PEDOLOGUE

- **Spring 2006**

Newsletter of:
Mid-Atlantic Association of Professional Soil Scientists
Edited by Del Fanning

In this issue:

Editor's Comments

This issue of Pedologue is again available from the MAPSS Web Site, http://sawgal.umd.edu/mapss/ . Hard copies are not sent unless the editor, dsf@umd.edu or 301-405-1308, is informed of someone who needs one.

At the MAPSS meeting on Feb. 18, I stated my intention to write an editorial for this issue of Pedologue to propose that MAPSS should select the Annapolis soil series as the state soil and I implied this selection would stimulate the MAPSS education committee to go to the state (legislature and or governor) to get a state soil officially recognized by the state. I also invited others to write a defense of Sassafras, the soil series previously selected by MAPSS as Maryland state soil. In this Pedologue issue these things are happening.

I hope that MAPSS members will read these state soil items and that the organization will come to a new stance on the Maryland state soil matter – to either reaffirm Sassafras or to crown Annapolis. In thinking about these matters, we need to think about the purpose and need for a state soil. In my opinion, the prime purpose of state soils is to educate people about how we/they should think about, appreciate, and interact with soils with a view toward how human/soil interactions can be improved in the future. In my editorial, I have pointed out how the Annapolis soil series offers tremendous opportunities as an

educational vehicle, looking to the future where environmental issues will be at the core of society's needs for soils information. I think that the Sassafras soil series is of great historical interest to soil survey programs and that it deserves to be an honored and respected soil series – which it already is. However, as we look to the future and future generations, the soil science educational needs will in my opinion be much better served by the selection of Annapolis than by Sassafras.

I wish to thank those who have contributed to this issue, especially Jim Brewer for the Meeting minutes and other items, Charlie Hanner for his Sassafras editorial and his article on the Caroline Co. soil survey up-date, Martin Rabenhorst for the soil judging team news, and Ray Weil, Pat Megonigal and Phil Snow for help with my editorial.

MAPSS Meeting Feb. 18, 2006. Minutes by Secretary Jim Brewer

MAPSS Business Meeting 2/18/06
Delaware Agricultural Museum and Village
Dover, Delaware

President Needelman presided over the meeting
Attendance: 39 current, new members and guests
Attached are agenda, finance report, etc.
Opened at 10:35 AM

Welcome by President Needelman

Sec. Brewer read the highlights of the minutes from the 2/23/05 business meeting. No corrections, approved

Nominations-Chairperson Rabenhorst gave the 2006 MAPSS officers nominations to Pres. Needelman who asked for nominations from the floor. Rabenhorst conducted the election. Nominations are:
President Elect – Richard Weismiller
Vice President – Jim Chaconas
Secretary – Jim Brewer
At Large Member (2 to be elected) – Susan Davis, Charlie Hanner, Carl Robinette and Mitchell Scott

Rabenhorst passed out and collected ballots
Results of the paper ballot were winners:
President Elect – Richard Weismiller
Vice President – Jim Chaconas
Secretary – Jim Brewer
At Large Members – Charlie Hanner and Carl Robinette

President Needelman called for COMMITTEE REPORTS

Finance –In the absence of Chairperson Effland, G. Jellick reported.
Jellick presented a financial report on expenditures for 2005 (see attached).
Report included all credit and debits. He briefly discussed the profit from the successful monolith project.
Lenore Vasilas asked about requested donations to the two states Envirothon teams. The item was chaired until later in the meeting.

Membership and Ethics – Pres. Elect Weismiller stated MAPSS had some new members at the meeting and that the committee was working well.

Education and Public Relations -Chairperson Fanning asked for contributions from the membership for future newsletters. He stated he was working on a special issue with D. Shields about the DE monoliths. Fanning thanked all the members who have sent in articles. He talked about the recognition of a new state soil, Annapolis soil series for MD. The committee supports the recommendation. Pres. Elect Weismiller stated MAPSS needs to make a stand on the need for an official state soil by the legislators. He stated Sassafras is in the Smithsonian Soils Exhibit Project and is recognized there as the state soil of MD. Fanning wants to put a pitch in for Annapolis in the next newsletter. Robinette stated the legislators need to approve it, but that they don't care which soil it is. Annapolis would be recognizable because it's the location of the state capital. He also stated, to the legislators that recognizing a state soil is "frivolous". Robinette stated we will need a prominent legislator to introduce the bill to them (mostly likely from an urban area of the state).

Constitution and By Laws –Chair Jellick led discussion on proposed changes for the MAPSS fiscal and administrative year from January 1 through December 31 to March 1 through February 28 because council elections are held after Jan 1 each year. It would only require a change in Article II of the By-Laws, which could be done immediately.

Jellick made motion to change By-Laws Article II to include the following language "The fiscal and administrative year shall be from March 1 through February 28"
Second by King
Voice approved, motion passed.

Jellick led discussion on proposal to add Article XV to the Constitution pertaining to a "Board of Directors" for the association. Jellick stated the Board of Directors shall include three members. Each member shall serve for 3 years on the Board. The duties of the Board shall be as defined in the By-Laws. The Board of Directors shall consist of three members. Each member must be a past officer of the Association. Each Director shall be nominated by the Executive Council and approved by a vote of the Membership. The duties of the Board of Directors shall include the following:

- Ensure that the Council executes its duties in accordance with the Constitution and By-Laws.
- Review actions of the Executive Council, and provide guidance on meeting the objectives of the Association.

