

photo Dianne Barnes

“... a hobby that went berserk.” Bruce Barnes has spent years getting his interactive plant keys in shape.

More than one way to name a plant

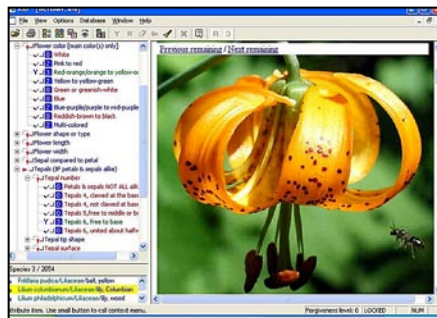
Computers eliminate the page-turning tedium and forced-choice frustration of traditional keys

Interview with Bruce S. Barnes,
Flora ID Northwest, LLC.

Menziesia last checked in with Bruce Barnes and his computerized plant identification system in Winter 1999 (www.npsbc.org/Newsletter/Menziesia99Winter.pdf). Tom Duralia recently caught up with him via email prior to a scheduled demonstration of his system at the NPSBC AGM.

In a nutshell, please remind us what your software can do for the B.C. and PNW plant enthusiast.

It mainly makes keying out plants a lot quicker, and takes away the tedium and frustration of wading through forced choices which one can't always resolve. The ability of the computer to sort data in a particular way allows the user to use whatever plant character-



Lilium columbianum photo by Frank Young

The CD contains colour photos for 99.6 per cent of B.C.'s species.

istic they wish in any order, while also providing colour photos of the plants for comparison.

When and how did this all start?

I had been photographing wildflowers for many years, spending up to 45 minutes to key a plant, and then not being sure I got it right. When computers came along it occurred to me that there might be a better way to key plants. I experimented with database

programs, but they really were only marginal for doing the job. Then in 1994, there was an article in *Science News* about a botanist [Richard Old] in Pullman, WA who had created software for creating keys [XID Services, Inc.]. I called him up, got his software, and jumped in. All I really planned on was to create a key for my own use, of the plants of the national forest near here. It took about two years, and after botanist friends saw it they encouraged me to expand it and develop it. It was a hobby that went berserk. I've averaged about 50 hours work a week on it over the past 12 years. We now produce the program for 14 states in addition to B.C.

How many species are covered in the B.C. program?

Just over 2700 species. This includes all the native and the naturalized species that are introduced [and] known

to be in the province. In other words, all that is in the *Illustrated Flora of B.C.*, and a few more. If there are introduced species that have recently become naturalized, or newly discovered native species that are not in the program, I would want to be informed so I can add [them].

And you have photos for many of the entries?

To be exact, there are only six flowering, non-grasslike plants, three grasslike plants, and three spore-bearing plants with no colour photo. This means there are colour photos for 99.6 per cent of the species. For the flowering, non-grasslike plants and the spore-bearing plants, 88 per cent of the photos are of live plants, and the other 12 per cent are of herbarium specimens. For the grasslike plants a high percentage are of herbarium photos, which for most species of grasses and sedges, for example, are more useful than a bunch of grass waving in the breeze. We welcome and encourage anyone who has good images of the species with no photos or herbarium photos to send us those so we can improve the keys for those who use it. Our photos currently come from over 100 sources.

When you say ‘we,’ do you mean you?

My wife actively assists me with data entry, proof-reading, and filling orders, though I do most of the product development. However, I mainly use ‘we’ so people get the sense that this is not just a lone ranger project with no one to pick up and move it forward if I got hit by a bread truck. A close associate and botanist has agreed to do so if the need should arise.

Any idea of the total number of users?

There have been over 600 copies sold, but many of them were sold with multiple site licenses, including statewide use by state and federal agencies. So the total number of actual users would be several times that number.... There are a number of her-



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***Clematis ligusticifolia* is one of 2700 species in the B.C. interactive key.**

baria which have copies of it on their computers, as well as colleges and universities which use it in classrooms and computer labs.

How has your product changed over the years? How many versions has it gone through?

