

Comment on the proposed the conservation of the name *Antheraea roylei* Moore, 1859 (Insecta, Lepidoptera, SATURNIIDAE)

(Case 3635; see BZN 70: 221–228; BZN 72: 57–60)

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The arguments and counter-arguments pertaining to this application focus on the debate as to whether *Antheraea pernyi* and *A. roylei* are distinct species or if *A. pernyi* was derived from *A. roylei* by sericultural selection, and therefore the two are biologically conspecific. However, if the two names do in fact represent separate species, which is the position of my colleagues Stefan Naumann and Wolfgang Nässig, then I would expect them to certainly support the application of Peigler & Chutia (2013) that the name *A. roylei* be conserved. Although I have argued, and will do so again below, that the two names refer to a single biological species, conserving the junior name would ensure that it can always be used by all authors, regardless of their viewpoint on this matter. If one is so certain that *A. roylei* is a species distinct from *A. pernyi*, then why would he or she object to conservation of the junior name *A. roylei*? Dr. Chutia and I were amiss in making this clear in our application. The following are my responses to the numbered points in the comments by Dr. Naumann.

3. In my earlier publication (Peigler, 2012), I outlined details pertaining to the geographical distributions of the two entities (names or species) that we call *roylei* and *pernyi*, and discussed the failure of feral populations of *pernyi* to persist. I agree with Naumann that climate zones would be a likely factor for the feral populations to eventually disappear. Bringing in names of other species or synonyms such as *korintjiana* and *lampei* from tropical Asia does not clarify any arguments, but I agree with Naumann that these belong to the *roylei* group. So what? The fact remains that all Chinese authors treat all specimens collected in China under the name *pernyi* and other authors reporting on material collected in Nepal, Vietnam, India, Bhutan, Thailand, West Malaysia, etc. call those specimens *roylei*. As I argued earlier (Peigler, 2012), the national borders cannot be a real line separating biogeographical zones, which can generally be considered north or south of the Himalayas. In fact, several saturniids and many insects and plants that are typically regarded as ‘sub-Himalayan,’ also turn up in Yunnan, Tibet, and other provinces in southern China (see Li et al., 2011). Manjeet Jolly was a leading sericulturist in India for many years, and there is no reason to doubt that he got his *pernyi* stock from China when he crossbred *pernyi* and *roylei* to produce his first lines of oak tasar (= temperate tasar) silkworm ‘hybrids’ (*proylei*). Moreover, if the *pernyi* material that Dr. Jolly first used really had been from India (therefore being *roylei*), why would the cocoons of the so-called hybrids resemble those of *pernyi* by being single-layered and with a large silk content? Furthermore, Jolly and others in India subsequently studied the chromosome numbers of Chinese *pernyi*, Indian *roylei*, and the *proylei* hybrid and accounted for the homologous pairings, as explained in my earlier paper (Peigler, 2012). The observation that the so-called hybrids between *pernyi* and *roylei* were fully fertile through multiple generations (implying they are the same species) is well documented, and the fact therefore well-supported. I do not believe that this argument for conspecificity can be effectively challenged.

4. I disagree that the phenotypic wing characters cited by Naumann are sufficient to define the two taxa. I stand by the statement in our original application (Peigler & Chutia, 2013) and earlier paper (Peigler, 2012) that the *roylei* phenotype falls within the wide variation we see among the more than 130 named strains of *pernyi*. For example, see the moths on pages 29 and 43 in the big book 'The Records of Tussah Varieties in China,' (SRIL 1996) and compare those to the *roylei* shown by Nässig et al. (1996, pl. 13, fig. 67) and Lampe (1985, pl. 6, figs. 3, 4). Li et al. (2011, pl. 55, fig. 2) figured a specimen of *roylei* from Guangdong with strongly produced forewing apices under the name *pernyi*. In Section 4, Naumann also alludes to differences separating the larvae and male genitalia, but does not specify what those might be. By contrast, I cited the pictorial table published by Jolly et al. (1979, fig. 78) that reveals the setal patterns of *pernyi* and *roylei* to be virtually identical, and the color images in Lampe (2010) showing larvae of *pernyi* and *roylei* to be identical.

5. Naumann lists several Chinese provinces that I had cited as records for *roylei* (Peigler, 2012). The specimens are in his collection and I got those records from him when he reviewed my manuscript, but now he considers them to represent *pernyi*. Furthermore, he says that wild records exist for far eastern Russia and the Korean peninsula, but fails to cite any specific data. I reviewed the Russian and Korean literature for *pernyi*, and concluded that those records were misidentifications for *A. yamamai* (Russia) or escapees from captive colonies of *pernyi* (Korea). I still do not believe that wild populations of *pernyi* exist in the Far East of Russia or in Korea or in fact anywhere in China. Naumann states that *roylei* is used in sericulture in India. Although this wild species has been investigated by several sericulture teams in Northeast India in recent years, it has never been mass reared for its silk, nor have its cocoons been mass collected for same.

7. Naumann challenges the taxonomic work of the early authors, such as Horsfield & Moore (1858–1859), Cotes & Swinhoe (1887), Hampson (1892), etc. As far as I can see, those workers identified and recorded *all* of the SATURNIIDAE correctly in their publications. They were some of the ones who named these species, or otherwise had access to the type specimens in London. Naumann's suggestion that those identifications should now be suspect because DNA-barcoding was not used is unfair. I believe that DNA-barcoding should be used (and viewed) as one taxonomic tool among many, rather than trying to define species boundaries or hypothetical phylogenies based on a portion of a single mitochondrial gene. In fact, the above cited authors of the 1800s had correctly separated *Antheraea knyvetti* from *A. roylei*, but it was only recently that Naumann realized that these two names refer to two species, after he, I, and many authors had incorrectly synonymized them.

8. My position remains unchanged that Mell (1939) in southern China and Sonan (1937) in Taiwan were in fact correct in their identifications of wild-collected moths as *roylei* instead of *pernyi*. It may be significant here that neither of those authors were Chinese, as it is clear that Chinese authors overwhelmingly call all wild-collected material from China by the name *pernyi*.

9. I do not think a taxonomic revision of the species-rich genus *Antheraea* will be necessary to resolve the question of whether *pernyi* and *roylei* are conspecific, although that is what it apparently took to resolve any doubt about the conspecificity of *Samia canningi* and *Samia ricini* (Peigler & Naumann, 2003).

14. I think the issue of *Antheraea assamensis* is different, because that sericulture is based on a species that is kept in the wild and is continually receiving genes from moths

in wild populations (Gogoi et al., 2014). By contrast, most of the sericulture of *pernyi* is in northeastern China where wild populations do not occur. Despite what Naumann believes about the northern limits of the range of *pernyi* or *roylei* in China, I was told by my hosts at the Tussah Sericultural Research Institute of Liaoning in 2008 that wild moths do not occur in that region. They would know.

One final argument I would like to record here is that Dr. Naumann is a leading authority on SATURNIIDAE with a lot of field experience in Asia, and his published work reflects high scientific integrity. Moreover, my impression of him over many years is that he has a good eye for species recognition. In spite of this, I respectfully disagree with him on this matter.

Additional references

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