- Meet once per year with the Executive Council to coordinate Association activities.

Discussion led by Pres. Elect Weismiller recommended that it be made clear that the Board would not have an active role in running the Association. Jellick replied that he would change the word "coordinate" to something like "review". Membership agreed that Jellick should draft revised constitution and by-laws for publication in the newsletter. Formal vote on the revisions would be made at the next business meeting.

President Needelman presented the 2006 MAPSS University of Maryland Scholarship to Chris Brosch. A picture of Chris (left) and Dr. Needelman is inserted here. They really aren't aliens, that's just a sign that happened to be on the wall.

Sec. Brewer reported on Executive Council meeting held in Jan. 2006. Highlights included:

- Invitations to NRCS State Conservationist to business meeting
- Past monolith making project and monies made
- Past issues of newsletter on web site
- Nominations for upcoming election
- MAPSS assistance with WCSS acid sulfate soils tour (approved up to $1000 donation for a MAPSS member to attend and provide lunches for tour)
- Revision of Extension Bulletin #212
- Logistics for business meeting
- MAPSS involvement in President Needelman's Ditch Soils Tour in August
- Possibility of a Board of Directors for MAPSS and change in fiscal year
- Awards and Scholarships approved (UMD scholarship-$1000; UMD soil judging team funding-$1000; High school land judging contest winners-$225)
- Possible Katrina donation became Smithsonian Project donation of $2500 donated to each monolith fund for Louisiana and Mississippi.

M. Rabenhorst reported on MD soil judging team and national contest to be held in CA this year and thanked MAPSS for contribution. Also mentioned that MD might host the regional contest in Fall 2007.

<u>2006 Activities</u>
Fanning led discussion on WCSS acid sulfate tour and assistance from MAPSS (box lunch on first day).

Pres. Needelman led discussion on proposed Ditch soils tour this summer by UMD. He would get more information to the membership in the near future.

Pres. Elect Weismiller discussed MD Bulletin 212 and need to update the document with help from NRCS and MAPSS.

Pres. Needelman had members and guests introduce themselves.
Sec. Brewer and G. Jellick led tabled discussion on Envirothon donations. Jellick had records of past donations to both DE and MD. Discussion led to a motion by Brewer to donate $200 to each state's team which won the soils part. Donation would be either money or other items of equal value.
L. Vasilas 2nd motion
Voice approved
L. Vasilas mentioned SWCS Old Line Chapter matching donations up to $250 to Envirothon in MD.
Meeting adjourned at 12:20 PM
NOTE: meeting was followed by a lunch with a slide show by D. Shield on the MAPSS summer monolith project and construction of soils display at Ag. Museum. After lunch there were lectures by Past Pres. King on new soil series in MD and DE; Delmarva geology by C. Hanner; M. Rabenhorst on IRIS tubes research; Pres. Needelman on ditch soils and D. Fanning on WCSS acid sulfate soils field trip.
Delaware Ag. Museum was open in the afternoon for touring.

2005 MAPSS Treasurer's Report

Bill Effland, Treasurer
February 17, 2006

2005 MAPSS Project
DE agriculture museum soil monolith collection

Gross income

	11,725.00

Expenses

Monolith preparation materials	659.74
	338.68
	108.62

Net Income

	10,617.96

Summary of Organization Account

Beginning Balance

Dec. 2004	7,684.46	

Income

2005 Membership dues	1,530.00	
2006 Membership dues	710.00	(as of 2/3/2006)
DE monolith project	10,617.96	
2005 February business meeting	447.00	
Smithsonian donations		
Bagley	500.00	
Earles	50.00	

Total Income

	13,854.96

Expenses

ASF (Smithsonian)	5,000.00
Soil Judging Sponsor	500.00
UMD soil science scholarship	1,000.00
2005 February business meeting	801.06
Land judging ($100, 75, 50 prizes)	225.00

Total Expenses

7,526.06

Ending Balance

14,013.36

MAPSS Projected Budget for 2006

Income

Membership dues	1500	est
February business meeting	150	est
Ditch soils tour project		

Expenses

WCSS field tour	1000	
UMD soil science scholarship	1000	
February business meeting	250	est
UMD soil judging team support	1000	
Land judging prizes	225	
ASF (Smithsonian)	5000	
Postage	20	est
Ditch soils tour		

est = estimated value; others were approved by Exec. Council 1/31/2006

Submitted by Bill Effland, Treasurer
2/17/2006

Editorial by Del Fanning proposing the Annapolis Soil Series as Maryland State Soil

ANNAPOLIS SOIL SERIES–FOR THE STATE SOIL OF MARYLAND

Editorial by Del Fanning

Background

The Soil Science Society of America (SSSA) is working intensively to develop a high-profile soils exhibit at the Smithsonian Museum of Natural History in Washington, DC. The Smithsonian is also committed to the development of this exhibit. To date, over 1 million dollars have been raised from various organizations and individuals to support the exhibit development. As part of the overall fund-raising campaign, each state was requested to raise a minimum of $10,000 to support the display of a monolith of their state soil in an exhibit of the state soils of the United States in the Museum. Largely through the efforts of MAPSS and individual members of MAPSS, Maryland and

Delaware have each raised the $10,000 to have their state soils exhibited. Recently, as part of Hurricane Katrina Relief Efforts, MAPSS additionally contributed $5000 to promote the exhibit of monoliths of the state soils of Louisiana and Mississippi in the Smithsonian. Some of the funds that MAPSS has contributed to these efforts were earned by MAPSS by collecting soil monoliths, including one of the Delaware state soil *Greenwich*, for display in the soils exhibits that opened in 2005 at the Delaware Agricultural Museum in Dover, DE.

