Culture of the Shrubby Penstemons

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[A number of inquiries have been received concerning the "shrubby penstemons." Here are extracts from *Studies in Penstemon No. 2 - Subgenus Dasanthera* compiled by Ralph W. Bennett in 195[1]*- Although written many years ago, the information is still valid. As listed in *Penstemon Nomenclature* dated I960, Subgenus *Dasanthera* consists of *P. barrettiae, cardwellii; davidsonii* ssp. *davidsonii* and ssp. *menziesii, edithae, ellipticus, fruticosus, montanus* ssp. *man-bonus* and ssp. *idahoensis, newberryi* ssp. *newberryi*, ssp. *berryi, forma humilor* and ssp. *monoensis*, and finally *rupicola*.—Ed.]

Behavior in Different Climatic Areas

The species in *Dasanthera* inhabit the slopes of the mountains along the Pacific Coast from southern California up into Canada, and extend east as far as Glacier Park and the Big Horn Mountains n the northern part of this country. They do not get into the desert regions of the Great Basin in Nevada and Idaho, and they do not extend in the Rockies south of Yellowstone Park. They are always found at quite high altitudes, seldom less than 5,000 feet (except for one species), being seen along the highways usually in the passes. Where they grow, the rainfall is abundant. They are found nearly always on steep, rocky slopes, often clinging to faces of cliffs, with their roots in he crevices. They are never far from dense forest growth, though almost never in the actual shade of the trees.

Knowing their native habitat, which is pretty much the same for all the species, we can guess quite closely how they will behave in cultivation. They will need conditions like those we find in the mountains. We will not have any of the difficulties with them that we have in growing the penstemons from the arid regions, that is, troubles that arise from too much moisture. Our difficulties, if any, will be of a quite different sort—more on the side of combating insufficient moisture and fluctuating temperature.

In the northwestern United States and east as far as the northern Rockies these species grow in cultivation as well as they do in the wild and without any special care. I used to read reports of wonderful success with the shrubbies out in those states and wonder how it happened that the gardeners out there were so much smarter than gardeners in the East. Then I visited the Pacific states and discovered that the gardeners are the same, but the climate is different. Just how it is different is hard to figure out, but the fact is that out there all that is necessary is to stick the plants in the ground and they will grow vigorously. If the rainfall in the particular area is less than it is in the mountains, such as would be the case in eastern Washington and in Idaho, it can be brought up to the required level by artificial watering, and the plants will not know that they are not in their native habitat. People living out there can read the catalogs of the western nurseries and take their statements literally. Most of the books about rock garden plants have been written by people who either lived in the northwestern United States or in a region where the climate is similar; and therefore the statements in those books, at least those that I have read,

about the behavior of the shrubby penstemons have to be interpreted as applying to such regions. They do not always apply to areas where the climate is markedly different.

Without knowing very much about it, I believe that the climate in Canada and England and Scotland is equally as favorable to the *Dasanthera* as that of the northwestern United States.

In the whole northeastern section of the United States, including the New England states and New York State, the climate is enough like that of the northwestern states so that no difficulty is experienced in growing the species in *Dasanthera* provided certain basic requirements are met. My observations in a number of gardens in this region lead me to believe that the only requirements there are adequate moisture and good drainage, with possibly a requirement for a certain amount of acidity. The fluctuations in temperature, though often complained about by residents of that area, are not enough to make it hard to grow the *Dasanthera.* Plants just as large and healthy as any in northwestern gardens have been seen by me in Hew York, Massachusetts, Connecticut, New Hampshire, and Vermont; and the plants were growing out of doors without any special care.

On Cape Cod the soil is very sandy. Therefore the drainage is excellent. It is too good, so that the rain water passes through too quickly and the plants appear to suffer a deficiency in moisture. The ones that I saw there did not look healthy. I have no doubt that if enough clay or humus were added to the soil in the sandy regions of New England to prevent the too-rapid loss of water, the *Dasanthera* would grow to perfection there. The climate is suitable.

On Long Island, in the gardens of Mr. Alex Summers, Hempstead, and Miss Alida Livingston, Oyster Bay, these species behave just like they do in their native region. Here the rainfall is about the same as in the Northwest, and the soil not as sandy as on Cape Cod. It retains enough moisture to make the plants happy. No better looking plants could be asked for than the ones I saw in these gardens.

