

Describing Soil Color for Hydric Soils Determinations

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Primary Components of Soil Color

- Organic Matter
 - Dark brown or black
- Iron
 - Red, yellow, orange
- Mineral grains
 - Typically gray

Components of Soil Color



Mineral Grain Colors



Describing Soil Color

- Matrix color
- Redoximorphic features
 - Type
 - Color
 - Amount
 - Location
- Any other mottles noting if they are organic or lithochromic



Aspects of Soil Color

Munsell Soil Color System

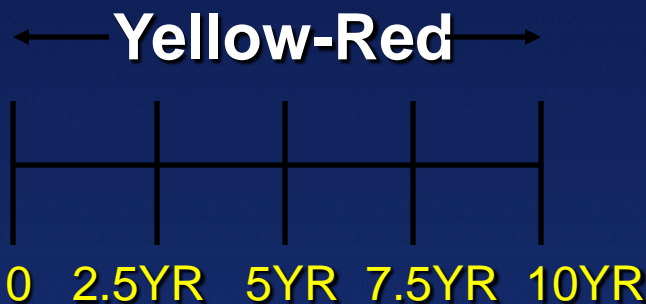
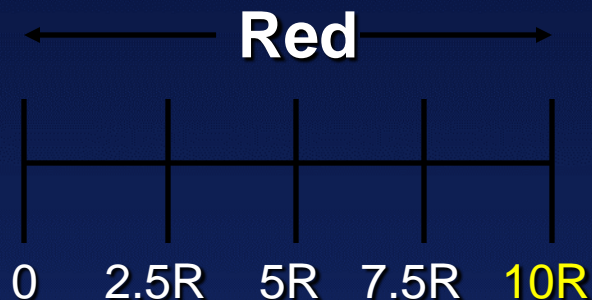
10R 5/8

- Hue
- Value
- Chroma



Hue

Spectral color in
relation to red,
yellow, blue, etc.



Value

The
Lightness or
Darkness of
Color

- 10/0 - Pure White



- 5/0 - "Gray"



- 0/0 - Pure Black



Chroma

“Neutral”
Gray

“Pure”
Color

/0

/2

/4

/6

/8

Increasing strength of color 



 Increasing grayness

Reading Soil Colors

Optimum conditions
for reading soil colors

- Natural light
- Clear, sunny day
- Midday
- Light at right angles
- Soil moist



General Rules for Recording Soil Color for Hydric Soil Determinations

- Always round to nearest hue and value
- Never round chroma
 - If a chroma is between chips note that on data sheet with a + or decimal point
 - 2.5Y 4/2+ or 2.5Y 4/2.2

