

Hello everyone,

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Today I am going to present before you keys: Single access

In this module I will be presenting definition of single access key, structural features of Indented key, structural features of Parallel key, guidelines for construction of single access key.

Learning outcome of this module will be: Learner will identify indented key and parallel key and know the guidelines for constructing single access key.

What are taxonomic keys?

Taxonomic keys are aids for identification of unknown plant taxa.

Keys are helpful in faster preliminary identification. Based on the arrangement of characters and their utilization identification keys are classified into two types.

Single access, also known as Sequential keys and multi access also known as multi entry keys.

Single access keys are identification keys where the sequence and the structure of identification steps is fixed by the author of the key.

So here the author decides the sequence of character in which the key is written.

Single access keys are components of floras, manuals, monographs, and other taxonomic literature meant for identification of plants.

These keys are based on diagnostic i.e., distinct characters, hence are also known as Diagnostic keys.

Single access keys are based on pairs of contrasting choices and hence also referred as dichotomous keys.

Coming to the types of single access keys.

Based on the arrangement of couplets, and their leads two main types of dichotomous keys are identified so based on the arrangement of couplets and its leads, we have indented or yoked key, parallel or bracketed key.

Coming to the structural component of indented or yoked key. In this type of key, the statements which are also referred as leads in the key and the taxa identified from them are arranged in visual groups or yokes.

The subordinate couplets are indented below the primary one at a fixed distance from the margin and the distance increasing with each subordinate couplets.

In indented key leads of subordinate couplets are at increasing distance from the margin.

The leads of initial couplets are far separated, whereas those of subsequent subordinate couplets are closer.

Indented keys, forms the integral part of Flora and Manuals and other taxonomic literature, especially when the keys are small in size.

In the slide you all can look at the structural arrangement of indented key. This key I have adopted from one of the textbook which I have cited in my references.

This key is written for family Ranunculaceae, so in this indented key you all can see the statements or the leads of the first couplet are far separated, whereas the subsequent couplets are closer and there is space left from margin and hence it shows indents.

That's the reason it is also called as indented key and the taxa which are identified in this key are nestled in a form of yolks in a group. This is one more reason why this key is known as yoked key.

Coming to some of the drawbacks of indented key: It becomes difficult for the user to locate the alternate lead of initial couplet as they may appear on any page.

As I already mentioned the leads of the first initial couplet are fast separated based on the number of taxa which are included for identification in that particular key, with the number of subordinate couplet increasing, the key becomes more and more sloping, thus reducing the space available for writing.

The leads indented arrangement of key is useful in shorter keys, but if key is very long running into several pages, it results in wastage of page space. Which is taken care in the second type of key that is parallel or bracketed key.

In parallel key the two leads of the couplets are always together the leads of the couplets are arranged parallel. That is, the distance from the margin is always same for the couplets and even the subordinate couplets.

The arrangement of this type of key is useful for longer identification keys as the location of alternate lead is easy because both the leads are always arranged parallel or found together.

This slide shows the structural arrangement of parallel key. Here you all can see the two leads of the couplet are always parallel to one another and always found together. There is no wastage of space as the subsequent couplet is not indented below the first one, hence it saves a lot of space if it is used in longer keys to be written in floras.

Drawback of parallel key is that the statements are no longer in visual groups as it is found in indented key.

Coming to the guidelines for construction of single access or dichotomous keys:

The important step involved in construction of dichotomous key is that it starts with the preparation of list of reliable characters for the taxon for which the key is to be constructed.

In this slide you all can see the diagnostic characters which are written for family Ranunculaceae. The genus of family Ranunculaceae.

These characters are adopted from Plant Systematic book by Gurucharan Singh which I have mentioned in my references.

For each character, the two contrasting choices are determined for example, the first statement says habit woody, then the subsequent lead of the couplet will be written as habit herbaceous.

Each choice constitutes a lead and the other two contrasting choices form the couplets.

Key should be strictly dichotomous, consisting of couplets with only two possible choices; there cannot be a third choice.

The two leads of couplets will be mutually exclusive, so that the acceptance of one should automatically lead to the rejection of another.

For characters having more than two available choices, the character can be split to make it dichotomous.

I have given here example where in here the plant taxa shows flower colors as red, yellow or white. These characters can be split as follows when it comes to writing the taxonomic dichotomous keys.

Flowers red and flower non red will form the first couplet with these two statements or the lead, and the second couplet will comprise of the other characters with regards to the colour shown by the taxa.

Colours of flower yellow, colours of flower white.

The statements of the lead should not be overlapping. I have given example here where in a key couplet is written in following manner.

Leaves 5 to 25 centimeters long.

Leaves 20 to 40 centimeters long.

If a user, who is looking out for identity of unknown plant, has found a plant with leaf length 20 to 25 centimeters due to the usage of overlapping character, the user will be confused to decide its identity as the length of the leaf is found overlapping in both the leads which are mentioned in this couplet.

So in order to avoid such confusion overlapping of statements should be avoided while constructing keys.

Avoid usage of vague statements such as flowers large versus flower small.

Such statements may often be confusing during identification of taxa because the dimensions are not mentioned as the user will not know the proper dimension of the character used in the key.

The two leads of couplet should start with the same initial words.

For example, if you have given leaves 5 to 25 centimeters, the second lead of that same couplet should also start with the same word, leaves 20 to 40 centimeters, and it should not start with any other word.

The leads of two successive couplets should not start with the same initial word if the word which is already used in the first couplet then that same word should not be used for starting the leads of the second coupling or the subsequent couplets.

Initial couplets should be selected in such a way that it divides the group into more or less equal half and the characters used are easily available for study.

The leads should be prefixed by the numbers or letters.

This makes location of leads easier and if left blank, the location of lead becomes very difficult, especially when key is longer and runs into many pages in the taxonomic literature.

For identification of trees, two keys should be constructed based on vegetative and reproductive characters separately for identification round the year.

For dioecious plants, it is important to have two keys based on male and female flowers separately.

These are some of the textbook which I have referred for preparing the content of module.

Thank you.