In Mr. Dwight Ripley's garden, on the Hudson River, the plants were growing in a sloping rock garden in which the top two feet consisted of gravel with rocks set into and on top of the gravel, and hardly any soil mixed *in.* There they had excellent drainage, hut apparently the scree soil retains enough of the rain to satisfy the moisture requirements of the plants. They all looked completely happy. They get absolutely no care and apparently don't need any.

Dr. Worth, in central New York, and Mr. LePiniec, near New York City, have had success with the *Dasanthera* in a scree soil.

Mrs. Lowman, in Connecticut, had her plants in flat but elevated terraces, in a stony soil. They looked healthy to me, and she reported them as blooming well.

Mr. Will Curtis, Sudbury, Mass. (Garden In the Woods), is growing these species in a flat-topped, open rock garden composed of cinders mixed with a little humus that has accumulated from rotting leaves. He had many plants at the time of my visit in 195^, and they seemed to be completely satisfied. He told me he never does a thing to them.

In Mr. Ted Knotts' garden, in southern New Hampshire, the plants were in a U-inch layer of pea-size gravel, mixed with rotting pine needles and nothing else. I never saw healthier plants. The drainage here is super-fine, but evidently the small-textured gravel, with the help of the pine needle humus, retains just the right amount of water.

In Mrs. Stillwell's garden in Vermont the plants were in ordinary rock garden soil, on a steep bank, and doing very well.

Northern Pennsylvania seems to share the favorable climate. In Mrs. C. E. Nelson's garden in Erie (near the lake) I saw plants as large and healthy as in New England or the Northwest. They were in flat ground, but the soil was very gravelly. Here the drainage and rainfall were

apparently balanced to just the right degree.

In the rest of the country—from California and Idaho east to the Atlantic, south of New York State—I have neither seen nor read of plants in *Dasanthera* doing quite as well as in the Northwest or Northeast. Most of the reports in the bulletins of the American Penstemon Society from gardeners in that area who have tried to grow the *Dasanthera* are rather discouraging. This is not because the gardeners are less skillful. It is because the climate is inherently not as suitable to these particular plants and the gardeners have not yet hit upon the right combination of drainage, moisture, and other factors to offset the difference.

No reports have been received of these species growing successfully in the southern half of the country. I know of no one in that section who has tried to grow them. I would not make any prediction at this time as to what success might be had in the southern states. On the other hand, I know of no factor that would necessarily prevent such success, unless it is excessive heat. Growing the plants in shade, in gravelly soil (which would favor a cool root run), and frequent watering in hot weather might overcome excessive heat.

As to the arid belt, where the rainfall is naturally too scanty to maintain these species in good health, we could be pretty safe in assuming that the *Dasanthera* would not do well unless given enough artificial watering to supply the deficiency. Their excellent behavior in Weiser, Idaho, which is in an arid region, proves that with artificial watering they can be grown as well in the arid belt as in the rest of the country, if other conditions are favorable. Whether artificial watering, aided by a scree soil and shade, will produce success in arid regions with a hotter climate than Idaho remains to be seen.

I confidently believe that in the whole northern half of the country we will find a way, within the next few years, of growing the *Dasanthera* to the satisfaction of the gardener. They may not bloom as heavily or spread as widely in some areas as in the favored areas, but their foliage should be beautiful enough to be worth the space that the plants occupy, even if the bloom is not profuse. I believe, however, based on my observations in the middle states, that we can learn how to get these species to bloom well, even where the climate is least suitable. Every time I travel around the country I see more and more good plants in places where I least expected to find them.

Factors Responsible for Differences in Behavior

I have tried to figure out what it is that makes the Dasanthera so much easier to grow in the Northwest and Northeast than in the rest of the country. It is not just the difference in the amount of rainfall. People in the central part of the country and in the eastern states can water their gardens to their hearts' content and still not be able to duplicate the results that are secured with the Dasanthera in the Northwest without any effort. I believe there are only two factors that we outside the favored areas have to contend with that they do not have. These are high summer temperatures and extreme fluctuations in temperature in winter and spring. Moisture and soil acidity may plan an important in the health of the plants, but we can control those things artificially. We cannot avoid hot summers or crazy winters. Still, I feel confident that we can counteract them to a reasonable extent. Perhaps covering the plants in winter will end our trouble from crazy winters, and it may be that growing the plants in scree soil and shade and keeping them well watered will counteract the hot summers.

