

Adventures in Misidentified Orchids

BY DANIEL L. GEIGER

WITH SOME 30,000 SPECIES, orchids are a fun playground for species enthusiasts. At orchid fairs and on websites a plethora of species are offered. As a species collector with an appreciation for diversity, I gravitate towards the lesser-known groups. At shows and when visiting nurseries I select plants based on unique looks and maybe a photograph of the flower, while the name tag is mostly meaningless. Either the genus is unknown to me (there are some 800–900 genera in Orchidaceae: Alrich et al. 2008) or the species cannot be ascertained on site.

The situation gets even more adventurous when ordering (or preordering) from out-of-town or out-of-country vendors. Often, only a name appears on a list and it is anybody's guess what may arrive. Additionally, most species tend to have small flowers; therefore, photographs provided are usually close to useless (for techniques to photograph small flowers, see Geiger 2013). As a true orchid addict, this does not deter me, but rather activates my inquisitive nature.

With orchids, the hybrid quandary is a challenge. Natural hybrids do occur but are rather rare; unless there is excellent reason for postulating a natural hybrid, consider the specimen a true species. The horticultural hybrids, on the other hand, are the bane of the species grower. Therefore, the best insurance against horticultural hybrids is to grow the most obscure groups and those with small to minute flowers. They are of no horticultural value and the dreaded “big-round-flat” reductionist view thankfully cannot take hold on those species.

By now you start to wonder what to do about this problem. Below I provide a five-step program to properly identify orchid species.

STEP 1. DOUBT Do not accept the name on the label provided. I have seen too many bad misidentifications that I am cured of trusting any label. In the sidebar I indicate a few examples, all from well-respected vendors (who shall not be named), including some comments on the severity of the misidentification and how the error got uncovered.

STEP 2. THE QUICK WEB-CHECK One of my first stops is www.orchidspecies.com (OSP) by Jay Pfahl, a wonderful resource. Then I also perform a



Original drawing of *Oberonia rufilabris* Lindley. Notice the split lip with two narrow side lobes in 1 (upper left). The drawings in the upper right and lower left (2, 3) illustrate the floral bracts, which change length along the rachis of the inflorescence.

Google image search and examine a wide variety of sources. If my plant and most images agree with one another, there is a reasonable chance that the label is correct. This is not equivalent to a strict scientific taxonomic evaluation, but a reasonable first stab that anybody can carry out with a minimum of effort.

One caveat with internet searches are misspellings, either on the web, or on the plant label, such as *sepigera* for *setigera*, *topingi* for *toppingii*, *mururus*

for *myosurus*. After a while, one develops a feel for what is a misspelling and what is not the same name. Generic assignments are quite variable in some cases, such as with pleurothallids, and one needs to keep in mind different genus–species combinations. In some cases, the ending of the species name (= species epithet) may also differ depending on the particular combination with a genus (*albus/alba/album*).

