborders are proposed for Entisols and Histosols; 'Wassents', and 'Wassists'**. The formative element "Wass" is from the German word for water - "wasser." **(High Priority for the South)**

Proposal #2:

1. Clarification of the Clay Content Requirement for **Paleustalfs, Palexeralfs, and Palexerolls (NSSC)** – The clay content criteria listed for the Paleustalfs (p. 59 of the Keys), Palexeralfs (p. 71), and Palexerolls (p. 224) refers to various clayey particle-size classes being present in the upper part of the argillic horizon. **The intent is to require 35% or more clay in the upper part (as written for the Paleustolls, page 209).** The use of particle-size class terms in this context is technically incorrect, because these soils do not have to be in a clayey family to meet the criterion. Proposal by Craig Ditzler and Bob Engel (retired), NSSC. **(Low Priority in the South)**

   Machete the only known series that will require reclassification (**Puerto Rico)**: **Very-fine, Mixed, Active, Isohyperthermic Aridic Paleustalfs.**

2. **Micaceous Soils** (See Series) (South Region Proposal) – A team of field and MLRA Office soil scientists in the South Region was assembled to study and evaluate how mica has historically been described in soil profile descriptions (official soil descriptions and field descriptions) and to determine if a need exists to refine quantification and description techniques as related to soil classification and making and interpreting soil maps. – Proposal provided by John Kelley **(High Priority for the South) Approved at National Level**

Proposal #4:
To **Add Humic Great Groups to the Udepts, Ustepts, and Xerepts And to Revise the Current Humic Subgroups in Various Great Groups (South Region Proposal) --** This is a proposal to add humic great groups to Udepts, Ustepts, and Xerepts and **to change the definition of the humic subgroups in various Great Groups of Udepts, Ustepts, and Xerepts**. This proposal was presented at the 2006 South Region Conference at Oklahoma City. **Proposed by:** Bill Craddock (KY), Roy Vick (NC), and Bob Engel (NSSC-retired). **(High Priority for the South) A group of series will be impacted based on these revisions.**

Proposal #5: **(Regional Soil Correlation Teams and Dense Soil Properties Group)**
Kanhapludults, Paleaquults, Paleudults & Plinthudults (Plinthic Horizon) (**South Region)** MO-14 Proposal.

1. Kanhapludults -- It is proposed the **Kanhapludults great group be revised by adding an *"Arenic Fragic"* subgroup.** The Ailey series (Arenic Kanhapludult) is of large extent, with over 250,000 acres in 3 user states. Ailey soils have fragic soil properties in addition to the arenic feature. It is proposed the Kanhapludults great group be revised by adding an *"Arenic Fragic"* subgroup.

Impact to Existing Soil Series: Ailey is the only known series that will require reclassification.

2. Paleaquults -- **Presently, both the "Grossarenic" and "Umbric" subgroups are recognized in the Paleaquults great group**. The Starke series meets both subgroup criteria. Since the Grossarenic feature is listed first in the key, the umbric feature is not recognized in family classification. Adding a *"Grossarenic Umbric"* subgroup would better reflect soil characteristics not presently captured in the current classification.

Impact to Existing Soil Series:
Starke is the only known series identified in OSDS and the Soil Classification File (tentative or established) that have as series criteria both the Grossarenic and Umbric feature. **(Florida)**

3. Paleudults - Presently, **soils in the Paleudults great group that meet the feature criteria for the "Aquic" subgroup and are also grossarenic, key as "Aquic Arenic" Paleudults. Soils that meet the feature criteria for the "Oxyaquic" subgroup and are also grossarenic, key as "Oxyaquic"** Paleudults. Soils that meet the feature criteria for the "Arenic" and "Plinthic" subgroup and are also oxyaquic, key as "Arenic Plinthic" Paleudults. It is proposed the Paleudults great group be revised by: 1) adding *"Aquic Grossarenic," "Grossarenic Oxyaquic," and "Arenic Plinthic Oxyaquic"* subgroups to the Paleudult great group, and 2) rearranging the subgroup order of Paleudults as to allow soils to key similarly to Kandiudults. **(High Priority for the South)**

Impact to Existing Soil Series:
Impact to current soil series is minimal. The revision is primarily directed toward the following soil series:

Great Group	*Proposed Subgroup*	Affected Soil Series	Present Subgroup	Extent	Approx. Acres
Paleudults	***Aquic Grossarenic***	Albany	Aquic Arenic	Large	250,000+
		Murad	Aquic Arenic	Small	8,000+
	Grossarenic	Meldrim	Oxyaquic	Moderate	10,000+

	Oxyaquic				
	Arenic Plinthic Oxyaquic*	Stilson	Arenic Plinthic	Large	100,000+

* Identification of more than two subgroup features is rare in Soil Taxonomy. However, other examples are *"Aeric Chromic Vertic"* Epiaqualfs and *"Arenic Plinthaquic"* Paleudults/Kandiudults.