Shade Versus Sun

I think the notion that, because these species grow perfectly in full sun in the Northwest and New England, they will want full sun in other regions is one thing that has contributed to lack of success with *Dasanthera* in the middle and eastern states. Directions in plant catalogs, such as that of Mr. Preece, a nurseryman of western Canada, that "these species will be perfectly happy if given sun and perfectly drained, poorish soil," have no doubt helped this notion to take hold. Several of our members who have been growing these plants for years believe just the opposite. They believe that the *Dasanthera* will do better in shade; in fact, require it except in the Northwest and Northeast. Mrs. Ben Thompson, Osborn, MO, is on of them. She has healthy plants growing up against the north side of the house foundation. Miss Livingston, Long Island, though living in the Northeast, still thinks that shade is best for all species in *Dasanthera* except *menziesii*. Mr. Ripley pointed out to me in his garden that plants having a northern exposure (shade during most of the day) had not suffered from winter injury, while those facing east or west (getting sun half of the day) had suffered quite a lot of injury. He said, "All these species do best with a northern exposure." Even in the Northwest some of the gardeners with the most experience with *Dasanthera* recommend a northern exposure for them. I cite Mrs. Izetta Renton and Mrs. Birdie Padavich as two of them. Near Portland, Oregon, one of the most favorable locations in the country for the *Dasanthera,* they were perfectly happy in Mrs. Boyrie's garden in the dense shade of an overhanging tree whose branches were only eight feet above the ground, excluding all direct light from the plants.

Two of our members, Miss Livingston and Mr. Summers, told me that *menziesii* requires sun. Observation by me of plants in their gardens seems to bear out this opinion. But they both live on Long Island, and it may be that in a more southern climate even *mania-ii* would appreciate shade. This point needs further clarification.

I think this matter of exposure is tied up directly with the requirement that I mentioned before—that for adequate moisture at all times. In many parts of the country the sun is so hot in summer and rain so infrequent that plants of *Dasanthera* in full sun would be likely to suffer from excessive transpiration through the leaves, even with artificial watering. Shade would minimize this danger.

Stony Versus Dense Soil

We have not experimented sufficiently yet to state positively whether a very gravelly soil, such as is producing outstanding success in the gardens of Mr. Ripley and Mr. Knotts, will produce equally good results in the parts of the country where the climate is not so favorable. But I am of the opinion that it will. In my own garden in northeastern Virginia the plants look satisfied in a bed of small-textured gravel, and in another bed of sifted coal ashes mixed with oak leaf compost. Even *rupicola,* said to be a difficult species, looks happy. It has been demonstrated that soil consisting mostly of gravel, especially if the pieces are small, will hold moisture much longer than ordinary soil, because stone is an insulator against heat and therefore there is less evaporation from the surface. It may be that growing the plants in scree soil and shade may go a long way toward overcoming climatic handicaps.

WINTER INJURY

In my own garden in Virginia I believe one major reason why I have not obtained large plants is that their periods of growth in summer have been offset by alternating periods in winter

when some of the leaves and branches were killed. Since I started protecting the plants against winter injury, they look as if they are on the way to becoming larger each year.

Winter injury in *Dasanthera* consists of the loss of leaves or twigs in late winter. Whether it is caused by freezing, by sun scald, wind burn, or just by rapid changes in temperature, is not well understood. But it does not make much difference what the cause is, since the remedy is the same in any case, namely, to protect the plants with some kind of covering during the winter.

In the favored areas of the Northeast and Northwest the loss of leaves or twigs in winter may he so slight as to "be negligible. In the gardens that I visited in the Northeast the evidence of injury consisted of dead leaves on the lower parts of some of the branches, and a few short dead shoots from the crown. Since growth is vigorous in that part of the country, the loss of a few leaves or shoots had had no effect that I could see on the health of the plants. But it would no doubt be desirable, for the sake of a neat appearance of the plants, to prevent any leaves dying except from old age. So we in the Penstemon Society have "been experimenting in recent years with coverings of different kinds and finding them successful.

Some gardeners think that evergreen branches make the "best covering. In my own garden I have found in two years trial that oak leaves are just as good. One might think that oak leaves would pack down and get soggy during the winter and exclude air, hut they do not seem to do it when used over the shrubby penstemons in my garden. They might "be harmful to other kinds of penstemons, and other kinds of leaves than oak might pack down too much, hut with the shrubbies, oak leaves seem to "be ideal. This practice has put an end to winter injury for me, and my plants seem to he much healthier than "before I started covering them.

