Nomenclature exercise

After completing this you should begin to understand why it is sometimes hard to know how many species there are in a given group or place.

Answer the following questions. All names are fictional.

****NOTE: Include author names, dates and parentheses where appropriate****

It begins: Fabricius decides that the species *Olla latifolius* Linnaeus, 1758 is so distinct that he erects a new genus, *Bogus*, in 1771, for this one species.

1. Miller decided that what was being identified as *Bogus latifolius* (L., 1758) was actually two species, one undescribed. Miller described the new species as *Bogus pseudolatifolius* and published this name to make it available, in 1899. Is his decision that one species was actually two species a nomenclatural decision or a taxonomic decision?

2. Smith begins to study the species of *Bogus* and sees that Miller added a new species to the genus in 1899. He decides to check the type specimens of *B. latifolius*, *B. pseudolatifolius*, and another *Bogus* species, *B. confusus* Fabricius, 1870, and decides they are all conspecific (the first two were opposite sexes of the same species). Smith publishes his conclusion in 1902 by doing what with these names? (provide a list / table that Smith would publish for these names).

3. Which of Smith's actions were taxonomic and which were nomenclatural (and what nomenclatural rule was used)?

4. Smith is confused. He reads the original description of *Bogus ornata* Kirby, 1782 and it says "head much wider than pronotum" but he looks at the holotype of *B. ornata* and the head is much narrower than the pronotum - no more than half the width! Smith is about to write a redescription of this species-(which has never been seen in the wild, the holotype is the only specimen) how should he describe the width of the head relative to the pronotum?

5. Walker was paid to describe species in the British Museum's collection of insects. He named thousands of species. Smith, as the first person to revise *Bogus*, was checking on the type specimens of species of *Bogus* and found that Walker had named two species in this genus in 1875 (*B. pomi* and *B. picta*)- both published in the same paper. Smith visits the British Museum and discovers that both names belong to the same type specimen! The specimen had two labels, in Walker's handwriting, both declaring it the holotype of each of the two names. What should Smith do in his next paper to be published in 1904? (also: He has only seen the name *B. pomi* in the literature, the other one has never been used to his knowledge)

6. Smith gets some specimens in the mail after his last *Bogus* paper had gone to press and he realizes that there is an obviously undescribed *Bogus* species in the new material. He is working on another paper (on a different genus, *Malococis*, that is restricted to Africa) which is almost finished so he adds this new *Bogus* species as a footnote as follows: "Recently obtained material from Guam included a new species, distinct due to its very dark shoulders, which I herein name *ater.* Realizing too late (doh!) that he did not specify to what genus his new species belonged! When this paper goes to print in 1907 is his new species *ater* available? Why or why not? If so, to what genus does it belong? If not, what is the term used to describe the name *ater* of Smith? (hint, see Article 11)

7. Schneider, in 1978, is revising the subtribe Bogina in which the genus *Bogus* is classified. The name *Bogus aaptonosma* (Sikes, 1893) lacks a type specimen and the description indicates it is very similar (almost too similar) to *Bogus palmblaber* (Sikes, 1893) which has a series of syntypes in the British Museum. She finds material identified as *B. aaptonosma* in various collections - all from one island (which happens to be the type locality of *B. aaptonosma*). *Bogus palmblaber* is endemic to a different but nearby island. What should she do regarding the type specimens for these two *Bogus* species?
8. Schneider also finds this problem to solve for her 1978 paper: She finds a series of type specimens and available names by Casey, all from 1906: All but *Bogus miles* have only a single type specimen.

*Bogus minutus* Casey, 1906  
*Bogus punctulatus* Casey, 1906  
*Bogus cornuts* Casey, 1906  
*Bogus sallei* Casey, 1906  
*Bogus miles* Casey, 1906

The first two names are clearly synonyms of *Bogus aaptonosma* (Sikes, 1893) (and are known only from that same island - These two Sikes names were originally published in the genus *Palmblaber*). The second two names are clearly synonyms of *Bogus palmblaber* (Sikes, 1893), but the final name, *B. miles* Casey, has a mixed type series - some of the syntypes are *Bogus aaptonosma* and others are *Bogus palmblaber*. Schneider decides to designate a lectotype from the syntype series and chooses one that corresponds to *Bogus palmblaber*. She then breaks up the syntype series by only putting paralectotype labels on the *Bogus palmblaber* specimens but moving the other syntypes to the general collection (as no longer types). She also finds a publication by Harris (1902) that cites *Bogus aaptonosma* (Sikes, 1893) but from the wrong island - the island is that of *Bogus palmblaber* (Sikes, 1893). Her suspicion that Harris misidentified the species in his 1902 paper is confirmed after she finds and studies his voucher specimens. What does the synonym table (for the two valid species in this question) that she publishes look like?

9. Schneider finds another problem to solve for her 1978 paper: She studies a similar looking species, *Malococis latifollius* Blanchard, 1903 (which has only one junior synonym: *M. noctua* Grieg 1908) and realizes that it is a “good,” distinct species but is actually a *Bogus* and not a *Malococis*! What should she do in her paper to be published in 1978 and what is the valid name with author for the Blanchard species? (hint: see chapter 12 of the ICZN)

10. Ivie (in 2001), knowing that the species *Bogus flava* Ziegler, 1812 is very common and widely cited in the literature, is checking through some old Russian journals and discovers a name *Malococis aphis* Randall, 1803 that he hasn’t seen before. He checks the collection of the St. Petersburg museum and finds the type specimens of *Malococis aphis* Randall are identical in every important way to *Bogus flava* Ziegler! From his knowledge of the literature he knows that *B. flava* has been used at least 25 times in the last 50 years by 15 authors encompassing a span of 22 years and the name *M. aphis* has only been used twice (the original publication and one in 1816 - a checklist). But Ivie is certain these two names are synonyms. What should he do? (hint see chapter 6, ICZN)

11. You have been doing some DNA sequencing on species of *Bogus* and think you may have found a new species. It appears to be very closely related to *Bogus latifollius*. But before you proceed you need to prepare a complete synonymy table for all the species of *Bogus* (assume all the species and important taxonomic/ nomenclatural actions are listed above in this assignment): [indicate junior synonyms by putting the term 'syn.' before the name]

12. On a hunch you borrow the type specimen of *B. pseudolatifollius* and get permission to extract DNA from a leg. The sequence is virtually identical to the one you thought was a new species! It is a good 8% different from *B. latifollius* (which is the most similar sequence) and most of the other species in the genus appear to be 3-10% different from each other. A phylogenetic analysis also confirms this new sequence is distinct. What should you do?

13. How many *Bogus* species exist (assuming there are no more new species)? How many valid species names are there before you publish your DNA findings?