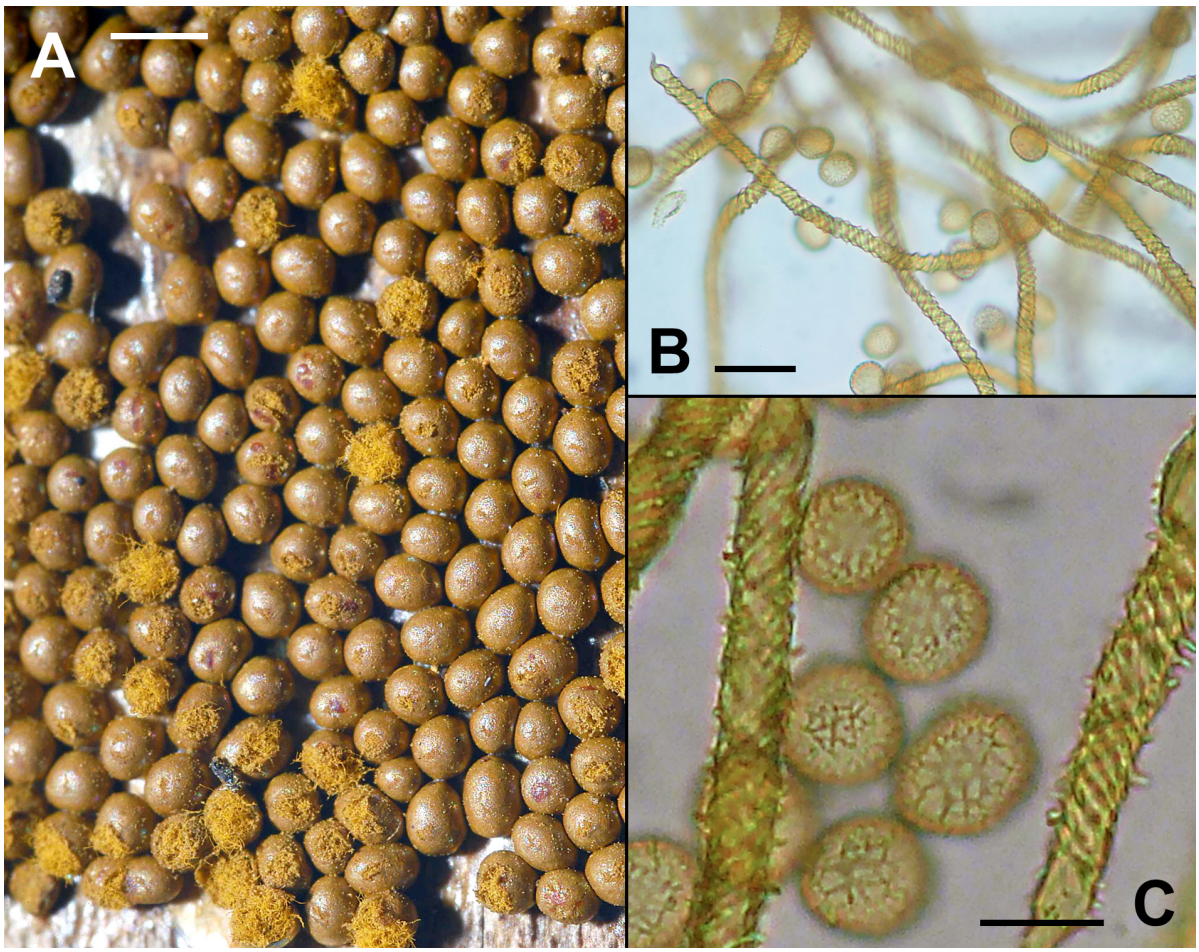
**IMI Descriptions of Fungi and Bacteria**
**No. 1919**

# TRICHIA SCABRA




**A**. Sporocarps, habit (bar = 1 mm). **B**. Capillitium and spores (bar = 20 µm). **C**. Spores (bar = 10 µm). [Photographs: A. Michaud]

**Trichia scabra** Rostaf., *Śluzowce (Mycetozoa) Monografia*: 258 (1875). [*IndexFungorum* 180329]

*Trichia nitens* Fr. ex Massee, *Journal of the Royal Microscopical Society* London **3**: 333 (1889), *nom. illegit.*, *ICBN* Art. 53·1, non *T. nitens* Pers. (1796). [*IndexFungorum* 168260]