Patrick Megonigal, the soil scientist curator of the soils exhibit at the Smithsonian and a new member of MAPSS, whose soil science research is headquartered at SERC (the Smithsonian Environmental Research Center at Edgewater, MD) informs us that the state soils exhibit is expected to open at the Smithsonian in the spring of 2008. The nearness of this date gives urgency to efforts to achieve official state recognition of a Maryland state soil. The MAPSS Education Committee that I chair (other members of this committee are Drs. Phil Snow and Ray Weil, who, like me are also citizens of Maryland) wants to work to get official state recognition of a Maryland state soil before the state soils exhibit opens at the Smithsonian. However, before we seek this recognition, we propose that the *Annapolis* soil series be selected as the state soil of Maryland. By this editorial we hope to persuade MAPSS members and others that *Annapolis* is the best soil series to represent Maryland. In succeeding paragraphs we present reasons why *Annapolis* is the ideal soil series to represent our state.

What are Annapolis soils and where do they occur?

The *Annapolis* soil series of *fine-loamy, glauconitic, mesic Typic Hapludults* by *Soil Taxonomy* (Soil Survey Staff, 2003) was established in 2003 during the update of the Anne Arundel County MD soil survey through the efforts of Susan Davis and other soil scientists, including Eddie Earles and David Verdone of NRCS who worked with Susan on the Anne Arundel update. A new series was needed because the criteria for glauconitic mineralogy families in *Soil Taxonomy* were recently changed such that soils with greater than 20 percent glauconite pellets in the fine-earth fraction of the soil mineralogy control section now qualify for a glauconitic family. Previously, 40 percent glauconite was required for a soil to qualify for a glauconitic family. Many soils previously mapped as *Monmouth* in Anne Arundel County were also found to fit in a fine-loamy particle size family rather than in a fine family. *Monmouth* soils have been placed in *Soil Taxonomy* in a fine particle-size family. The former *Monmouth* soils that were found to be fine-loamy were also found to have more than 20 percent glauconite pellets in their mineralogy control section. The Annapolis soil series was established for these soils. It was decided that the *Collington* soil series would continue to be placed in a mixed mineralogy family class, so that series was re-defined as having less than 20 percent glauconite pellets (in the fine-earth fraction of its mineralogy control section). However, since many soils previously mapped as *Collington* have 20 or more percent glauconite pellets in their control section and are fine-loamy, many former *Collington* soils now also qualify for the Annapolis series. The new series was named for the city of Annapolis, the Maryland state capitol as well as the county seat of Anne Arundel County.

Annapolis soils represent both the land and the sea.

Maryland is a coastal state with the largest inland sea in the country, the Chesapeake Bay. Many of the soils of the state are developed in soil parent materials that are sediments (e.g. Coastal Plain sediments) or sedimentary rocks (e.g. the limestones, shales and sandstones of the Appalachian Mountains region) or are metamorphosed sedimentary rocks (e.g. slates, marbles, phyllites, and schists in the Piedmont region) that were strongly influenced by marine and/or estuarine conditions during times in the geologic past when the materials of which they are composed were accumulated as estuarine or marine sediments. Many of the geologic sediments of our present Coastal Plain originated from other regions of Maryland or surrounding states and may have been deposited as sediments during multiple events.

Like many other soils in Maryland, *Annapolis* soils are developed in geologic sediments that have been heavily influenced by both the land and the sea. Quartz, SiO_2, the main mineral in the sand fraction of the Annapolis soils other than glauconite pellets, has been noted in microscopic examination of thin sections to resemble zoned quartz in soils and rocks of the Piedmont region, from which this quartz is likely to have once eroded (Tapper and Fanning, 1967).

The other main mineral found in the sand fraction of Annapolis soils is the unique and colorful mineral glauconite. Glauconite, is a green, micaceous phyllo(layer)-silicate mineral that may be represented by the formula $K_{0.8}(Si_{3.8}Al_{0.2})(Fe^{3+}_{0.8},Fe^{2+}_{0.2},Mg_{0.4},Al_{0.6})O_{10}(OH)_2$. It occurs as abundant sand-sized pellets in *Annapolis* soils. Interestingly, the deep black color of a glauconite pellet changes to green when crushed between a finger and thumb or is streaked on a streak plate for mineral identification. The mineral is the reason that some people call glauconitic soils like Annapolis “greensand soils”.

