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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Catholic University
Nov. 24, 1948

Dear Dr. Ball,

Very recently, Father O'Neil called you by phone in regard to a dissertation I am to work on, namely, "A key to the Willows in Alaska".

I am enclosing a list of Willows as found in Eric Hulken's - Flora of Alaska and Yukon. I would appreciate it if you would check over the list and note: whether I should add any;

whether some should not be included;

and whether the synonyms are correct. I wish you would put down what in your opinion is valid name and synonym in each case, as we intend to follow your interpretation and no other author.

Father O'Neil says this list is the first step, so for any help you can give me, I will be very grateful. Later on, when I run into more problems, I hope I can call on you personally. I know you are also working on a key - so mine is really secondary. However, I do like the willows, and once I have a complete list, I hope to make the key independently.

You can return the list after checking it to Father O'Neil's address on the envelope. I hope this does not cause you too much time and energy.

Very sincerely yours, (over)
Rev. O. W. Schulte

Rev. O.W. Schulte,
Care Dr. Hugh O'Neill, Dept. Botany,
Catholic University of America,
Michigan Ave., Washington 17, N.E.

3814 Jocelyn St., N.W.,
Washington 15, D.C.

Nov. 27, 1948

Dear Father Schulte:

Your letter of November 24, and the list of willows supposedly of Alaska, were promptly received. While I am unable to make final decisions in all cases at this time, I have checked the list and am returning it herewith.

Those species and varieties of which I am relatively certain, I have checked with a triangle and, for convenience, have numbered them in the usual botanical sequence of position.

A few of which I am in much doubt as to occurrence in Alaska, I have ~~questioned~~ questioned (?). Those which I am certain should be excluded, I have marked by a dash (—).

As to the new species and subspecies of Hulten himself and the *S. tomentosa* Tratt. I can give no definite opinion until I study his discussions and the material he cites. Knowing Hulten and his work, however, I fear the worst.

Sweden has given us many headaches on willows. Andersson, the monographer, rendered great service by his monographing the willows of the world, but his knowledge of the relative scanty American material was not adequate to the job. Then too, like many others, everything which looked different was a new species to him. In his different publications the same entity varied from species, to subspecies, to variety, and even to form, generally progressing downward but not always. Part of the shift was due to the lesser space in a manual as compared with a monograph (*Monog. Salicum*).

In more recent years, Floderus has evolved the absurd theory that practically all willows are hybrids, and that the parents do not have to be present in the area where their supposed hybrids occur abundantly. Further and worse, he insisted that, from dried fragments in herbariums, he could recognize hybrids with not only two parents but also those having three, four, and even five parents. Then when he named such, he put the 3, 4, or 5 specific names in the ~~next~~ sequence which he imagined was denoted by the relative influence of each on the hybrid. Plain bosh. While Persild was in charge at Ottawa, he sent to Floderus (who was a friend of his father) all the Canadian herbarium willows. They came back named as multiple hybrids but when once filed they could not be found again, for the reasons named, so had to be put back under the names they bore before Floderus saw them.

Now comes Hulten, making subspecies out of former varieties. If they had been named as subspecies he would be changing them to varieties. Both of these categories should not be permitted by taxonomists, as it is too much temptation to the weak and unscrupulous.

Soon after the first of the year, I hope to begin active study of the Alaska-Yukon willows. And then will determine what really is represented by the novelties and other major changes given by Hulten. This annotated list should help you in starting on your keys. I will be glad to be of the fullest possible assistance.

Cordially yours,

Carleton R. Ball

Rev. O. W. Schulte,
Catholic University of Am.,
McMahon Box 88,
Washington 17, D.C.

3814 Jocelyn St., N.W.
Washington 15, D.C.

24 March, 1949

Dear Brother Schulte:

Your letter of March 21 and list of Alaska willows with tentative Sections assigned was promptly received. As I have been so busy in trying to find out what is represented by the increasing flood of "new" species, I have neglected the matter of correct names for Sections. Your letter caused me to do some searching.

I inclose a list of Alaskan willow species and varieties, with the Sections given at the right hand and the glaucousness or lack of it indicated at the right hand. Some comments on the matter of Sections may be helpful.