The dying of leaves and twigs from winter injury is less prevalent in the prostrate species of *Dasanthera* than in the taller species. The prostrate ones tend to "be compact, without large open spaces "between the "branches, so that the "branches seem to protect each other from the penetration of cold in winter. Whatever the reason is, I noticed on my trip through the northeastern states that the plants of *menziesii* and *rupicola* showed relatively little winter injury, even in gardens where the taller species showed quite a lot of injury. In the taller species the branches grow in a looser manner, exposing the leaves to the cold winter air and the winter sun, with less mitigation from the neighboring branches than in the compactly growing types. This is not to say that *menziesii* and r*upicola* would not need to be protected, hut that they would need it less than the others.

Acid Versus Alkaline Soil

There has been much discussion as to whether the *Dasanthera* require acid soil, alkaline soil, or neutral. I cannot recall a place where I have seen them growing well in a distinctly alkaline soil. I do not go so far as to say that they do not like lime. They may or may not, hut they certainly do not require it. On the other hand, I could not help being impressed with the very evident vigor of the plants in the gardens of Miss Livingston and Mr. Knotts. In Miss Livingston's garden the plants were growing next to pine trees and the ground was covered with pine needles. In Mr. Knotts' garden the gravel in which the plants were growing so healthily was mixed with rotting pine needles and nothing else.

I would not say positively that the *Dasanthera* require an acid soil. But the evidence in the-two gardens cited is very suggestive. At least we can say that the *Dasanthera* like acidity. In most gardens where I have seen them growing well the soil has been at least to some extent on the acid side. In the gardens in the northeast that I visited, where the acidity was strongest, the plants were exceptionally healthy. Therefore I would recommend an acid soil as the best bet for

anyone who is in doubt on the subject. I think we should try some controlled experiments to make this point more certain.

Rich Versus Poor Soil

I never heard of anyone growing these species in a rich soil, that is, one containing manure or fertilizer. Neither did I ever hear of anyone fertilizing the plants with good results. Mr. Knotts reported that feeding them with commercial fertilizer will cause them to become very large, but also weak and subject to disease. In Mr. Ripley's garden, where they all look healthy, they are in extremely poor soil, from the standpoint of fertility. I believe that Mr. Preece's recommendation of a "poorish" soil for the shrubby penstemons is borne out by the evidence. But it might still be found that, in regions where the plants grow too slowly to satisfy the gardener, he might be able to force them into quicker growth through judicious feeding with soluble plant food applied to the leaves in the first half of the season. At least he might be able to get them off to a good start this way. I would recommend caution, however, so as not to render the plants soft and weak.

Sun and Flower Color and Erectness of Stems

In Section *Habroanthus (Glabri)* sun for at least half the time when the flower buds are opening is necessary with most species to bring out the good flower colors and to make the stems stand up straight. It is not necessary for either of these purposes in *Dasanthera.* In the wild the plants grow in open places, but that is because their habitats are naturally cool and cloudy for a good part of the time. In cultivation they flower just as well and have just as good colors in dense shade as in full sun.

As to the stems standing up straight without sun, I need only cite the instance where I saw plants growing in the dense shade of a Chinese chestnut tree at Clackamas, Oregon. This tree was shaped like a mushroom and the bottom of its cone-shaped head was only eight feet from the ground. Yet the stems in the shrubbies in a big bed underneath this tree, where the only light they got had to come in from the sides under the overhanging crown, were standing perfectly vertical. On the other hand, in Willamette Pass, in a large colony of *cardwellii* growing on a roadside slope in full sun, the stems were leaning strongly down the slope. My conclusion at the time was, and it still is, that the stems will stand up straight, regardless of the amount of shade, unless they are beaten down by heavy rain or drawn toward the source of light as on a road bank.

Close Shade Harmful

Although shade seems to be beneficial to the *Dasanthera* in most instances, Mrs. Renton observed that the creeping kinds cannot stand the shade of plants which grow directly over them and exclude the light from the penstemon leaves. Here we have to remember that even under trees or on the north side of a house there is considerable light reflected to the plants from the sky. So long as the penstemons in this group can get that reflected light, they grow veil. But where another plant excludes this reflected light by spreading its foliage closely above the penstemon foliage, the latter will naturally die for lack of light. This applies only to the creeping kinds that grow close to the ground. The taller ones are able to push their stems up high enough to get their share of the light, except perhaps in extreme cases.

