

**ADDITIONAL NOMENCLATURAL PROBLEMS**

In each of the problem sets, you are presented with a series of original names (basionyms) and their types, followed by some previously proposed combinations based upon them. In the problems that follow each set of names, a taxonomist (who, for purposes of authorship, is considered to be you) makes a series of decisions concerning the disposition of the cited types. For each problem, you must choose the correct name(s), with author citations, or make new combinations or propose new names (indicated by 'your-choice' in the answers) as necessary (in which case you would use your own name in place of 'Student' in the answers). All taxa are considered distinct until appropriate taxonomic decisions are made as stated and conditions cited in earlier questions generally hold until they are explicitly changed.

**SET 1. PINACEAE LINDLEY.** In the early days of modern taxonomy, the genera of the conifer family Pinaceae were not very well characterized and one has to search all of the common genera for the oldest name for species belonging to any one of them.

The following names have been published and associated with the corresponding types:

<i>Pinus abies</i> L., 1753	(type: specimen 'A')
<i>Abies mariana</i> Mill., 1768	(type: specimen 'B')
<i>Pinus nigra</i> Ait., 1789	(type: specimen 'C')
<i>Pinus heterophylla</i> Lamb., 1803	(type: specimen 'D')
<i>Abies heterophylla</i> Rafin., 1832	(type: specimen 'E')
<i>Pinus mertensiana</i> Bong., 1832	(type: specimen 'F')

In addition, the following relevant combinations have been published:

<i>Picea nigra</i> (Ait.) Link, 1831
<i>Tsuga mertensiana</i> (Bong.) Carr., 1867
<i>Picea abies</i> (L.) Karst., 1881
<i>Picea mariana</i> (Mill.) B. S. P., 1888
<i>Tsuga heterophylla</i> (Rafin.) Sarg., 1898

**Solve the following problems:**

- 1) 'B' and 'C' are conspecific members of the genus *Picea*. What is the correct name of this species?
- 2) If this species is transferred to *Pinus*, what should it now be called?
- 3) The name *Tsuga mertensiana* was used from 1870 to 1922 for a hemlock species including 'E' but not 'F'. What should the distinct species including 'F' be called?
- 4) The species containing 'E' is transferred to the genus *Pinus*, but is not conspecific with the species containing 'D'. What should it be called?
- 5) The species containing 'A' is transferred to the genus *Abies*. What is the correct name for this species?

**SET 2. IPOMOEA L. SECT. CALONYCTION (CHOISY) GRISEB.** Moonflowers, as the name suggests, are "morning glories" whose flowers open only at night, when they are pollinated by moths. The white and purple moonflowers of this group have had a complex nomenclatural history.

The following taxa have been described and associated with the corresponding types:

<i>Convolvulus aculeatus</i> L., 1753	(type: specimen 'A')
<i>Ipomoea alba</i> L., 1753	(type: specimen 'B')
<i>Ipomoea bona-nox</i> L., 1762	(type: specimen 'C')
<i>Convolvulus muricatus</i> L., 1767	(type: specimen 'D')
<i>Ipomoea muricata</i> Cav., 1799	(type: specimen 'E')
<i>Ipomoea bona-nox</i> L. var. <i>purpurascens</i> Ker, 1818	(type: specimen 'F')
<i>Bonanox riparia</i> Raf., 1837	(type: specimen 'G')
<i>Calonyction speciosum</i> Choisy var. <i>vulgare</i> Choisy, 1845	(type: specimen 'B')

The following new names (nomina nova) have also been proposed, each typified by the same specimen as its basionym:

<i>Ipomoea turbinata</i> Lag. & Seg., 1816	(basionym: <i>Convolvulus muricatus</i> L.)
<i>Calonyction speciosum</i> Choisy, 1834	(basionym: <i>Ipomoea alba</i> L.)