In the first place, no two successive authors seem to agree on the relationships of many species, and hence on the Sections to which they belong. Schneider never did conclude where *S. arbusculoides* and *S. angustocarpa* belonged, perhaps some other specie

Myrtosax has been a catch-all for many species having leaves which suggested *Myrtillus* and so has included many species not at all closely related. To remove *S. Chamissoe*, for example, from the *Adenophyllae* merely because it is prostrate and has more sharply denticulate leaf does not seem warranted.

I agree with you that *S. arbusculoides* should be grouped with the *Phyllofoliae*. Most authors, including myself, have lumped it with a miscellaneous group which need breaking up. I was wrong in lumping them as Sect. *Argentae*.

I now agree that *S. arbusculoides* is nearer to the *Phyllifoliae* and the Section *Griseae* Buxer should be resurrected for the group with short styles and stigmas, including *S. coactilis*, *S. petiolaris*, *S. sericea*, and *S. subsericea*. This leaves *S. Drummondiana* (including *S. bella* and *S. subcoerulea* as vars.), *S. Jepsoni*, *S. argyrocarpa*, and *S. pellita* Anderss. to be disposed of otherwise. Certainly *S. humilis* and *S. tristis* do not belong with this group, as Schneider and Andersson have placed them but with *S. discolor* and *S. Seculeriana*. Schneider did not place *S. argyrocarpa* in any Section, and Fernald made a new Section *Argyrocarpae* for it, but it is so close to *S. pellita* that some foliage specimens cannot be separated with certainty.

If Section *Herbaceae* is split to recognize Section *Retusae*, then *S. herbacea* and *S. polaris* remain in *Herbaceae* and *S. retusa*, *S. Dodonaea*, *S. phlebophylla*, *S. rotundifolia*, and *S. Setchelliana* go to Sect. *Retusae*. *Floerusa* gives evidence of being both crazy and dishonest (I'll be glad to furnish the proofs) and his Sect. *Aliense* has no standing. *S. Setchelliana* is most closely related to *S. retusa* and especially to its variety *Kitaibeliana* of the Carpathian Mtns. of SE. Europe.

I have been wrong in using Sect. *Rostratae* for *S. Bebbiana*, etc. Section *Fulva* of *Barratt* is correct. I have no record of a Section "*Lividae* Hym.". I will be glad if you will give me the citation. *Fulvae* was published in 1840, for *S. Bebbiana*.

I cannot make a decision on the question of stipules and glands without extensive study. Both stipules and glands are readily deciduous on many species. Some species and varieties have glands, not only on the denticulations of blades and stipules but also on the upper surfaces of petiole stipules as well. Such glands, as well as marginal ones, dry up and fall off as the season advances. Glands at the bases of stipules ~~are~~ ^{are} ~~not~~ ^{are} ~~found~~ ^{found} ~~on~~ ^{on} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~stipules~~ ^{stipules} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~petioles~~ ^{petioles} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~stipules~~ ^{stipules} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~petioles~~ ^{petioles} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~stipules~~ ^{stipules} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~petioles~~ ^{petioles} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~stipules~~ ^{stipules} ~~and~~ ^{and} ~~the~~ ^{the} ~~undersides~~ ^{undersides} ~~of~~ ^{of} ~~the~~ ^{the} ~~petioles~~ ^{petioles} ~~and~~ ^{and} ~~the~~ 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^{petioles}

Arcticae has been used for such miscellaneous groups of unrelated species
that it scarcely can be used at all. Cordially yours,

Cordially yours,

Catholic University
McMahon Box 88
March 21, 1949

Dear Mr. Ball:

I am enclosing my list of ALASKAN WILLOWS AND I am not sure if the sections to which they belong are correct. I have added the names as given in the literature in lead pencil. I would be very grateful if you would check them and make any necessary changes.

Another thing in making the key on the vegetative characters, I find that the glaucousness of the leaves has disappeared due to faulty drying. If it is not too much trouble, would you please put a check on those which have the glaucous coating on the living specimens.

One last question. Apparently the stipules are not always well developed. The old scars show a stipule scar, but no visible stipules with the leaves. Instead I find with a ten power lens little glands. One on each side where the stipules are supposed to be. Found on some specimens of *Anglorum Ovalifolia* and *Stolonifera* plus a few others. Now is it correct to describe this as "stipules absent or with only a gland present"?

So far I have finished a rough draft of the key. It works well enough for some species, but not too well for others. During the past month I have examined all of our specimens with 10 power binoculars from leaf to leaf. One thing it has taught me, is that they are hard to identify, but now gradually getting easier.