The glauconite that composes the pellets in *Annapolis* soils formed in sediments of Eocene and Cretaceous seas some tens of millions of years ago. These ancient sediments, upon being raised out of the sea or by dropping sea-level, became the parent materials of *Annapolis* and related glauconite-containing soils. The glauconite formation took place in the seas through the transformation of other minerals in the sediments (e.g. probably kaolinite and iron oxides, which may have been derived from the Piedmont region) (Tapper and Fanning, 1968; Fanning et al., 1989). The K (potassium) of the glauconite was extracted from sea water during the mineral transformation processes. These processes seem to have occurred during times when the rate of sediment accumulation was slow – such that the minerals came into a stable equilibrium with the sea water. This mode of glauconite formation is validated by potassium/argon dating of glauconite from various geologic formations, which dates are found to match the time when the sediments are expected to have been deposited (Fanning et al., 1989; Hurley et al., 1960).

The glauconite pellets appear to be fecal pellets of organisms that lived on the floor of the seas, or perhaps of fish in the seas, as the sediments were being deposited and the glauconite was formed. This sea floor environment appears to have been a sub-aqueous

soil of some kind. Modern sub-aqueous soils have now been recognized on the floors of bays in MD and DE by soil scientists at the University of Maryland, starting with the late George Demas, who earned his Ph.D. at the University of Maryland by his pioneering studies of such soils. Perhaps recognition of *Annapolis* as our state soil will inspire soil scientists and their students to determine if glauconite is forming in our sub-aqueous soils of today. Perhaps they may also be inspired to determine what organisms made the fecal pellets. Perhaps *Annapolis* as our state soil will make us ask and search for the answer to questions such as "What species made those feces?", "Were they mollusks represented by carbonate shells that are present in the geologic glauconitic sediments in many places?" "Was the mud that must have passed through the intestines of these creatures glauconite, or was it other minerals that were transformed into glauconite in the organisms or after the material was pelletized?" There are many interesting geologic as well as pedologic questions for those interested in *Annapolis* soils to ponder and research.

The land and the sea also influenced the marine sediments in which the *Annapolis* soils have formed by fostering the formation of iron sulfides, particularly the mineral pyrite FeS_2 -- known in macroscopic form as "fools gold", but which in these sediments commonly occurs as microscopic framboids, which formed in the marine sediments and even within some of the glauconite pellets. The sulfur (like the potassium of the glauconite) for the pyrite formation came from the sea in the form of sulfate, chemically reduced in the sediments to sulfide, to combine with the iron in iron oxide bearing sediments from the land – which iron was chemically reduced in the sediments from the ferric to the ferrous form to combine with the sulfide sulfur through the predominantly anaerobic soil process of sulfidization – a process named and described by soil scientists from the University of Maryland in multiple publications (e.g. Fanning and Fanning, 1989; Fanning et al., 2002; Rabenhorst et al., 2002).

The *Annapolis* soils today, which link the past and the present, are found on land surfaces. The aerobic conditions of the land have transformed the minerals deposited in the marine environment, far back in geologic time, into minerals that are stable under the aerobic conditions of the terrestrial environment of today. The iron sulfides in particular have undergone big changes, to the point that *Annapolis* and associated soils no longer contain any sulfides. The iron released when the sulfides oxidized has itself been oxidized and hydrolyzed and is now to be found in minerals such as iron oxides, that may occur in the form ironstone, or in the yellow potassium iron oxyhydroxide sulfate mineral jarosite, whose presence in many *Annapolis* soils shows that the soils experienced a time of active sulfuricization (Fanning and Fanning, 1989) when active acid sulfate weathering took place -- as the previously anaerobic sediments adjusted to the predominantly aerobic environment represented by the *Annapolis* soils of today. *Annapolis* soils are great examples of what we call post-active acid sulfate soils. They show how such soils, which have undergone a period of extreme acidification during active sulfuricization (see Fanning and Fanning, 1989, or Fanning et al. 2002, for an explanation of the term) when the sulfides were oxidizing and jarosite formed (when it is likely that essentially no plants could grow well when the sulfide oxidation was taking place at the soil surface, and the soils exported extremely acidic, iron-bearing water to surface and ground waters) to become less acid and eventually productive soils after the sulfides oxidized away.

Oh *Annapolis* soils, you cause one to wax poetic, you represent land to sea to land to… You are like so much of this wonderful state of Maryland still is today -- both land and sea.

Like most Maryland soils, *Annapolis* soils have *argillic horizons*, a subsurface B horizon of clay accumulation.

Annapolis soils, like most of the well-developed soils of Maryland that occupy the most extensive areas of land in our state, have *argillic horizons*, a subsurface zone of clay accumulation. This clay has accumulated in these Bt (t from the German word for clay, which is *ton*) horizons to a considerable extent because it has been leached (or eluviated or lessivated, see Fanning and Fanning, 1989, Chapter 13) down from overlying A or E (for eluvial) horizons as clay particles that have become suspended in the leaching water. These particles have stopped (been illuviated) in the B horizons by flocculation of the clay or by being filtered out on the walls of the pores and peds in the B horizons so as to form what soil scientists of today call clay skins or coatings or *argillans*.

The origin of the clay that moves in *Annapolis* soils is easy to explain. The glauconite pellets that compose commonly 30 or more percent of the sand of the deeper, BC or C horizons of these soils are composed of agglomerated clay particles or they are easily broken down into glauconitic clay by soil physical processes such as by tillage or by shrink-swell or freeze-thaw phenomena. As a result, the sand fraction in the surficial A or E horizons usually contains less than 10 percent glauconite pellets, whereas the sand of the B horizons typically has about 25 percent percent pellets, and the sand of the deeper BC or C horizons, beneath the Bt horizons has 30 or more percent pellets.