Color Patterns in Soils



Matrix Color

- The dominant color or colors

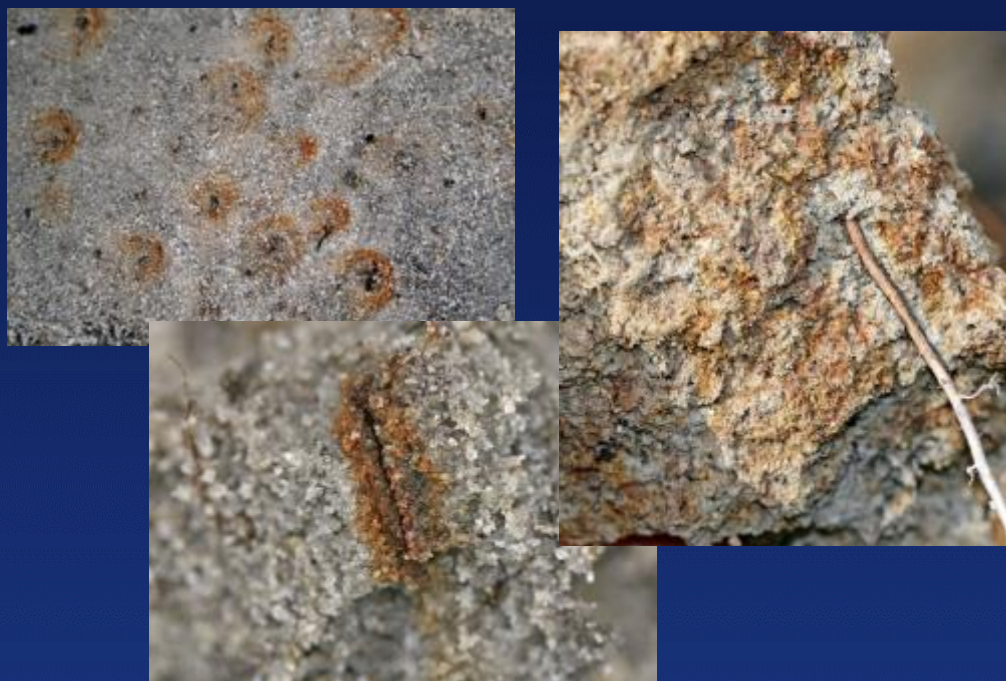


Mottles

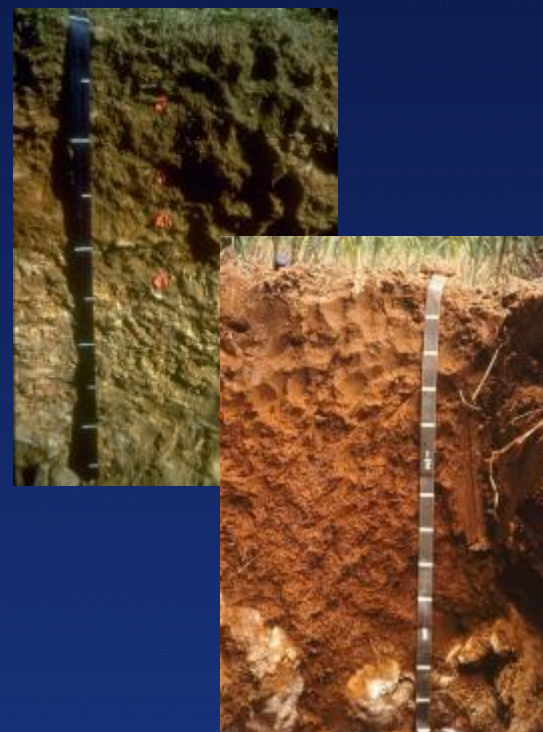
- Splotches of soil color
 - Organic features
 - Due to wetness or infilling of pores from surface horizons
 - Redoximorphic features
 - Due to wetness
 - Lithochromic features
 - Not due to wetness

Redox Features vs. Mottles

Redox Features

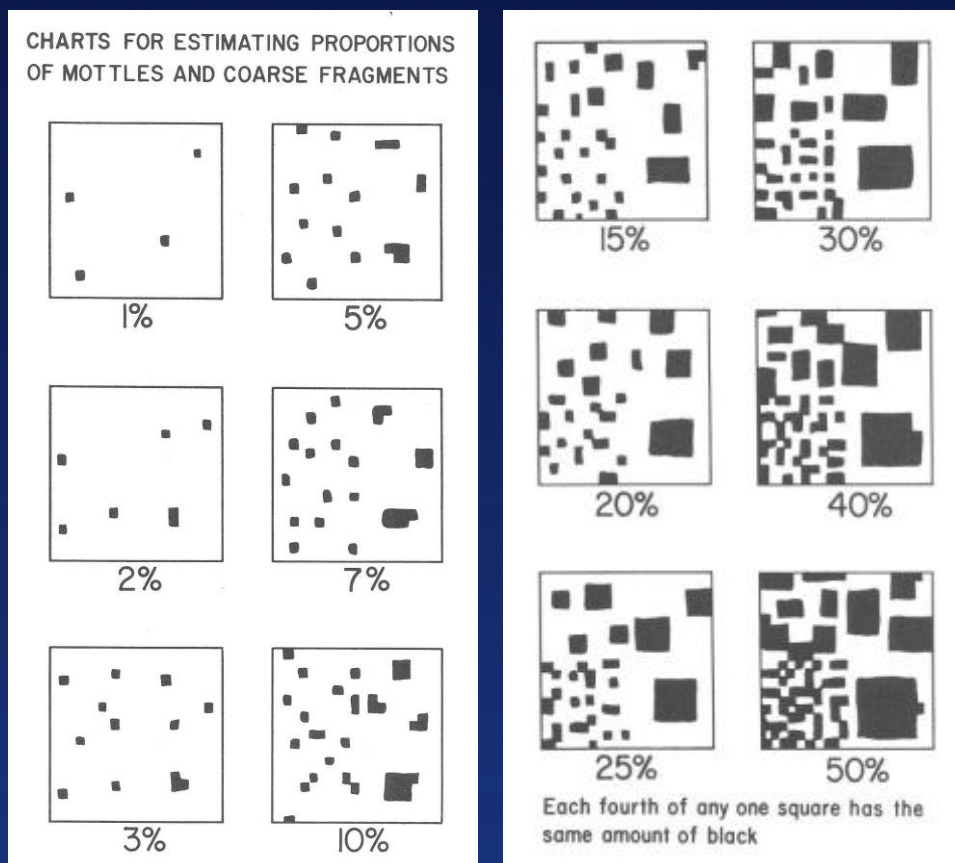


Lithochromic Mottles



Abundance of Features

Some indicators require different abundance thresholds than categories used for other soil survey purposes. Best to record an estimated percentage.



Contrast of Features

The degree of visual distinction between associated colors

- Faint – evident only on close examination
- Distinct – readily seen
- Prominent – contrast strongly

Upper Threshold for Faint		
Δ Hue	Δ Value	Δ Chroma
0	≤ 2	≤ 1
1	≤ 1	≤ 1
2	0	0
Hue	Value	Chroma
Any	≤ 3	≤ 2

Sandy Soils

- In sandy soils with dark colors due to masking of sand grains it is important to note the percentage of grains masked (black) grains.
 - If more than 70% masked the soil will appear almost 100% black
 - If less than 70% masked the soil will have a salt and pepper look with many light colored sand grains

Masked Sand Grains



Masked Sand Grains with the Naked Eye

When soil is moist,
Almost 100% of the grains
should appear masked
to the naked eye.



Conclusion

- Organic matter, iron and the color of the mineral grains are the primary sources of soil color.
- The Munsell Soil Color System is the standard to which we describe soil color.
- Both the color and the patterns of color in the soil are important to note when describing soil color.

The End