*Hemiarcyria bucknallii* Massee, in COOKE, *Grevillea* **18**(no. 86): 27 (1889). [*IndexFungorum* 245601]

*Arcyria bucknallii* (Massee) Massee, *A Monograph of the Mycetogastres*: 161 (1892). [*IndexFungorum* 569154]

*Trichia minima* Massee, *Journal of the Royal Microscopical Society* London **3**: 336 (1889). [*IndexFungorum* 157315]

*Trichia scabra* var. *lutea* Meyl., *Bulletin de la Société Botanique de Genève* **2**: 266 (1910). [*IndexFungorum* 569155]

*Diagnostic features*. The combination of bright orange-yellow, densely packed sessile sporangia on a brown honeycomb hypothallus, a capillitium with rough elaters and spiny spirals, and delicately reticulate spores is diagnostic for this species.

*Habit.* On dead wood, and occasionally other substrata. *Plasmodium* white, or occasionally pale yellow. *Sporocarps* sessile sporangia, bright orange-yellow, brownish orange, dull orange or golden brown, shining, iridescent, crowded, clustered in compact groups or tightly clustered in large developments several cm in extent, old fructifications without capillitia resemble honeycombs. *Hypothallus* membranous, thin, dark brown, well-developed, common to a group of sporocarps, continuous below the whole development and surrounding the bases of the sporangia so that after disintegration all that remains is a 'honeycomb' of cups. *Stalks* not observed. *Sporangia* globose, subglobose to slightly cylindrical or occasionally turbinate, angular by mutual pressure, (0·4–)0·5–0·7(–0·8) mm diam., with a deep, funnel-shaped calyculus with convex and torn sides. *Peridium* single, membranous, smooth, shining, the inner surface smooth, faintly wrinkled or with faint and dense granules, dehiscence irregular, particularly evanescent, remaining as cap. *Capillitium* deep orange-yellow, or brilliant yellow to greenish yellow by transmitted light, consisting of long, simple elaters, 4–6 µm diam., flexuous, spirally twisted, entangled, bi-refringent in polarized light, without attachments to the peridium, bearing 3 or 4 closely-wound, regular, spinulose spiral bands, connected by faint longitudinal striae, the apices short and acuminate, the free ends pointed, 8–10 µm long. *Spores* deep yellow to rusty orange in mass, individually light yellow to light greenish yellow by transmitted light, free, subglobose, (9–)10–11(–12) µm diam., delicately reticulate, with small-meshed non-pitted bands and thin ridges, in optical section showing as a border, 0·2–0·5 µm thick, visible with oil immersion.

**ASSOCIATED ORGANISMS & SUBSTRATA**: **Fungi**: *Byssostilbe stilbigera* (Berk. & Br.) Petch [as *Blistum ovalisporum* (A.L. Sm.) B. Sutton]. **Plantae**: *Abies borisii-regis* Mattf. (wood); *Acer campestre* L. (bark, wood); *Alnus glutinosa* (L.) Gaertn. (wood); *Betula pendula* Roth (wood); *Carpinus betulus* L. (bark, wood); *Fagus sylvatica* L. (wood); *Fraxinus excelsior* L. (wood); *Magnoliopsida* indet. (wood); *Muscopsida* indet.; *Picea abies* (L.) H. Karst. [also as *P. excelsa* Link] (stump, trunk, wood), *P. schrenkiana* Fisch. & C.A. Mey.; *Pinus sylvestris* L. (wood); *Plantae* indet. (leaf, wood); *Populus nigra* L. (wood), *P. tremula* L. (bark, wood); *Quercus robur* L. (bark, leaf, wood); *Salix alba* L. (wood); *Ulmus campestris* L. (wood). **Protozoa**: *Metatrichia vesparium* (Batsch) Nann.-Bremek. ex G.W. Martin & Alexop.

**INTERACTIONS & HABITATS**: Nothing specific is known about interactions between *Trichia scabra* and other organisms, but myxomycetes in general, in their plasmodial state, are known to feed on bacteria, yeasts and other single-celled organisms, and they themselves provide food for insects, particularly beetles, and other animals. Some beetle species are known only from myxomycetes, and for some of these there may be a close symbiosis. Myxomycetes may also be found in association with fungi, and some fungi have been found only on myxomycete sporocarps and, presumably, derive their nutrition from them either as parasites or as saprobes. *Byssostilbe stilbigera*, recorded from the present species, is a good example of such an association. *Trichia scabra* sporocarps are generally observed on dead parts of plants, using the plant material as a substratum, but probably not as a nutrient source. The species is very widely distributed but not common. In the tropics it seems to prefer lower altitudes more than other members of the genus. It has been recorded on rotten wood of deciduous trees and, more rarely, from dead leaves. It is particularly characteristic of logs of *Ulmus*, and its presence is possibly an indicator of ancient woodland.