Because much of the clay of the *argillic horizons* of *Annapolis* soils has accumulated by the clay movement phenomena as described above, the Bt horizons of these soils and the BC horizons below typically have well developed clay skins that are easy to discern on ped faces and/or in the pores and channels of these horizons. This makes them good for demonstrating to students and others what clay skins look like and how they formed.

The presence of an *argillic horizon* in *Annapolis* soils along with a low base saturation of the exchange complex of these soils, causes them to be classified by *Soil Taxonomy* as *Ultisols*. *Ultisols* are the most extensive order of soils in Maryland. At the suborder level of *Soil Taxonomy*, *Annapolis* soils are *Udults*, (implying an udic moisture regime). Udults are the most extensive suborder of soils in Maryland, and at the great group level *Annapolis* soil are *Hapludults* (*Hapl* for simple Udults), the most extensive great group in the state – so Annapolis soils are good soils to represent classes of soils in *Soil Taxonomy* that are extensive soils across the whole state.

***Annapolis* soils were some of the first in the state to be cultivated for commercial agriculture and the use of *Annapolis* soils today.**

Annapolis soils occur in Maryland primarily in Anne Arundel and Prince George's Counties. These are counties that were colonized by Europeans early in the settlement of the state, in the 1600's. Most areas of *Annapolis* soils were used commercially for agriculture in Maryland for the production of tobacco from the time shortly after the region in which they occur was first settled up until the present time. The *Annapolis* soils were and continue to be excellent soils for the production of tobacco and other crops. For tobacco their acid nature was good because it prevented the crop from growing too prolifically and rank – thin, high quality leaves were (are) produced on these soils without the need for much fertilization. Even before the advent of synthetic fertilizer, the *Annapolis* soils were especially well suited to the high potassium-demanding crop of tobacco, because of the readily available natural potassium supply released from the glauconite in these soils.

From a soil science historical point of view, Milton Whitney, who is credited with starting the U.S. federal soil survey program, and was the Chief of the federal survey from its inception in 1899 until the year of his death in 1927, is likely to have farmed what are now recognized as *Annapolis* soils during the years of his youth in Anne Arundel County and may have been inspired to become a soil scientist from his contact with these soils (Fanning and Fanning, 2001). Milton liked to smoke cigars and used to claim that he could tell from the smoking qualities of the tobacco of the cigars which kind of soil produced the tobacco. One wonders if his favorite tobacco came from soils that we now call *Annapolis*.

With the recent expansion of suburban development in the corridor between Annapolis and Washington, DC, where *Annapolis* soils are widely distributed, the *Annapolis* and closely related soils are often disturbed by construction activities. When they are excavated too deeply, they can give rise to severe active acid sulfate soil problems if the underlying un-oxidized zone of the soil-geologic column that still contains sulfide minerals is exposed. Engineers, land use planners and citizens in general need to be made aware of these hazards associated with the too-deep disturbance of the *Annapolis* and associated soils. Making *Annapolis* the state soil will provide a wonderful opportunity to draw attention to the need to carefully assess whether the un-oxidized zone will be encountered in construction activities before disturbance takes place. These educational activities by soil scientists will demonstrate the environmental sensitivity of soils and their need for careful management and protection. So that we may continue to appreciate these unique soils some natural areas and parks where these soils occur need to be protected. I have in mind natural areas such as Watkins Park in Prince George's County and areas at SERC in Anne Arundel County. Continued construction activities in Prince George's and Anne Arundel Counties are likely to make the *Annapolis* soil series an endangered soil series, like an endangered species of plants or animals in terms of its need for protection from the danger of extinction. Recognition of the soil series as the state soil should give increased impetus to protect some areas where *Annapolis* soils occur.

Thoughts about the comparison between *Annapolis* and *Sassafras*, the soil series previously recognized by MAPSS as the Maryland state soil and some educational advantages of the *Annapolis* soils.

It is to be acknowledged that MAPSS in 1993 picked the *Sassafras* soil series, *Typic Hapludults, fine-loamy, siliceous, semiactive, mesic* as the state soil of Maryland. I, DSF, must admit that when I first heard of the idea of state soils that *Sassafras* was the first soil series that came to my mind for state soil of Maryland. It was one of the first soil series recognized in the state and in the early twentieth century it was probably the most extensively mapped soil series in the Coastal Plain region of the state and thereafter for many years into the mid-twentieth century. Now, however, *Sassafras* soils are difficult to find because the definition of the series has become very restrictive as many, many different soil series have been defined out of what were originally *Sassafras* soils (e.g. 34 different series were already separated from Sassafras by the early 1950's, see Table 19.3, page 157 of Fanning and Fanning, 1989 and probably even more have been defined out since the 1950's). Some of the soils split out were the *Downer* soils series, *Typic Hapludults, coarse-loamy, siliceous,semiactive, mesic*, that has been selected as the state soil of New Jersey, and *Greenwich, Typic Hapludults, coarse-loamy, mixed, semiactive, mesic* -- selected in 2000 as the official state soil of Delaware. Monoliths of these well-drained generally brown soils and *Sassafras* (if it becomes the officially recognized Maryland state soil) when lined up in the Smithsonian exhibit of state soils will look much alike. One argument for *Annapolis* as Maryland state soil is that it will be a more distinctive and interesting soil in comparison to some others from the Mid-Atlantic region, particularly if an *Annapolis* profile can be selected for a monolith that has a greenish tinge from glauconite in some of its horizons and if it has some yellow jarosite concentrations in its deeper horizons. Also the soil genesis story that we can present for *Annapolis* should be more interesting than that for any of the *Sassafras* family of soils.