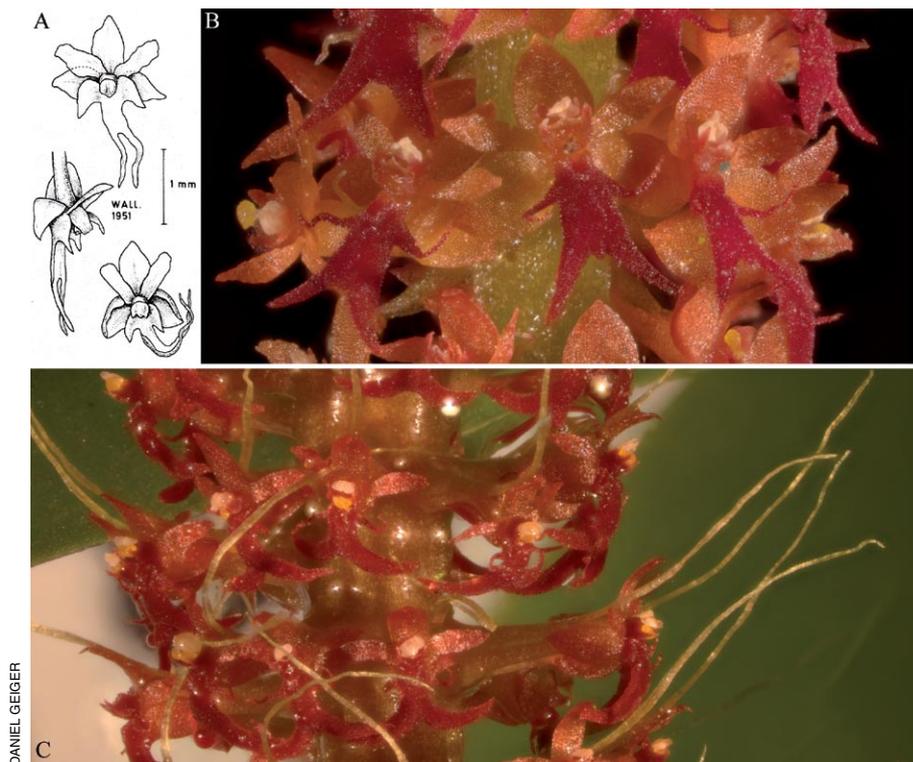
STEP 3. MY LIBRARY I am a strong

[A] Drawing of *Oberonia anthropophora* from Seidenfaden (1968) based on type specimen. Notice broad side lobes of lip unlike the thread-like ones in *Oberonia rufilabris*.

[B] Plant obtained as *Oberonia anthropophora* India, clearly not fitting the illustration of the type, but matching *Oberonia rufilabris* precisely; from distal portion of inflorescence with short flower bracts.

[C] Plant obtained as *Oberonia anthropophora* Philippines. Flowers show short side lobes and long flower bracts typical of the proximal portion of the inflorescence in *Oberonia rufilabris*.

Photographs z-stacked on Zeiss Discovery V20 stereomicroscope, motorized focus, objective slider, Zeiss planapochromatic $\times 1.5$ lens, Zeiss Axiocam HRc, controlled by Zeiss Zen 2012 blue with z-stack module. Image processing with Zerene Stacker.



believer in investing in books. While my holdings are still relatively small, I check whether I have information on the plant in my books. If books and web agree, that is a further confirmation that the label may be right.

STEP 4. THE ORIGINAL DESCRIPTION Problems arise when the above two sources show disagreements. In such cases it is difficult to determine who is right and who is wrong. To get to the bottom of the story it is best to find the original description of the species, which by definition is correct. But how to find it? The *World Checklist of Selected Plant Families* is a great resource. Search the name and it will find it either as a correct species, or as a synonym of another species. The site also gives the literature reference of where the species was described. In many cases, even a link to online repositories such as the Biodiversity Heritage Library is conveniently provided. Some herbaria have images of the original herbarium specimen (or specimens) (the “types”) that can be of help. Comparing the description and illustrations to the plant at hand can confirm or refute the information on the label.

STEP 5. CORRECTING MISIDENTIFICATION If the plant does not agree with the original description, it will take significantly more work to figure out what it really is. It is not for the faint of heart. The simplest option is to take images of the plant and the flower, and to

post them on one of the orchid discussion groups on the web. With a bit of luck, someone will recognize it and provide a name. At this point you start again at Step 1 above, until you are confident that the identification is correct.

If you are like me, and enjoy the really obscure species, then it is entirely up to you to get to the bottom of it. This means collecting all information from the genus (or group) and making a scrapbook out of all the information. Today, this is easily done on the computer, where text and images can be combined conveniently and information can be updated as new source material becomes available. As a corollary, such undertakings are only carried out for a small subset of species and will take a significant amount of time.

My scrapbook on the 150–300 *Oberonia* species has currently around 750 pages after about a year of efforts, and is still highly incomplete. I use QuarkXpress, because high-resolution images can be included by links without making the main file too large.

Such undertakings may eventually lead to true scientific discoveries, including new synonymies or novel species. However, it is beyond the scope of this short essay to further venture into this field. (See Geiger 2012, 2013a for a short introduction.)

You may wonder, what is the misidentification rate in my area of interest? About half of the plants are unidentified (*Oberonia* sp.), which is quite fine as at

least no misinformation is spread. Of the 50 percent that have a species name on the label, the majority (approximately 80 percent) is wrong in one way or another. A few use later taxonomic synonyms, while most are outright misidentifications.

I have explained misidentifications to several vendors with supporting material, but at subsequent visits or shows, many plants remain grossly misidentified. Although my insights seem to be ignored by vendors, I still gain satisfaction from figuring out what I am growing in my collection.

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SELECTED ADVENTURES IN MISIDENTIFIED PLANTS

Notylia sp. = *Zygostates pellucida*. Examined all species on OSP and no match could be found. Posted photograph on www.orchidboard.com and the species was identified by Ronald Hanko. Verified identification on OSP.

Oberonia iridifolia = *Oberonia leytensis*. The species epithet *iridifolia* does not belong in *Oberonia*, which is a good indication for misidentification. The plant was said to come from the Philippines and an image of *Oberonia leytensis* in Cootes (2011) matched my plant. I then checked the original description through the Biodiversity Heritage Library.