**GEOGRAPHICAL DISTRIBUTION**: AFRICA: Democratic Republic of the Congo, Réunion, Rwanda, South Africa, Uganda. CENTRAL AMERICA: Costa Rica, Nicaragua. NORTH AMERICA: Canada (Alberta, Nunavut, Ontario, Québec), México, USA (Alaska, California, Colorado Idaho, Illinois, Iowa, Maine, Michigan, Minnesota, Mississippi, Montana, South Carolina, Tennessee, Washington, West Virginia, Wyoming). SOUTH AMERICA: Brazil (Goiás), Venezuela. ASIA: Armenia, Bangladesh, Bhutan, China (Heilongjiang, Hunan, Qinghai, Yunnan), Georgia, India (Himachal Pradesh, Uttar Pradesh), Japan, Kazakhstan (Alma-Atinskaya oblast, Severo-Kazakhstanskaya oblast, Vostochno-Kazakhstanskaya

oblast), Mongolia, Nepal, Pakistan, Russia (Altaiskiy krai, Krasnodarskyi krai, Sverdlovsk oblast, Tiumen' oblast), South Korea, Sri Lanka, Turkey. AUSTRALASIA: New Zealand. CARIBBEAN: Jamaica. EUROPE: Austria, Belarus, Belgium, Czech Republic, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, Moldova, Netherlands, Poland, Portugal, Romania, Russia (Bashkortostan, Komi autonomous republic, Leningrad oblast, Moscow oblast, Tver oblast, Volgograd oblast), Slovenia, Spain, Sweden, Ukraine, United Kingdom. PACIFIC OCEAN: Samoa.

**ECONOMIC IMPACTS**: No evaluation has been made of any possible positive economic impact of this myxomycete (e.g. as a source of useful products, as a provider of checks and balances within its ecosystem, or of other ecosystem services such as recycling, etc.). No reports of negative economic impacts have been found.

**INFRASPECIFIC VARIATION**: *Trichia scabra* var. *lutea* Meyl., listed in the synonymy above, was examined by KOWALSKI (1975) who concluded that the colour difference on which it was based was 'very slight and hardly appears to be of taxonomic value'.

**DISPERSAL & TRANSMISSION**: Nothing specific is known about *Trichia scabra*. Myxomycete spores are produced in dry dusty masses inside sporocarps. The sporocarp outer wall fragments to expose the spores which are then, most probably, primarily dispersed by wind. This dispersal is likely to be totally random unless there is a strong prevailing wind in the vicinity. Insects are known to graze on myxomycete sporocarps, and spores have frequently been found in their faeces. This is therefore also likely to be an important part of their dispersal mechanism. Insect dispersal has the potential to be less random than wind dispersal, but there seem to be no studies of how long spores may remain in an insect digestive tract or of insect movements in relation to myxomycete spore dispersal. After the spores have landed on plant material, each may germinate to produce a single-celled zoospore with one or two flagella. This zoospore may then use its flagella to disperse locally. The zoospores subsequently transform into amoeba-like cells which reproduce by mitosis and aggregate, forming groups which are sometimes sufficiently large as to be seen with the unaided eye. These groups, which are called plasmodia, can also migrate, often in response to light. For almost the whole life cycle, therefore, myxomycetes are mobile organisms, with only the sporocarp stage being fixed in a single location. Unlike members of the kingdom *Fungi*, myxomycetes do not form hyphae, and do not derive nutrition from the plant substrata on which they are found. As a result, it is not meaningful to describe them in terms of transmission. There is no infection stage, and no colony formation inside plant material. Instead, the individual amoebae derive their nutrition by engulfing bacteria, yeasts and other single-celled organisms.

