Poster: TerrHum: an iPhone app for classifying forest humipedons. Abstract and poster accepted and published.

Authjors: Zanella A.*, Katzensteiner K, Ponge J.-F., Jabiol B., Sartori G., Kolb E.., Le Bayon R.-C., Aubert M., Ascher-Jenull J., Englisch M., Hager H.

Abstract

The knowledge of a little number of specific terms is necessary to investigate and describe the forest topsoils: diagnostic components, diagnostic organic and organic-mineral horizons and the 17 series of humus horizons composing all the observed real forest not submerged topsoils. Diagnostic horizons are grouped in humus forms, which represent five humus systems. To become a good topsoil investigator is then only a question of field experience. No mean to do otherwise: you must go in the field with a blade and a good manual and put your hand in the soil. You have to make a hole and to observe on your knee a wall of the pit, from the top to the bottom, detecting all the characters that you find indicated in the manual. At the beginning you will be discouraged, things change from a site to another and never are exactly as in the manual. After few days of difficult survey, you will be able to know your soil even without doing a hole. Be patient and follow what it is indicated in the published first eight articles of Humusica (http://intra.tesaf.unipd.it/people/zanella/hmanual.html). On the poster, you find some examples of diagnostic properties of forest topsoils, and a dichotomy key of classification, you can copy paste and take with you in the field. An iPhone application (Terrhum) allows to bring in the field the necessary information for a fast classification of the topsoil.

Theme:5. Forest soil monitoring networks and environmental change: successes and challenges

Keywords: Humusica, humus system, humus forms, topsoil classification, humipedon, diagnostic horizon

TerrHum

An iOS App for humus forms classification

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Zanella A.*[a], Katzensteiner K.[b], Ponge J.-F.[c], Jabiol B.[d], Sartori G.[e], Kolb E.[f], Le Bayon R.-C.[g], Aubert M.[h], Ascher-Jenull J[i], Englisch M.[j], Hager H.[b]

a Università di Padova, Dipartimento TESAF, Legnaro, Italy

b University of Natural Resources and Life Sciences Vienna, Austria

c Musée National d'Histoire Naturelle, Paris, France

d AgroParisTech, Nancy, France

e Museo di Scienze Naturali, Trento, Italy

f Technische Universität München, Germany

g Université de Neuchatel, Switzerland

h Université de Rouen, France

i University of Innsbruck, Institute of Microbiology, Austria

j Federal Research and Training Centre for Forests, Natural Hazards and Landscape, Austria

* Corresponding author

The knowledge of a little number of specific terms is necessary to investigate and describe forest topsoils: diagnostic features lead to the designation of diagnostic organic and organic-mineral horizons. The vertical arrangement of diagnostic horizons defines humus systems each of them subdivided humus forms.

Below you find the description of a iOS application (Fig; 1 to 5). TerrHum allows the classification of 5 Terrestrial humus systems (Mull, Moder Mor, Amphi and Tangel) and 17 humus forms (Eumull… Pachytangel) answering a series of yes/no question. After a few days of field experience you will be able to diagnose your soil, even without digging a whole soil pit. Be patient and consequently follow what is published in the eight articles of Humusica Part 1, an Applied Soil Ecology special issue dedicated to forest not submerged humus systems. (https://www.sciencedirect.com/journal/applied-soil-ecology/vol/122/part/P1).
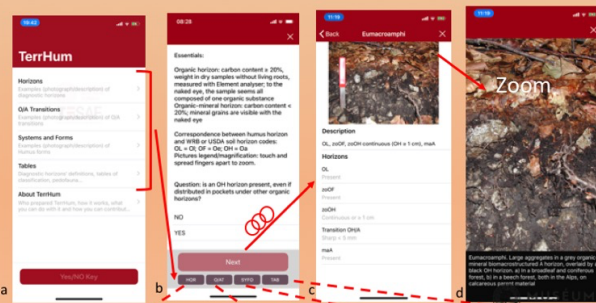

Fig. 1. TerrHum screens. Initial screen (a). The main key of classification is accessible by touching the red button located at the bottom. Above this, four options allow access to: i. illustrations of humus horizons, ii. types of transition between organic and organic-mineral horizons, iii. examples of humus Systems and Forms, iv. particular tables containing helpful specific information for the classification (% of recognizable remains in different diagnostic horizons, tables of classification, animal droppings…), and v. general information about the app (genesis and how it works). These touch-buttons are accessible even in the other steps of the classification. One click on the "Yes/No Key red touch" opens a new window (b) where a Yes/No question is proposed to the user; a click on "Next" button activates a series of Yes/No questions and at the end a humus form is proposed as solution (c), along with the list of horizons chosen during the run/classification process. It is possible to magnify the picture (d) and to see other examples of the same humus form, in different environments.
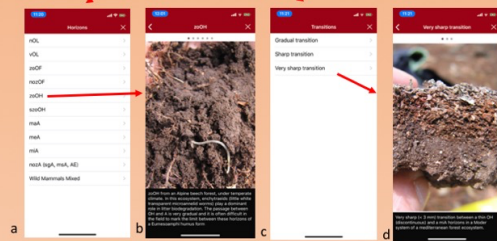

Fig. 2. TerrHum screens. a) First brown touch "Horizons" allows to see examples of diagnostic horizons; b) Touching zoOH horizon; c) Clicking on the second brown touch named "O/A transitions", the user can display examples of passages between O and A horizons; d) en example of very sharp O/A transition.
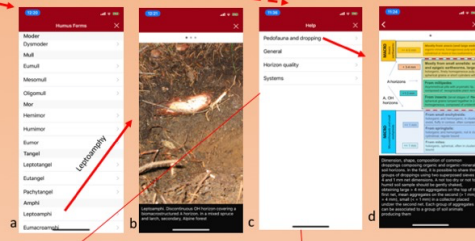

Fig. 3. TerrHum screens. a) Third brown touch "Humus Systems and Forms"; b) Touching the screen on a name listed in the Amphi System, as "Leptooamphi", a photograph of this humus Form appears on the screen; it may be magnified; two others are accessible sweeping the screen with a finger; c) clicking on the fourth brown touch named "Tables", the user can display information concerned groups of animals c) and produced soil aggregates d).
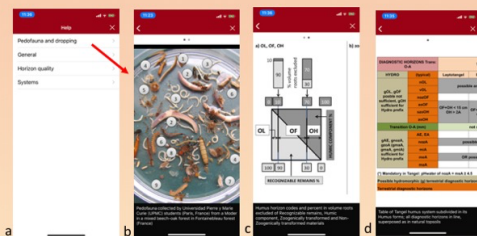

Fig. 4. TerrHum screens. a) Fourth brown touch "Tables"; b) Touching the screen on the word "Arthropods", two photographs of these animals collected in Petri boxes may be recalled and magnified; c) tables with composition of humus horizons or d) tables of humus Systems and Forms are also available.
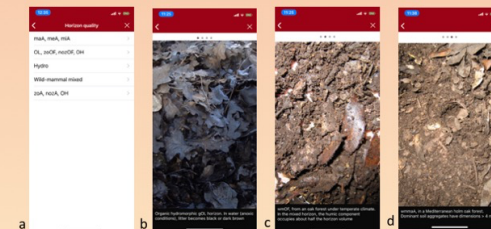

Figure 5. TerrHum screens. a) Horizon quality touch allows to display even particular horizons that have to be considered in presence of capillary water and hydromorphic situations b), or horizons mixed by wild-mammals (c and). d