Again I hope this is not too much bother for you.

With every kind wish,

(Rev) O. W. Schulte

(see over)

O.W. Schulte 24 March 1949
WILLOWS OF ALASKA, ARRANGED BY SECTIONS

<u>Sections.</u>	<u>Species and Varieties</u>	<u>Glaucousness.</u>
<u>Pentandreae</u>	<i>S. lasiandra</i> Benth.	Glaucous
<u>Dumortier.</u>	var. <i>lanceifolia</i> (Andersson) Bebb	"
<u>Longifoliae</u>	<i>S. interior</i> Rowlee	Green to sub-
<u>Andersson.</u>	var. <i>pedicellata</i> (Andersson) Ball	Green glaucescent
<u>Cordatae</u>	<i>S. myrtillofolia</i> Andersson	Green
<u>Buratt.</u>		
<u>Saliciferae</u>	<i>S. Walpolei</i> (Coville & Ball) Ball	Glaucous
<u>Schneider</u>		
<u>Adenophyllae</u>	<i>S. Baralayi</i> Andersson	All glaucous
<u>Schneider.</u>	var. <i>angustifolia</i> Andersson	
	var. <i>hebecarpa</i> Andersson	
	var. <i>rotundifolia</i> Andersson	
	<i>S. Chamissonis</i> Andersson	Glaucous
	<i>S. coccinata</i> Bebb	Green
	var. <i>denticata</i> Bebb	"
	var. <i>puberula</i> Bebb (capsules)	"
	<i>S. pseudoscuticula</i> Ball	Glaucous
<u>Chrysanthae</u>		
<u>Koch.</u>	<i>S. alaxensis</i> (Andersson) Coville	Glaucous but
	var. <i>longistylis</i> (Rydberg) Schneider	tomentose
	<i>S. amplifolia</i> Coville	Glaucous
	<i>S. Burattiana</i> Hooker	Glaucous
	var. <i>angustifolia</i> Andersson	plus
	<i>S. Richardsonii</i> Hooker	Glaucous
<u>Rosae</u>		
<u>Andersson</u>	<i>S. fuscescens</i> Andersson	Glaucous
	var. <i>reducta</i> Ball	"
<u>Reticulatae</u>	<i>S. reticulata</i> Linne	Glaucous
<u>Fries.</u>	var. <i>gigantifolia</i> Ball	"
	var. <i>subrotunda</i> Searge	"
<u>Herbaceae</u>	<i>S. phlebophylla</i> Andersson	Green
<u>Burrer.</u>	<i>S. polaris</i> Wahlenberg, var. <i>subsynensis</i> Reup	"
	<i>S. rotundifolia</i> Tautvetter	"
	<i>S. Setchelliana</i> Ball	"
<u>Ovalifoliae</u>	<i>S. anglorum</i> Chamisso	Glaucous
<u>Rydberg.</u>	<i>S. arctica</i> Kallas	"
	var. <i>obcordata</i> (Andersson) Rydberg	
	<i>S. ovalifolia</i> Tautvetter	Glaucous or
	var. <i>gambensis</i> Schneider	Glaucous
	var. <i>cyclophylla</i> (Rydberg) Ball	"
	<i>S. stolonifera</i> Coville	"
<u>Glaucosae</u>	<i>S. brachycarpa</i> Nuttall, var. <i>Merrillii</i> Ball	Glaucous
<u>Fries</u>	<i>S. desertorum</i> Richardson	"
	<i>S. glauca</i> Linne, var. <i>acutifolia</i> (Hooker) Schneider	" or
	var. <i>Allicana</i> Ball	glaucous
	var. <i>glabrescens</i> (Andersson) Schneider	"
	<i>S. niphoclada</i> Rydberg	"
<u>Hylicifoliae</u>	<i>S. arbusculoides</i> Andersson	Glaucous or
<u>Dumortier</u>	var. <i>glabra</i> Andersson	glaucous
	<i>S. pulchra</i> Chamisso	Glaucous or
	var. <i>Looffiana</i> Ball	glaucous
	var. <i>Palmeri</i> Ball	do.
	var. <i>yukonensis</i> Schneider	do.
<u>Sitchensae</u>	<i>S. Sitchensis</i> Samsen	Glaucous
<u>Bobb</u>	var. <i>denticata</i> Andersson	"