**CONSERVATION STATUS**: **Information base**. Nearly 1500 records (specimens, databases, bibliographic sources and field observations combined, excluding duplicates) from 1875 to 2008, with observations in March, April, May, June, July, August, September, October and November, with the main fruiting season in the northern hemisphere from July to October. The species is widely regarded as not common but most of its known associated organisms are common and likely to be classified as Least Concern by the IUCN. **Estimated extent of occurrence** [calculated using *http://geocat.kew.org*]. Nearly 59·5 million $km^2$ (Africa: 9·4 million $km^2$; Central America: insufficient data; North America: 13·4 million $km^2$; Asia: 26·2 million $km^2$; South America: insufficient data; Australasia: insufficient data; Caribbean: insufficient data; Europe: 10·5 million $km^2$). **Estimated area of occupancy** [calculated using *http://geocat.kew.org*]. About 328 $km^2$. The method for estimating area of occupancy has probably produced an artificially low figure. **Population trend**. Not reported, but sufficient records exist for some analysis to be possible. **Threats**. No specific threats have been identified. **Evaluation**. Using IUCN criteria (IUCN SPECIES SURVIVAL COMMISSION. *2006 IUCN Red List of Threatened Species*, *www.iucnredlist.org*. Downloaded on 15 May 2006), the species is assessed globally as Least Concern. ***In situ* conservation actions**. None noted. Many recent records, however, originate from protected areas. ***Ex situ* conservation actions**. One nucleotide sequence was found in a search of the NCBI GenBank database [*www.ncbi.nlm.nih.gov*]. No living strains of this species were found in a search of the ATCC, CABI, CBS and ICMP culture collection on-line catalogues.

**NOTES**: The distribution map of this species on the *Eumycetozoan Project* website [*http://slimemold.uark.edu*] provides further georeferenced records but some errors may have occurred in allocating latitudes and longitudes. The record on that map in the northern part of the Pacific Ocean is, in reality, from New Zealand, and the record, apparently from southwest Kazakhstan, is in fact from Germany. The true geographical distribution of this species remains uncertain because some earlier researchers have experienced difficulty in distinguishing it from *T. favoginea* (Batsch) Pers.