In addition, the following relevant combinations have been published:

<i>Ipomoea muricata</i> (L.) Jacq., 1803
<i>Bonanox muricatum</i> (L.) Raf., 1836
<i>Calonyction muricatum</i> (L.) G. Don, 1837
<i>Calonyction bona-nox</i> (L.) Small, 1903
<i>Calonyction aculeatum</i> (L.) House, 1904
<i>Calonyction album</i> (L.) House, 1905

**Solve the following problems:**

- 6) The white-flowered specimens, 'A', 'B', and 'C', are conspecific members of the genus *Ipomoea*. What is the correct name for this species?
- 7) The purple-flowered specimens, 'D' and 'F', belong to a different species of *Ipomoea* that is not conspecific with 'E'. What is the correct name of the purple moonflower?
- 8) The purple and white moonflowers are considered varieties of a single species of *Ipomoea*. What are the correct names of the two varieties?
- 9) What are the correct names for the white and purple moonflowers if they are transferred as distinct species to Choisy's genus *Calonyction*?
- 10) 'C' turns out not to be a white moonflower ('A' and 'B'). It is not even an *Ipomoea*, but a distinct species of the same genus as 'G'. What is the correct name for the species containing 'C'?

**SET 3. POPULUS L.** The aspens are a distinctive group of poplars with a few nomenclatural difficulties to explore.

The following taxa have been described and associated with the corresponding types:

<i>Populus</i> L., 1753	(type: <i>P. alba</i> L.)
<i>Populus</i> L. sect. <i>Leuce</i> Duby, 1828	(type: <i>P. alba</i> L.)
<i>Populus</i> L. sect. <i>Aigeiros</i> Duby, 1828	(type: <i>P. nigra</i> L.)
<i>Populus alba</i> L., 1753	(type: specimen 'A')
<i>Populus nigra</i> L., 1753	(type: specimen 'B')
<i>Populus tremula</i> L., 1753	(type: specimen 'C')
<i>Populus tremuloides</i> Michx., 1803	(type: specimen 'D')
<i>Populus nivea</i> Willd., 1804	(type: specimen 'E')
<i>Populus aurea</i> Tidestr., 1910	(type: specimen 'F')

In addition, the following relevant combinations have been published:

<i>Populus alba</i> L. var. <i>nivea</i> (Willd.) Wesm., 1868
<i>Populus tremula</i> L. var. <i>alba</i> (L.) O. Ktze., 1890
<i>Populus tremuloides</i> Michx. var. <i>aurea</i> (Tidestr.) Dan., 1911
<i>Populus tremula</i> L. subsp. <i>tremuloides</i> (Michx.) A. & D. Löve, 1975

**Solve the following problems:**

- 11) 'A' and 'B' belong to different sections of *Populus*. What are the correct names for these two sections?
- 12) If 'A' and 'E' belong to one variety and 'C' to a second variety of one species, what are the correct names of the two varieties?
- 13) If 'D' and 'F' are now added to this species as a third variety, what is the correct name of this variety?
- 14) If the three varieties are now raised to subspecies rank, what are their correct names?
- 15) If 'C' is removed from the species containing 'A' and 'D', and the latter are considered as two different subspecies, what are the correct names of the two subspecies?

**SET 4. PAPAVER L.** The arctic poppies are an attractive group of small, tufted, perennial true poppies whose taxonomy is complicated by an extensive polyploid series extending from 2X to 12X. Determination of the ploidy level of the type specimens of the many proposed species is critical to determining the correct names. There appear to be three main taxa of arctic poppies in the Atlantic region: a northern decaploid ( $2n=70$ ), a southern decaploid, and a middle octoploid ( $2n=56$ ). Unfortunately, we can only guess at the chromosome numbers of any specimens collected before about 1920 based on their similarities to specimens for which we do know the chromosome numbers.