Proposed Subgroups and revised order of the Key.
(Numbers in parentheses indicate the number of series presently identified.):

Current Kandiudults (24)	**Current Paleudults (237)**	***Proposed Paleudults***
Arenic Plinthaquic (0)	**Vertic (3)**	Vertic
Aquic Arenic (0)	**Spodic (1)**	Spodic
Arenic Plinthic (1)	**Arenic Plinthaquic (4)**	*Aquic Grossarenic (2)*
Arenic Rhodic (0)	**Aquic Arenic (5)**	Arenic Plinthaquic
Arenic (2)	Anthraquic (0)	Aquic Arenic
Grossarenic Plinthic (0)	**Plinthaquic (7)**	Anthraquic
Grossarenic (3)	**Fragiaquic (14)**	Plinthaquic
Acrudoxic Plinthic (0)	**Aquic (31)**	Fragiaquic
Acrudoxic (0)	**Oxyaquic (10)**	Aquic
Plinthaquic (0)	**Lamellic (4)**	Grossarenic Plinthic
Aquandic (0)	**Arenic Plinthic (5)**	*Grossarenic Oxyaquic (1)*
Andic (0)	**Psammentic (4)**	Grossarenic
Aquic (0)	**Grossarenic Plinthic (2)**	*Arenic Plinthic Oxyaquic (1)*
Plinthic (4)	**Plinthic (13)**	Arenic Plinthic
Ombroaquic (0)	Arenic Rhodic (0)	Arenic Rhodic
Oxyaquic (0)	**Arenic (12)**	Arenic
Sombic (0)	**Grossarenic (13)**	Plinthic
Rhodic (4)	**Fragic (3)**	Fragic
Typic (10)	**Rhodic (11)**	Oxyaquic
	Typic (94)	Lamellic
		Psammentic
		Rhodic
		Typic

4. Plinthudults (Plinthic Horizon). Soil scientists who work in regions with soils that contain iron concentrations historically have struggled to consistently and accurately describe and quantify these materials. Local or regional application of concepts have added to the complexity of consistent soil correlation from county-to-county, state-to-state, and region-to-region. With the implementation of the major land resource area (MLRA) soil survey approach, it has become imperative to develop concepts and conventions that may be uniformly applied.

A review of plinthic soils in the Southeast U.S. clearly indicates a lack of consensus among university staff, field soil scientists, and correlators in how to identify, quantify, and ultimately correlate soils with these types of noncemented to indurated iron-rich materials. Many studies, field investigations, and research projects have been conducted in the past; however, conclusions or recommendations from these studies have not been universally accepted or implemented as standards in the cooperative soil survey program. By adding cementation to the revised plinthite concept and providing a standard field slake test, ambiguity between progressively cemented materials is lessened.

With this revision, how Fe-rich materials respond once exposed to air and sunlight remains a common feature but is less important than in the present definition. To be identified as plinthite, it must now also exhibit a minimal degree of in situ cementation (hardening). Once initial cementation has occurred, the material responds from an engineering and management viewpoint as a pararock fragment. Once progressive cementation reaches the point of being strongly or more cemented it responds as a rock fragment. This change allows for a clear and more accurate quantification of the material, ultimately providing improved soil interpretations. Lowering the amount of plinthite required for the "plinth" great

group allows for an improved separation of soils that have a wide range of content and type of cemented material.

The proposed plinthite concept is in line with other international soil classification systems and is very close to that used by the World Reference Base. Incorporating the proposed changes will add credibility to both systems. There is a potential for a few established soil series to require field investigation. Some series that presently have a wide range of plinthite content (e.g., 5 to 50 percent) may even require splitting into two separate series; however, this is thought to be a rarity. Changes to Official Soil Series Descriptions need not be immediate. Required changes may be made as the MLRA soil survey management system is implemented and as soil scientists begin to update soil surveys across major land resource areas.

Procedures and Standards

Subaqueous Soils

***Charge #2*: Identify needed changes to the *NSSH, Field Guide for Describing and Sampling Soils,* and *Soil Survey Manual* to accommodate Subaqueous Soil survey activities.**

The Southern Cooperative Soil Survey Steering Committee has established a Southern Region Subaqueous Soils Sub-committee. This sub-committee will work with NSSC and other regions to establish procedures and standards for the south region.