I’ve avoided labelling ‘versions,’ which would be artificial. In reality, I’m continually making changes, updating scientific nomenclature, adding or replacing plant photos, etc. At the same time, XID Services continues to make improvements in their software platform. Whenever we get an order, we burn the CD at that time, so that what the purchaser gets has the latest improvements. That’s why we tell purchasers to feel free to contact us about once a year, and for the cost of shipping and handling (\$6) we will send them a free updated CD. I know this isn’t the usual way for software producers to do business, but I really want those using it to have the best product available. If using our program helps someone enjoy learning about plants, it’s worth it.

What data sources power the B.C. version, and what source provides the

scientific names?

I use every reliable source for plant data I can get my hands on – as the crammed bookshelves in my office would attest. B.C. has one of the absolute best sources, by the way, in the recent eight-volume *Illustrated Flora*.

The scientific names change so fast my eyes cross some days. I generally tend to go with the work of Kartesz, but especially the *Flora of North America* as those volumes become available. However, I tend to wait a couple of years before making any drastic changes to be sure there is consensus in the botanical community, and work hard at being sure the information on each plant includes synonyms which may be used in local references.

Are taxa that are difficult with standard keys (say sedges or willows), still likely to be difficult with your system?

Depends on the taxa. There is no way to make willows, grasses or sedges easy. That being said, the interactive keys can get you down to just a few species quite quickly using easy

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As with any key, mistakes can happen

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characteristics such as leaf margins or length of catkins, though as with any key you may need to refer to technical descriptions to separate the remaining few and confirm an identification. I was taught years ago that one is never done keying a plant until they compare the specimen with a description. That is still generally true. It is just as easy in an interactive key to make a mistake as in a dichotomous key, and if you do you will get just as incorrect an answer. One difference is that there are features in the program to help sort out what went wrong if that happens.

Is it possible to run your program using a habitat, biogeoclimatic zone or some other subset of factors in the database?

Habitat and climatic zones are not choices allowed. They are great for describing what is, but not for keying out individual species; plants don't read the books about where they should grow.

Are there other ways to use the program beyond identifying species?

Yes. Pick any one or combination of characteristics, and print out a list: aquatic flowers, for example, blue flowers, orchids of southeast B.C., etc. Saving a list to a file, adding photos, notes, changing names and more can be done, but you would have to also purchase the Authoring System from XID Services, and also request an unlocked copy of the database from us.

Are there both Mac and Windows versions? How about something for my Palm that I can take into the field?

Windows only. Macs and Palm-type products each have their own computer languages, so the XID Services software would have to be rewritten in those languages. There is not enough of a market for XID to recover the programming expense. Also, the Palm-type units have screens that are too

small to adequately show the images or display all the text needed, not to mention the storage space. However, small-sized PCs which run Windows are available, and hopefully the cost of those units will come down.

What enhancements do you see for your products in the future? Anything web-based? Plans for mosses and fungi?

Software which would run on the web is a possibility; to my knowledge XID hasn't found a source of funding to cover the development cost. Mosses and fungi are way out of my area of expertise, but I'd encourage anyone interested in those areas to go for it. I am just completing interactive keys to the world's plant families, which is scheduled to be included next year with the 4th edition of the textbook *Contemporary Plant Systematics* by Dennis W. Woodland. We are currently working on adding California to the states available.

And what about you? What background does it take to become the expert behind an expert system?

I'm a clinical social worker who started photographing wildflowers over 25 years ago while taking our kids hiking in the woods. Then I figured I ought to know what I was taking

pictures of. One book wouldn't cover it all, so I added more.... The rest is history. I retired early to devote more time to this and because I could. This is not something one would do to make a living. Fortunately, my now-grown kids still enjoy walking in the woods and identifying flowers, and I make just enough from this to pay for doing what I love to do.

How much does it cost for the B.C. edition, the PNW edition, and how do I get a copy?

The B.C. version costs \$100 CDN, as does any single state version, and the PNW version costs \$300 CDN. The PNW version includes seven states plus B.C. There is a \$6 shipping/handling charge per order. We also have multiple-site licenses for agencies, schools, etc., which are cheaper per user. The best way to order is to mail us a cheque or phone us with credit card information, as our web site and email are not secure. Our web site lists the prices as above, and we charge Canadian customers the same price but in Canadian dollars.

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