The following taxa have been described and associated with the corresponding types:

<i>Papaver</i> L., 1753	(type: <i>P. somniferum</i> L.)
<i>Papaver</i> L. sect. <i>Meconella</i> Spach, 1828	(type: <i>P. nudicaule</i> L.)
<i>Papaver</i> L. sect. <i>Scapiflora</i> Reichenb., 1832	(type: <i>P. radicum</i> Rottb.)
<i>Papaver somniferum</i> L., 1753	(type: specimen 'A')
<i>Papaver nudicaule</i> L., 1753	(type: specimen 'B')
<i>Papaver radicum</i> Rottb., 1770	(type: specimen 'C')
<i>Papaver radicum</i> Rottb. subsp. <i>occidentale</i> Lund., 1923	(type: specimen 'D')
<i>Papaver radicum</i> Rottb. subsp. <i>lapponicum</i> Tolm., 1923	(type: specimen 'E')
<i>Papaver nordhagenianum</i> Lo"ve subsp. <i>islandicum</i> Lo"ve, 1955	(type: specimen 'F')

The following nomen novum has also been proposed, typified by the same specimen as its basionym:

*Papaver dahlianum* Nordh., 1931 (basionym: *P. radicum* Rottb. subsp. *occidentale* Lundstr.)

In addition, the following relevant combinations have been published:

*Papaver nudicaule* L. subsp. *radicum* (Rottb.) Fedde, 1909  
*Papaver lapponicum* (Tolm.) Nordh., 1931  
*Papaver radicum* Rottb. subsp. *dahlianum* (Nordh.) Randal, 1974

#### Solve the following problems:

16) If the Iceland poppy ('B') and the arctic poppies ('C' to 'F') are all members of the same section of *Papaver* and also belong to the same section as the opium poppy ('A'), what is the correct name for this section?

17) What is the correct sectional name for the arctic poppies if they belong to a different section from the opium poppy?

18) Each of the three arctic poppies is considered a distinct species. If 'C' is considered to belong to the southern decaploid (the same species as 'E'), what are the correct names for the three species?

19) If the three taxa are now considered subspecies of a single species of arctic poppy, what are the correct names of the three subspecies?

20) If, instead, we continue to recognize the three taxa as separate species, but 'C' is now considered to belong to the octoploid species (the same species as 'F'), what is the correct name for the species containing 'E'?

**SET 5. CUPRESSUS L.** The true cypresses are southwestern trees which grow in scattered groves (relicts of Ice Age climatic cycles) that differ from one to another to such an extent that taxonomists have had a field day naming species, subspecies, and varieties. As is so often the case, taxonomic uncertainties are accompanied by nomenclatural ones.

The following taxa have been described and associated with the corresponding types:

<i>Cupressus</i> L., 1753	(type unspecified, but Linnaeus included the following three species: <i>C. disticha</i> L., <i>C. sempervirens</i> L., and <i>C. thyoides</i> L.)
<i>Taxodium</i> Rich., 1810	(type: <i>Cupressus disticha</i> L.)
<i>Chamaecyparis</i> Spach, 1842	(type: <i>Cupressus thyoides</i> L.)
<i>Cupressus disticha</i> L., 1753	(type: specimen 'A')
<i>Cupressus sempervirens</i> L., 1753	(type: specimen 'B')
<i>Cupressus thyoides</i> L., 1753	(type: specimen 'C')
<i>Cupressus macrocarpa</i> Hartw., 1847	(type: specimen 'D')
<i>Cupressus goveniana</i> Gord., 1849	(type: specimen 'E')
<i>Cupressus goveniana</i> Gord. var. <i>pigmaea</i> Lemm., 1895	(type: specimen 'F')
<i>Cupressus sargentii</i> Jeps., 1909	(type: specimen 'G')
<i>Cupressus sargentii</i> Jeps. var. <i>duttonii</i> Jeps., 1923	(type: specimen 'H')
<i>Cupressus abramsiana</i> Wolf, 1948	(type: specimen 'I')

In addition, the following relevant combinations have been published:

<i>Cupressus pigmaea</i> (Lemm.) Sarg., 1901
<i>Cupressus goveniana</i> Gord. var. <i>sargentii</i> (Jeps.) Elwes & Henry, 1910
<i>Cupressus goveniana</i> Gord. var. <i>abramsiana</i> (Wolf) Little, 1970