Also we do not need to worry about covering even the prostrate kinds in winter to prevent winter injury. The leaves seem to be dormant at that time, or else they are able to get enough air through the covering material to keep them healthy. Of course we would not want to exclude the

air entirely even in winter, but 1 found that oak leaves do not do this and surely evergreen branches would not.

Effect of Tree Roots

In some penstemon groups we have to be concerned about tree roots. If the soil is filled with roots from large trees, they may rob the penstemons of so much food and water that they will be stunted. In *Dasanthera* this is not the case. These species have grown up in nature next to trees and have gotten used to competing with their roots. I saw them growing in a number of places in gardens right among big trees, and they did not show a bit of evidence of suffering from competition with the tree roots. I cite particularly the gardens of Mrs. Boyrie, Mrs. Renton, and Miss Livingston to support this conclusion. If other factors are favorable to the growth of the shrubbies in a certain garden, the presence of tree roots will not have any harmful effect.

Fungous Diseases – Virus

The only thing that has been reported so far as a serious concern in the growing of *Dasanthera,* even in the favored sections of the country, is what some people believe to be a fungous disease. Branches may wilt and die within a short time. Large parts of plants may die. This was reported in 1953 from the area near Seattle, which is a very rainy region in spring, with fluctuating weather conditions. It has not been reported from other parts of the West Coast, where the weather is more equable, nor from eastern Washington or Idaho. In Ohio this disease struck in Mr. James Bradfield's garden at Barnesville and killed half his plants.

It has been only in the last year (1953) that this disease has been mentioned in the Penstemon Society reports from the Seattle region, and it was confined to only one garden. It has been only in the last two years that it was reported from Ohio. That is all the reports we have had. The disease could have been present and not reported. I saw a large dead portion of a plant in Miss Livingston's garden, which she said was due to fungus.

In the garden where this trouble appeared last year, near Seattle, it was confined to old plants. The growers in that region are of the opinion that drastic pruning of old plants, to keep their branches young, will minimize the trouble. Pruning back the old plants almost to stubs every year immediately after blooming keeps the flowering twigs young, therefore vigorous and less susceptible to disease. To us in the East this sounds like pretty drastic treatment, "but in the West the plants grow so fast that pruning them "back severely does not mean losing any "beauty. They make large plants again in one year, we are told.

In the eastern half of the country the plants do not grow as fast as this, and gardeners there would no doubt be reluctant to prune them severely. But it is a point to keep in mind. Also Mr. Bradfield's plants were young ones, not more than six or eight inches across, not large enough to prune severely.

Mr. Bradfield has made quite a study of plant diseases. His suggestion, for gardeners outside the Northwest, is that we "breed or select for resistance to the fungus rather than depend on controlling it with fungicides. He noticed in his own garden that about half the plants were not affected as badly as the others. He is going to work with those and try to develop resistant strains. In the Northwest, where the plants become large, gardeners might want to try to save their plants with fungicides, if it can be done, while also trying to develop resistant strains in young plants.

In my own .garden—and this is probably true of others—I have had branches die suddenly and for no apparent reason. Since the rest of each plant seemed to be healthy, I never paid much

attention to the dying back of a branch or two. I just assumed it to be natural. In other instances I have had whole plants die. I attributed it to the difference between my climate and that of the Northwest. Some species have been more apt to die in this manner than others. When three plants of *newberryi* died back while one of *fruticosus* next to them was unaffected, I did not think of looking for a fungous disease, because *newberryi* is known to have the fault of dying back naturally.

Mr. Ripley told me that he does not believe this sudden dying of shrubby penstemons is due to a fungus. He thinks it is due to a virus. If a virus is to blame, then of course it would do no good to spray with a fungicide. I know of nothing that will ward off viruses. Breeding for resistant strains, as recommended by Mr. Bradfield, may be the answer even with viruses.

Sometimes these plants that die back send up new stems from the crown and are soon as large as before. Sometimes the whole plant dies. It is a perplexing problem. Until our knowledge of the requirements of these species outside the Northwest becomes more definite, I think we will have to be content when a majority of our plants thrive and stop worrying when some of them die.

Another good suggestion is to take cuttings every year and keep a good supply of them in a rooting bad. We should be especially alert, in case we notice any signs of disease, to take cuttings immediately from healthy plants or healthy parts of plants and put them in a location removed from the diseased plants. In this way we will always be able to replace plants that die.