Appendix

Impact of the Humic Great Groups Proposal to Existing Soil Series

The following lists of soil series were extracted from the Soil Classification file and reviewed to assess the impact of this proposal on their classification. The following 7 lists are provided:

Xerepts, Udepts, Ustepts

Dystroxerepts Dystrudepts Dystrustepts
Haploxerepts Eutrudepts
Fragixerepts Fragiudepts

After each series listed, the following notation is used to describe the impact:

0 - No change
1 - Humic subgroup
2 - Humic great group
3 - Question due to range of depth and or color
4 - Other classification
5 - Description not found in OSED file
? - A question mark following a number means there is a depth range conflict.

******** DYSTRUDEPTS ********
*** TYPIC DYSTRUDEPTS ***
Current position in the keys suggests these can not be Humudepts.
- the newly defined Humic Dystrudepts (if
they have 18cm dark surface)
- or Humic Psammentic Dystrudepts if they
are also sandy,
- or they remain typic
EDNEYVILLE . . . . . NC 3
SOCO . . . . NC 1
STECOAH . . . NC 1
COARSE-LOAMY, MIXED, SEMIACTIVE,
MESIC
BANNERTOWN . . . . . NC 3
DEVOTION . . NC 3
FINE-LOAMY, ISOTIC, FRIGID
CHILTOSKIE . . . . . NC 1
FINE-LOAMY, ISOTIC, MESIC
CROSSNORE . . NC 1
PORTERS . . . NC 1?
TUSQUITEE . . NC 1
UNAKA . . . . TN 1
WHITEOAK . . NC 1
FINE-LOAMY, MICACEOUS, MESIC
CASHIERS . . NC 1
FINE-LOAMY, MIXED, ACTIVE, MESIC
BROOKSHIRE . . . . . TN 1

HUNTDALE . . NC 1
FINE-LOAMY, MIXED, SEMIACTIVE, MESIC
AYERSVILLE . . . . . NC 1
CEDAR . . . . T WV 5
KIMPER . . . KY 1
NEW RIVER . . T WV 5
PIPESTEM . . T WV 5
RAMP . . . . T WV 5
LOAMY, MIXED, ACTIVE, ISOTHERMIC,
SHALLOW
CUCHILLAS . . PR 1
LOAMY, MIXED, SUPERACTIVE, MESIC, SHALLOW
LOAMY-SKELETAL, MIXED, ACTIVE, MESIC
CLOVERLICK . . . . . KY 1
LOAMY-SKELETAL, SILICEOUS, SEMIACTIVE, MESIC
LAYLAND . . . T WV 3
NUTTALL . . . T WV 5
OPOSSUM . . . T WV 5
If there is 18 cm dark surface, these become Aquic Humic Dystrudept, otherwise they remain as classified.
NOT MANY PROSPECTS HERE??
These should become Aquic Humudepts
*** AQUIC HUMIC DYSTRUDEPTS ***
COARSE-LOAMY, MIXED,

ACTIVE, ISOTHERMIC
UTUADO . . . PR 3 border Aquic to Aquic Humic
SANDY, SILICEOUS, HYPERTHERMIC
SEFFNER . . . FL 2
If these have an umbric or mollic epipedon then they are Aquic Humudepts (need Fluvaquentic?) Otherwise they remain as classified.
*** FLUVAQUENTIC DYSTRUDEPTS
COARSE-LOAMY OVER SANDY OR SANDYSKELETAL, MIXED
SUPERACTIVE, MESIC
CULLOWHEE . . NC 2 Aquic Humudepts
If there is 18 cm dark surface, then these are Fluventic Humic Dystrudepts, otherwidse they remain as classified.
COARSE-LOAMY OVER SANDY OR SANDYSKELETAL,
MIXED, ACTIVE, ISOHYPERTHERMIC
VIVI . . . . PR 1
FINE-LOAMY, MIXED, ACTIVE, THERMIC
RIVERVIEW . . AL 1
FINE-LOAMY, MIXED, SEMIACTIVE, THERMIC

STARR . . . . SC 1

Assuming these all have a mollic or umbric they are reclassified as Humudepts, either: Cumulic, Pachic, or Fluventic.