At the time of the run off election for the Maryland state soil conducted by MAPSS in 1993, the soil that I nominated was *Collington* (other series nominated by others were *Hagerstown*, *Glenelg*, and *Othello*) for many of the same reasons that I have presented in this editorial for *Annapolis*. An argument that was used against *Collington* at the time of the election was that state control for the administration of the *Collington* soil series resided with New Jersey, even though the name Collington was from Collington in Prince George's County, MD, when the *Collington* series was first set up in the early 20th century about the same time that the *Sassafras* series was first recognized. Now I am no longer in favor of *Collington* for Maryland state soil because it has been redefined to have less than 20 percent glauconite pellets in its soil mineralogy control section, which will also limit the extent of *Collington* soils. The *Annapolis* soil series, which had not been defined at the time of the original run off election, is now the soil that best represents what I think the Maryland state soil should be and to my knowledge the state control for the *Annapolis* series resides with Maryland.

A political and public perception reason for *Annapolis* as MD state soil is that the name Annapolis is easy to associate with Maryland as it is the same as the state capitol. Also the occurrence of the *Annapolis* soils near the state capitol and their environmental and

historical as well as agricultural sensitivity should make these soils attractive to a broad spectrum of supporters.

Annapolis will be an excellent soil for teaching the general public about the importance of soil in our everyday lives. The history of land-sea interactions helped shape the development of this soil and now soils such as *Annapolis* are shaping interactions between people and the land land-sea environment. Such storylines can be woven into public relations and teaching opportunities using the *Annapolis* soil as a backdrop. For example, an *Annapolis* soil profile has been exposed near Pat Megonigal's office and laboratory facilities at SERC. As the curator of the Smithsonian soil exhibits, Pat and his staff plan to show the Maryland state soil (assuming that *Annapolis* is selected) to the many visitors to SERC. Furthermore the status of this soil as the Maryland State Soil can be a venue for highlighting how important soils and soil science are to the welfare of Maryland citizens. This message has the potential to reach the thousands of school children that visit SERC each year. This sort of public outreach can be repeated at other sites where *Annapolis* soils occur. Making *Annapolis* the Maryland state soil should stimulate interest and the extension of knowledge in general about soils and the environments that formed them and about human interactions with soils.

Summary.

MAPSS should select the *Annapolis* soil series as the Maryland state soil and promote this recognition by the state. The *Annapolis* soil will be a valuable educational vehicle for explaining how so many of the soils of the state have developed in sediments or transformed sediments and, from a geologic point of view, how they represent both the land and the sea. This is an important message in a state that is so connected to the sea via the Chesapeake Bay and numerous smaller bays where subaqueous soils occur, as well as to its lands.

The *Annapolis* soil series as the state soil will also permit many of the soil science research and educational advances that have been made at the University of Maryland to be show-cased. These include studies of the nature of the minerals glauconite and jarosite, the recognition of and research about subaqueous soils, and the understanding that many of state's soils are influenced by acid sulfate soil processes. The leadership of Maryland's soil scientists in producing soil science educational materials, such as textbooks (e.g. Brady and Weil, 2002, 2004; Fanning and Fanning, 1989) and multiple chapters in other books that are used internationally as well as nationally, will be complimented by the visionary selection of *Annapolis* as our state soil.

The *Annapolis* soils also occur in an area of the state that is being heavily impacted by suburban development and construction activities that must take the nature of soils like *Annapolis* into strong consideration in terms of the environmental impacts that these activities will have on the well-being of the state and its citizens.

The MAPSS education committee seeks the support of the whole MAPSS organization to recognize the *Annapolis* soil series as the state soil of Maryland and to promote this recognition into official recognition of *Annapolis* as state soil by the state.

Acknowledgements. The author acknowledges the contributions to this article of other members of the MAPSS education committee, Phil Snow, who is pushing us forward in going for state recognition, and Ray Weil, for encouragement and for excellent suggested revisions to this article. Also, the most extensive and helpful revision comments were received from Patrick Megonigal, who we hope as a new MAPSS member will join our education committee as he curates the national soil exhibits that are being developed at the Smithsonian Museum of Natural History.

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Author's final comment. I had the intention to put pictures of an *Annapolis* soil profile and of some glauconite pellets into this editorial, however, I have run out of time and don't want to make this article any longer or more difficult to communicate by electronic means than it already is. However, if *Annapolis* is selected as MD state soil by MAPSS, pictures will be added to a revision of this document as we go for official state recognition.

Editorial by Charlie Hanner defending Sassafras as Maryland State Soil.

While listening to Dr. Fanning's emotional and rousing speech at the Feb. 18 MAPSS meeting and his proposal for Annapolis as a state soil, I must admit at first I found his idea of a *pedological coup d'etat* somewhat interesting. Though I could not help to think of the history the Sassafras series has in Maryland and with the soil survey program.