Oberonia iridifolia = *Oberonia* cf. *mucronata*. *Oberonia iridifolia* is a synonym of *Oberonia mucronata*, the type species of the genus *Oberonia*. That said, illustrations of the flowers of this species in the scientific literature differ widely from one another. The original description is not terribly helpful, so examination of type material will be required to resolve the identity of this species. My plant agrees with some interpretations of *Oberonia mucronata*, but it is not clear whether it is the true species. The taxonomic history of this species is extraordinarily convoluted. For now I have added the cf. designation (for the Latin *confer* meaning closely resembling).

Oberonia myosurus = *Oberonia cavaleriei*. Plants called *Oberonia myosurus* are some of the more commonly offered *Oberonia* plants. However, the real *Oberonia myosurus* belongs in the genus *Phreatia* where it is a later synonym of *Phreatia mathewsii*. The *Oberonia* plants offered under the name *Oberonia myosurus* have only recently been formally described as *Oberonia cavaleriei* and all *Oberonia myosurus* in the literature are misidentifications.

One vendor label reads *Phreatia mathewsii* (= *Oberonia myosurus*) noting that there is something going on, but still getting it wrong. It is tantamount to saying apple (= orange).

Oberonia aurea = *Oberonia* cf. *cavaleriei*. *Oberonia aurea* has a fan of laterally compressed leaves, but the plant obtained by mail order had terete (pencil-shaped) leaves. Right out of the box it's obvious the name isn't correct. The most widely available *Oberonia* with terete leaves is *Oberonia cavaleriei*. Because there are other, vegetatively similar species, I have designated the uncertainty using cf. Once this plant flowers, I will get make a final identification.

Oberonia anthropophora = *Oberonia rufilabris*. Here examination of the flower under a stereomicroscope was necessary. The side lobes of the lip are rectangular in *Oberonia anthropophora*, while in *Oberonia rufilabris* they are threadlike.

Oberonia setigera = *Oberonia rufilabris*. The much larger leaves of *Oberonia setigera* are usually lined with red, or are overall pale red when light stressed. Additionally, the floral bracts are about twice as long in *Oberonia setigera* as they are in *Oberonia rufilabris*. The stereomicroscope identifies additional obvious differences.

I spotted one of these misidentified plants at a vendor's booth at the Pacific Orchid Expo in San Francisco in 2013. While I looked at the plant, I told my wife "This is not *setigera*", whereupon the owner of the booth poked her head around and said "You must be Daniel."

Oberonia toppingii = *Hippeophyllum* sp. The genus *Hippeophyllum* is defined by the presence of creeping rhizomes clearly present in the plant obtained. Whether this distinction is valid is open to continued discussion among taxonomists but at the species level, *Oberonia toppingii* has fan-shaped to slightly caulescent flat fans of laterally flattened leaves, while the plant obtained has terete leaves. For the time being I have decided to call this a species of *Hippeophyllum*.

Oberonia brachystachys = *Oberonia lycopodioides*. *Oberonia brachystachys* has fan-shaped leaves, whereas *Oberonia lycopodioides* has a long distichous vegetative portion, akin to a *Lockhartia*. The flowers match the treatment in Seidenfaden (1968) precisely, though Cootes (2011) shows a different (still unidentified) species under that name.

Oberonia surigaensis = *Oberonia* cf. *patentifolia*. The flowers do not match the original description of *Oberonia surigaensis* available online, but could well be *Oberonia* cf. *patentifolia* due to the strongly hirsute pedicel with ovary. The species seems to have flowers in cream-color shown here or in green as published on the cover of *Orchid Digest* 77(3).

grows as a serious orchid hobbyist only small to minute species in two terraria and a small greenhouse. He specializes in *Oberonia* (and *Hippeophyllum*) for which active research using light and scanning electron microscopy is ongoing. He is board member with the Southern California Orchid Species Society, member of AOS and the Orchid Society of Santa Barbara, and has an appointment as a Visiting Research Scholar with the Huntington Botanical Gardens, Santa Barbara Museum of Natural History — *Invertebrate Zoology*, 2553 Puesta del Sol, Santa Barbara, California 93105 (e-mail geiger@vetigastropoda.com).



Oberonia cf. *patentifolia* plant habit and inflorescence. Inset image is a close-up of the flowers. Plant habit is strongly reminiscent of *Lockhartia* and flowers appear to come in two color forms; the cream-color illustrated here and a bright green form illustrated on the cover of the *Orchid Digest* (77/3). Scanning electron microscopy did not reveal any differences between the two forms.