**Solve the following problems:**

- 21) If *Chamaecyparis* Spach and *Taxodium* Rich. are truly genera distinct from the cypresses, what is the type of *Cupressus* L.?
- 22) You initially believe that 'F', from a dwarf tree only 1 m tall, belongs to a species distinct from the tall tree that yielded 'E'. What is the correct name for the species containing 'F'?
- 23) Better evidence suggests that 'E' and 'F' come from distinct varieties of a single species. What are the correct names of the varieties?
- 24) Further study shows that 'I' represents a third variety of the same species. What is the correct name of this variety?
- 25) 'G' and 'H' belong to one taxon, a distinct variety of the same species to which 'D' belongs. What is the correct name for the variety with 'G' and 'H'?
- 26) Finally, you decide that 'D' to 'I' all belong to one species, which contains two subspecies, one for 'D', 'G', and 'H' and one for 'E', 'F', and 'I'. What are the correct names for the two subspecies?
- 27) If the conditions of questions 23 to 26 all hold, what is the correct name of the pygmy cypress?

**ANSWERS TO NOMENCLATURAL PROBLEMS****SET 1. PINACEAE LINDLEY**

- 1) Picea mariana (Mill.) B.S.P.
- 2) Pinus mariana (Mill.) 'Student'
- 3) Tsuga mertensiana (Bong.) Carr.
- 4) Pinus 'your-choice' 'Student'
- 5) Abies 'your-choice' 'Student'

**SET 2. IPOMOEA L. SECT. CALONYCTION (CHOISY) GRISEB.**

- 6) Ipomoea alba L.
- 7) Ipomoea turbinata Lag. & Seg.
- 8) Ipomoea alba L. var. alba  
I. alba L. var. purpurascens (Ker) 'Student'
- 9) Calonyction album (L.) House  
C. muricatum (L.) G. Don
- 10) Bonanox 'your-choice' 'Student'

**SET 3. POPULUS L.**

- 11) Populus L. sect. Populus  
Populus L. sect. Aigeiros Duby
- 12) Populus tremula L. var. alba (L.) O. Ktze.  
P. tremula L. var. tremula
- 13) Populus tremula L. var. tremuloides (Michx.) 'Student'
- 14) Populus tremula L. subsp. alba (L.) 'Student'  
P. tremula L. subsp. tremula  
P. tremula L. subsp. tremuloides (Michx.) A. & D. Lo"ve
- 15) Populus alba L. subsp. alba  
P. alba L. subsp. tremuloides (Michx.) 'Student'

**SET 4. PAPAVER L.**

- 16) Papaver L. sect. Papaver
- 17) Papaver L. sect. Meconella Spach
- 18) Papaver radicatum Rottb.  
P. dahlianum Nordh.  
P. islandicum (Lo"ve) 'Student' is one possibility
- 19) Papaver radicatum Rottb. subsp. radicatum  
P. radicatum Rottb. subsp. occidentale Lundstrom  
P. radicatum Rottb. subsp. islandicum (Lo"ve) 'Student'
- 20) Papaver lapponicum (Tolm.) Nordh.

**SET 5. CUPRESSUS L.**

- 21) Cupressus sempervirens L.
- 22) Cupressus pigmaea (Lemm.) Sarg. Set 5. (*cont.*)
- 23) Cupressus goveniana Gord. var. goveniana  
C. goveniana Gord. var. pigmaea Lemm.
- 24) Cupressus goveniana Gord. var. abramsiana (Wolf) Little
- 25) Cupressus macrocarpa Hartw. var. sargentii (Jeps.) 'Student'
- 26) Cupressus macrocarpa Hartw. subsp. macrocarpa  
C. macrocarpa Hartw. subsp. goveniana (Gord.) 'Student' is one choice
- 27) Cupressus macrocarpa Hartw. [subsp. goveniana (Gord.) 'Student'] var. pigmaea (Lemm.) 'Student'