Being established in 1901 with the publication of the Cecil Co. soil survey, the Sassafras series was one of the first soil series in the early days of soil survey activities in the U.S. It is one of the oldest soil series in the U.S. It is designated as a Benchmark and Hall of Fame soil series, which is recognition of its historical significance in the evolution of soil science in the U.S. At one time, Sassafras was mapped on nearly 500,000 acres across the Maryland Coastal Plain. Currently Sassafras is correlated in 16 soil survey areas and the map units cover 310,041 acres. Currently Annapolis is correlated in 1 soil survey area and the map units cover 23,762 acres. Some say Sassafras is not as important as it had been, and it has been mostly correlated out of many legends in Maryland. It is, however, the beginning central concept of many series that have sprung out of it. Quite literally, it is the parent of many other series that we have today. (Or, as in the famous quote from George Demas, "It is the MOTHER of all soils") In 1993 the MAPSS membership voted in a special election to decide which series would be Maryland's State soil - and Sassafras was selected. While I was only an agronomy student at the time at the University of Maryland and did not vote, I remember the energy amongst the faculty and staff about the election, and the importance of this event that they pressed upon us.

Sassafras by far is one of the most recognizable series within the environmental and agricultural field today. Last but not least, USDA- NRCS has produced many documents, bookmarks, posters, web pages, etc. deeming Sassafras as Maryland's state soil. It may be confusing to the public if another soil series is posted as the 'official' state soil.

Original Nomination of Sassafras for State Soil by George Demas

From the 1993 Pedalogue – SASSAFRAS - Nominated by G. P. Demas

Sassafras. The name brings to mind the sweet odor of the forest, the golden sun shining, the green leaves wafting in the breeze, and birds singing their songs to each other. A subtle reminder for soil scientists of those days spent boring in the woods. But Sassafras is not just another tree. It is also the name of the most widely mapped soil series in Maryland – the soil series which should be nominated for State Soil of Maryland!

The Sassafras soil series was established in Cecil County in 1901, and its type location is presently in St. Mary's County. It is one of the oldest soil series in the United States. In Maryland, it is mapped in 19 of the 23 counties, more than any other soil in the state, comprising nearly ½ million acres or about 7 percent of the land area in Maryland. No other soil series in Maryland is as widely mapped, covers more acres, or is represented in more counties than Sassafras.

The Sassafras soil is a typical Mid-Atlantic coastal plain soil. It is classified as a fine-loamy, siliceous, mesic Typic Hapludult. It developed in sandy alluvial and marine sediments which were originally laid down as unconsolidated ocean deposits to form the Delmarva peninsula and coastal plain. In 1901, Sassafras was used in published soil surveys for sandy, well developed soils. In fact, besides the Norfolk soil series, no other sandy well drained soils were mapped on the coastal plain. In the 1920's another round of soil survey occurred, but in most surveys the soil series added mainly were for poorly and moderately well drained soils. In the mapping that occurred in the late 1950's and 1960's (our present published surveys), it was found that Sassafras could be divided up to show more differences in agricultural land use management. At that time, such series as Galestown, Evesboro, Fort Mott, Downer and Rumford came into being. Now, with the present soil survey activities in the state, more subdivision of Sassafras soil series is occurring to include both environmental and urban soil information of importance. This has spawned the development of the Rosedale, Runclint, Hambrook, Ingleside, and Cedartown soil series. So, in effect, Sassafras could be called the "Mother of all Soils" on the coastal plain! Yet there are those who may argue that as the new series are developed, there is less and less "real" Sassafras around. Although the acreage of Sassafras is being reduced, these new soils illustrate the ability of soil science to adapt to changing conditions and concepts of land use management. When soil information was primarily used for agricultural decisions, there was little need to separate soils based on one or two seemingly minor attributes that did not affect farming. Yet now, a water table between 42 and 72 inches in a Sassafras (which had no impact whatsoever on farming and therefore previously paid little attention), is extremely significant to septic system design. The Hambrook soil series, for example, is identical to Sassafras with a deep water table. The Galestown soil series is identical to a Sassafras with slightly less clay in the argillic horizon. In other words, a rose is a rose is a rose!

Yet even with such a distinctive history and family tree, these are not the only reasons Sassafras should be the State Soil. It is also Class 1 or prime farmland; it is a USDA-SCS Benchmark and Hall of Fame soil series; it is one of the best soils in the state for housing and onsite septic systems; and it has few limitations for almost any land use one can think of. If there were any soil in this state deserving of

NRCS Begins Caroline County Soil Survey Update

By Charlie Hanner, NRCS Soil Scientist

In cooperation with the Caroline Co. Soil and Water Conservation District, the USDA-Natural Resource Conservation Services (NRCS) has begun a project to update the county's soil survey. The original soil survey, published in 1964, is out-of-print and in

terms of modern environmental and development issues it is out-dated. New information about soils is needed to address changes in demographics, advances in building and farming technology, new environmental questions and the greater intensity of land use. There have also been many advances in soil science and soil survey procedures that need to be incorporated into the new survey. Planning departments, health departments, nutrient management specialists, wetland creation and mitigation specialists, civil engineers and a host of USDA programs all use soil survey information as a basis for making important land use decisions.