*** FLUVENTIC HUMIC DYSTRUDEPTS

COARSE-LOAMY, MIXED, SUPERACTIVE, MESIC

ROSMAN . . . NC 2

FINE, MIXED, ACTIVE, THERMIC

GRASMERE . . AL 2

FINE-SILTY, SILICEOUS, ACTIVE, THERMIC

EMORY . . . . TN 2?

SANDY-SKELETAL, MIXED, MESIC

SMOKEMONT . . NC 2

Assuming these all have a mollic or umbric, they reclassify to Humudepts, either Entic or Typic.

*** HUMIC DYSTRUDEPTS ***

COARSE-LOAMY, MIXED, ACTIVE,

ISOHYPERTHERMIC

MAYO . . . . PR 2

FINE, MIXED, SEMIACTIVE, MESIC

LEATHERWOOD . . . . . NC 2

FINE, PARASESQUIC, ISOHYPERTHERMIC

ANONES . . . PR 2

FINE-LOAMY, ISOTIC, FRIGID

BREAKNECK . . TN 2

BURTON . . . NC 2

CATALOOCHEE . . . . . NC 2

GUYOT . . . . NC 2

OCONALUFTEE . . . . . NC 2

TANASEE . . . NC 2

WAYAH . . . . NC 2

FINE-LOAMY, ISOTIC, MESIC

CHEOAH . . . NC 2

JEFFREY . . . TN 2?

PLOTT . . . . NC 2

SANTEETLAH . . . . . NC 2

TUCKASEGEE . . . . . NC 2

FINE-LOAMY, MIXED, ACTIVE, MESIC

BARBOURVILLE . . . . KY 2

FINE-LOAMY, MIXED, SEMIACTIVE, MESIC

CUTSHIN . . . KY 2

FINE-LOAMY, PARASESQUIC, THERMIC

RED HILLS . . TN 1? TP 4 chroma in upper Bw

FINE-LOAMY, SILICEOUS, ACTIVE, MESIC

CHESTOA . . . NC 1

FINE-LOAMY, SILICEOUS, SEMIACTIVE,

MESIC

CROSSVILLE . . . . . KY 2?

ZENITH . . . TN 2

LOAMY-SKELETAL, ISOTIC, FRIGID

ANAKEESTA . . TN 2

BALSAM . . . NC 2

HEINTOOGA . . NC 2

LUFTEE . . . TN 2

LOAMY-SKELETAL, ISOTIC, MESIC

CULLASAJA . . NC 2

SPIVEY . . . TN 2

LOAMY-SKELETAL, MIXED, ACTIVE, MESIC

GUYANDOTTE . . . . . WV 2

LOAMY-SKELETAL, MIXED, SUPERACTIVE,

ISOHYPERTHERMIC, SHALLOW

YUNES . . . . PR 2

LOAMY-SKELETAL, SILICEOUS, ACTIVE,

FRIGID

SUMMERS . . . WV 2

*** HUMIC LITHIC DYSTRUDEPTS ***

CLAYEY-SKELETAL, PARASESQUIC,

ISOHYPERTHERMIC

LOAMY, ISOTIC, FRIGID

CRAGGEY . . . NC **Lithic Humudepts**

PULLBACK . . NC **Lithic Humudepts**

LOAMY-SKELETAL, MIXED, SUBACTIVE,

ISOHYPERTHERMIC

TEJA . . . . PR **Lithic Humudepts**

This taxon becomes obsolete with this proposal.

These all go to Humudepts, either Cumulic or Pachic.

*** HUMIC PACHIC DYSTRUDEPTS

FINE-LOAMY, ISOTIC, MESIC

HAYWOOD . . . NC 2

FINE-LOAMY, SILICEOUS, SUPERACTIVE,

THERMIC

MICCOSUKEE . . . . . FL 2

Assuming these have a mollic or umbric, they all become Psammentic Humudepts

SILICEOUS, HYPERTHERMIC

FLORAHOME . . FL 2 Psammentic falls out before Pachic

FORT MEADE . . . . . FL 2

ORLANDO . . . FL 2

If there is a mollic or umbric, then Oxic Humudept

*** OXIC DYSTRUDEPTS ***

VERY-FINE, PARASESQUIC,

ISOHYPERTHERMIC

ALONSO . . . PR **Oxic Humudept**

If there is a mollic or umbric, then Oxyaquic Humudepts, otherwise remain as classified.

*** OXYAQUIC DYSTRUDEPTS ***

COARSE-LOAMY OVER SANDY

OR SANDYSKELETAL,
MIXED,
SUPERACTIVE, MESIC
REDDIES . . . NC 2
SANDY-SKELETAL, MIXED, MESIC
DELLWOOD . . NC 2