**LITERATURE & OTHER SOURCE MATERIAL**: ALEXOPOULOS, C.J. & SÁENZ R., J.A. The Myxomycetes of Costa Rica. *Mycotaxon* **2**(2): 223–271 (1975). BARSUKOVA, T.N. & DUNAYEV, Y.A. [as БАРСУКОВА, Т.Н. & ДУНАЕВ, Е.А.] Аннотированный список слизевиков (*Myxomycota*) Московской области [An annotated list of slime moulds (*Myxomycota*) from Moscow oblast]. *Микология и Фитопатология* [*Mycology and Phytopathology*] **31**(2): 1–8 (1997). CELLE, M.A. [as ЦЕЛЛЕ М.А.] Матеріали до флори міксоміцетів України [Materials for the flora of Myxomycetes of Ukraine]. *Вісник Київського Ботанічного Саду* [*Bulletin of Kiev Botanic Garden*] **2**: 31–39 (1925). DUDKA, I.O. & KRIVOMAZ, T.I. [as ДУДКА, І.О. & КРИВОМАЗ, Т.І.] Нові види міксоміцетів з Українських Карпат [New species of myxomycetes from Ukrainian Carpathians]. *Український Ботанічний Журнал* [*Ukrainian Botanical Journal*] **53**(6): 710–717 (1996). DUDKA, I.O., KUZUB, V.V. & ROMANENKO, E.A. [as ДУДКА, І.А., КУЗУБ, В.В. & РОМАНЕНКО, Е.А.] Миксомицеты Ялтинского горно-лесного заповедника [Myxomycetes of the Yalta mountain-forest nature reserve (Ukraine, Crimea)]. *Микология и Фитопатология* [*Mycology and Phytopathology*] **33**(5): 307–315 (1999). EMOTO, Y. *The Myxomycetes of Japan* (Tokyo, Japan: Sangyo Tosho Publishing): 263 pp. (1977). FARR, M.L. Myxomycetes. *Flora Neotropica Monograph* **16**: 223–224 (1976). ING, B. *The Myxomycetes of Britain and Ireland* An Identification Handbook (Slough, UK: Richmond Publishing): 374 pp. (1999). KOWALSKI, D.T. The myxomycete taxa described by Charles Meylan. *Mycologia* **67**(3): 448–494 (1975). KRUPA, J. Zapiski mycologiczne, przewaznie z okolic Lwowa i Tatr [Mycological notes mostly from around Lvov and Tatra]. *Kosmos* Warsaw **11**: 370–399 (1886). KRUPA, J. Zapiski mycologiczne z okolic Lwowa i Podtatrza [Mycological notes from around Lvov and Podtatrze]. *Sprawozdania Komisyi Fizjograficznej Akademji Umiejetnosci* Krakow **22**(2): 12–47 (1888). KRZEMINIEWSKA, H. Śluzowce Karpat Wschodnich [Slime moulds of the eastern Carpathians]. *Kosmos* Warsaw **59**: 207–223 (1934). KRZEMINIEWSKA, H. Śluzowce zebrane w starym ogrodzie botanicznym we Lwowie [Slime moulds collected in the old botanic garden of Lvov]. *Kosmos* Warsaw **62**: 17–26 (1937). LADO, C. & PANDO, F. Myxomycetes, I. *Ceratiomyxales*, *Echinosteliales*, *Liceales*, *Trichiales*. *Flora Mycológica Ibérica* Real Jardín Botánico Madrid **2**: 323 pp. (1997). LAVITS'KA, Z.G. [as ЛАВІТСЬКА, З.Г.] Матеріали до флори слизовиків (Myxomycetes) району Середнього Дніпра [A contribution to the flora of slime moulds (Myxomycetes) of the Middle Dnieper region]. *Праці Канівського Біогеографічного Заповідника* [*Works of the Kaniv Biogeographical Reserve*] **7**: 47–49 (1949). LEONTYEV, D.V., DUDKA, I.O., KOCHERGINA, A.V. & KRIVOMAZ, T.I. New and rare Myxomycetes of Ukraine 3. Forest and forest-steppe zone. *Nova Hedwigia* **94**(3–4): 335–354 (2012). MARTIN, G.W. Myxomycetes. *North American Flora* **1**(1): 1–152, 179–190 (1949). MARTIN, G.W. & ALEXOPOULOS, C.J. *The Myxomycetes* (Iowa City, IA: Iowa University Press): 560 pp. (1969). NAKHUTSRISHVILI, I.G. [as НАХУЦРИВИЛИ, И.Г.] *Флора Споровых Растений Грузий* (Конспект) [*Flora of Spore-producing Plants of Georgia* (Summary)] (Тбилиси: Мецниереба, Институт Ботаники им. Н.Н. Кецховели, Академия Наук Грузинской ССР [Tbilisi: Metsniereba, N.N. Ketskhoveli Institute of Botany, Academy of Science of the Georgian SSR]): 888 pp. (1986). NAMYSLOWSKI, B. Śluzowce i grzyby Galicyi i Bukowiny [Slime moulds and fungi of Galicia and Bukovina]. *Pamietnik Fizjograficzny* Warsaw **22**(4): 1–151 (1914). NANNENGA-BREMEKAMP, N.E. *A Guide to Temperate Myxomycetes* (Bristol, UK: Biopress): 409 pp. (1991). NEUBERT, H., NOWOTNY, W. & BAUMANN, K. *Die Myxomyceten Deutschlands und des Angrenzenden Alpenraumes unter Besonderer Berücksichtigung Österreichs* **1**: *Ceratiomyxales*, *Echinosteliales*, *Liceales*, *Trichiales* (Gomaringen, Germany: Karlheinz Baumann Verlag): 340 pp. (1993). NOVOZHILOV, Y.K. [as НОВОЖИЛОВ, Ю.К.] *Определитель грибов России: отдел Слизевики* **1**. Класс Миксомицеты [*An Identification Handbook of Russian Fungi* **1**. Class Myxomycetes] (Санкт Петербург: Наука [Sankt-Peterburg: Nauka]): 288 pp. (1993). PIDOPLICHKO, M.M. [as ПІДОПЛИЧКО, М.М.] Критичні

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See also the following internet pages:

- *Checklist of Fungi of the British Isles* [*www.fieldmycology.net/GBCHKLST/gbchklst.asp*].
- *Cybertruffle* [*www.cybertruffle.org.uk*].
- *GBIF* [*http://data.gbif.org/welcome.htm*].
- *Google* [*www.google.co.uk*].
- *Landcare Research New Zealand* [*http://nzfungi.landcareresearch.co.nz*].
- *Myxomycetes of Ukraine* [*www.myxomycet.com.ua/eng*].
- *National Center for Biotechnology Information* [*www.ncbi.nlm.nih.gov*].
- *Nomen.eumycetozoa.com* [*www.nomen.eumycetozoa.com*].
- *The Eumycetozoan Project* [*http://slimemold.uark.edu*].
- *USDA Fungal Databases* [*http://nt.ars-grin.gov/fungaldatabases/index.cfm*].

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