An update of Caroline County's soil survey will include more detailed descriptions of soils and their interpretive ratings. Information in this updated survey will be applicable to the management of soils for crops, woodlands, building sites, sanitary facilities, highways, parks and for wildlife habitat. It will also be used to identify the strengths and limitations of unique soils for specific land uses and to help prevent construction or crop failure caused by unfavorable soil conditions. Soil surveys can help planners to maintain and create land use patterns in harmony with the natural soil. Contractors can use the soil survey to locate sources of sand, road fill and topsoil. Health officials will also find the soil survey useful. The survey can help them plan the safe disposal of wastes.

There have been several advances in soil survey since the original survey was published just over 40 years ago. In 1976 a soil taxonomic classification system for identifying different types of soil was developed. With the advent of computers all soil mapping can now be completed onscreen with the use of mapping software. Other technical advances such as GPS (global positioning system) units, color infrared ortho-photography and portable hand held computers all help in increasing the speed, efficiency and accuracy of the soil survey update. Much of the soil survey update process still involves going to the field, auguring and describing soil borings much like the soil scientists did in Caroline County just over a half a century ago.

Soil survey activities have been occurring in Maryland since 1899, Cecil County, Maryland being one of the first soil surveys in the nation. Because of the support from the Maryland Department of Agriculture, the Maryland Soil Conservation Districts and the University of Maryland Agricultural Experiment Station, Maryland has one of the most progressive and advanced Soil Survey programs in the nation. Almost all of Maryland's soil surveys have already been updated or are in the process of being updated.
To learn more about the Caroline County Soil Survey Update visit the Maryland NRCS homepage at: http//www.md.nrcs.usda.gov/ and click on soils

New MAPSS members
Jim Brewer informs the membership and other Pedologue readers that the following individuals are 2006 New Members of MAPSS:
Johnbull Dickson
Julie Wolf
Julie Hill
Don Dagnan

Bryan Campbell
Melissa Hanner
Patrick Megonigal

Thank you message from new MAPSS scholarship winner Chris Brosch

Editor's Note: The following letter was received for MAPSS as an e-mail message from Chris. MAPSS is pleased to have such a grateful recipient and wishes Chris best wishes for a successful career as a soil scientist.

Dear MAPSS membership,

I am writing to thank you all for the generous scholarship you have provided me. I am quite impressed by the strength of your organization for the size niche it fills. It is inspiring for me to see professionals in my field of study that are so focused on making a difference in the community.

I was also glad to find that all the parliamentary skills I was forced to learn in my FFA career might still serve a purpose in my professional life.

I am very grateful for the contribution to my undergraduate degree at the University of Maryland. It has allowed me to look at going to graduate school more seriously. Whether at UM or somewhere else, I hope to gain advanced knowledge of soils with which I can make a profound difference in the field of agriculture.

I promise to stay in touch and plan to visit at the next business meeting if I'm invited back. Maybe I could share some soil photos I will be taking while I study in the Sonoran desert in Arizona this spring break.

Sincerely,

Chris Brosch

National Soil Judging Contest

On March 23 and 24, the National Soil Judging Contest was held in San Luis Obispo, CA hosted by California Polytechnic and State University. There were twenty one universities participating from seven regions around the country. The practice pits included an interesting variety of soils including Haploxeralfs, Haploxererts, Haploxerolls, Argixerolls, Calcixerolls and Xerofluvents. On Thursday the 23rd, the individual judging was held on a portion of the Cal Poly Campus where students described Haploxeralfs and Argixerolls. The group judging on Friday was held at the Halter Ranch Vinyard, where students described a Calcixeroll and a Haploxerert (and the coach tasted a lovely local cabernet sauvignon). The overall honors went to West Virginia University coached by their recently hired Assistant Professor Jim Thompson, followed by Virginia Tech in 2nd place, Univ. of Georgia in 3rd place, and Univ. of Illinois (coached by UMD Alumnus Prof. Bob Darmody) in 4th place. The University of Maryland finished 13th among the field of 21. In addition to studying the soils of the area, the UMD team had the chance to experience a number of other very interesting

events, 1) including the sun setting over the Pacific Ocean at Pismo Beach (where several purportedly half crazy students went swimming in the frigid water), 2) standing on the San Andreas Fault (we didn't feel anything), and 3) seeing the giant trees in Sequoia National Park (we had to drive 10 miles on snow with chains to reach the giant forest where there was 4 ft of snow on the ground)! All in all it was an outstandingly educational trip that we will all remember for a long time to come. Thanks for your support.

To the left are profiles of a Haploxerert from one of the practice pits and a Calcixeroll from one of the contest pits.

The University of Maryland team examining a vertisol at the Halter Ranch vineyard during the group portion of the competition. In the group judging, UMD finished 8th. Below, the team in Sequoia National Park (left) and the group poised upon the San Andreas fault (right) where Wallace Creek takes two 90 degree bends, as a result of fault displacement.

Calendar of some coming events

May 22-23. Virginia Tech led acid sulfate soils symposium – repeat of fall 05 programs. Spotsylvania, VA. Get info from Lee Daniels at Virginia Tech or Fanning at MD.

July 6-8, 2006. WCSS acid sulfate soils tour thru Delaware, Maryland and Virginia. There is still time to sign up – see the WCSS web site www.18wcss.org

July 9-15, 2006. World Congress of Soil Science. Philadelphia, PA. www.18wcss.org

August 22-23. MAPSS Ditch Tour on 22nd and symposium in College Park on 23rd – lead by Dr. Brian Needelman.