



A. Sporocarps, habit (bar = 1 mm). B. Colony with sporocarps on a living snail (bar = 5 mm). C. Capillitium and spores (bar = 20 µm). D. Spores (bar = 10 µm). [Photographs: A. Michaud]

**Arcyria stipata** (Schwein.) Lister, *A Monograph of the Mycetozoa*: 189 (1894). [*IndexFungorum* 184737]  
*Leangium stipatum* Schwein., *Transactions of the American Philosophical Society of Philadelphia* New Series **4**: 258 (1832). [*IndexFungorum* 186504]  
*Hemiarcyria stipata* (Schwein.) Rostaf., *Śluzowce (Mycetozoa) Monografia Supplementum* 1: 41 (1876). [*IndexFungorum* 182706]  
*Hemitrichia stipata* (Schwein.) T. Macbr., *The North American Slime Moulds*: 204 (1899). [*IndexFungorum* 179442]

*Diagnostic features.* The almost pseudoaethalial habit, persistent peridium and copper colour make this species distinctive.

*Habit.* On dead wood, and occasionally other substrata. *Plasmodium* yellow, then white, becoming pink as the sporangia ripen. *Sporocarps* sessile or short-stalked, erect or ± superimposed and then sessile, very densely crowded and (in large colonies) appressed, often resembling a pseudoaethalium, shining coppery

pink, or copper to reddish ochraceous in the fresh state, metallic, often with lavender or rose tints, browning with age, 0.8–3 mm high. *Hypothallus* shared, membranous, dark brown, confluent. *Stalk* very short, 0.1–1.5 mm tall, often appearing to be absent, red-brown or dark brown, filled with round cells *c.* 13 µm diam. *Sporangia* ± cylindrical, erect or curved, 0.8–1 × 0.5–0.8 mm, with a ± deep calyculus which is smooth or decorated with very fine papillae sometimes arranged in lines. *Peridium*, in separate sporothecae, evanescent above and leaving a shallow cup, persistent in pseudoaethaliate forms and then splitting into lobes, persistent, shining, often iridescent, red with copper reflexions. *Capillitium* loosely attached at the base and easily blown away, the upper part often breaking away with the peridium, forming a loose and rather lax net, somewhat elastic, the tubules 2.5–5 µm diam., bearing 3 or 4 spirals, these sometimes intermixed with spines, cogs, half-rings or occasional rings and partial reticulations, the whole ornamentation appearing to be spirally arranged, with bulbous thickenings and numerous free ends. *Spores* coppery in mass, individually pallid, pale red to almost colourless in transmitted light, very minutely warted (viewed under oil immersion) with a few groups of larger warts, 6–8 µm diam.

**ASSOCIATED ORGANISMS & SUBSTRATA:** **Animalia:** *Gastropoda* (shell). **Plantae:** *Betula pendula* Roth (wood); *Fagus sylvatica* L. (wood); *Populus alba* L. (wood), *P. tremula* L. (wood); *Quercus robur* L. (wood).

**INTERACTIONS & HABITATS:** Nothing specific is known about interactions between *Arcyria stipata* 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. *Arcyria stipata* sporocarps are generally found on living and dead parts of plants, using the plant material as a substratum, but probably not as a nutrient source. The species is widespread in some regions, but never common, being found particularly in temperate regions on fallen trunks, especially of *Fagus* species.

**GEOGRAPHICAL DISTRIBUTION:** CENTRAL AMERICA: Panamá. NORTH AMERICA: Canada (British Columbia, Ontario), USA (Colorado, Iowa, Kansas, Massachusetts, Minnesota, Oregon, Tennessee, Washington, West Virginia). SOUTH AMERICA: Colombia, Venezuela. ASIA: China, India (Himachal Pradesh), Japan, Nepal, Philippines, Russia (Khabarovskiy krai, Krasnoyarskiy krai, Sverdlovsk oblast). AUSTRALASIA: New Zealand; CARIBBEAN: Dominican Republic, Jamaica. EUROPE: Belarus, Belgium, France, Germany, Italy, Lithuania, Poland, Russia (Leningrad oblast, Volgograd oblast), Sweden, Switzerland, Ukraine, United Kingdom.

**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:** None reported.

**DISPERSAL & TRANSMISSION:** Nothing specific is known about *Arcyria stipata*. 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 500 records (specimens, databases, bibliographic sources and field observations combined, excluding duplicates) from 1832 to 2008, with observations in February, June, July, August, September, October and December, with the main fruiting season in the northern hemisphere from June to October. The species is widely regarded as not common, but most if not all 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 29.4 million km<sup>2</sup> (Central America: insufficient data; North America: 5.0 million km<sup>2</sup>; South America: insufficient data; Asia: 20.9 million km<sup>2</sup>; Australasia: insufficient data; Caribbean: insufficient data; Europe: 3.5 million km<sup>2</sup>). **Estimated area of occupancy** [calculated using <http://geocat.kew.org>]. About 140 km<sup>2</sup>. 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](http://www.iucnredlist.org). Downloaded on 15 May 2006), the species is assessed globally as Least Concern. **In situ conservation actions.** None noted. Some recent records, however, originate from protected areas. **Ex situ conservation actions.** Two nucleotide sequences and one protein sequence were found in a search of the NCBI GenBank database [[www.ncbi.nlm.nih.gov](http://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 *Eumycetozoa Project* website [<http://slimemold.uark.edu>] provides further georeferenced records. There is an exceptional record (see illustration above) of this myxomycete using the shell of a living snail as a substratum.

**LITERATURE & OTHER SOURCE MATERIAL:** CHASSAIN, M. *Arcyria stipata* (Schw.) A. Lister. Myxomycète non signalé en France, trouvé en Loire-Atlantique. *Bulletin de la Société des Sciences Naturelles de l'Ouest de la France* N.S. **69**: 7–13 (1971). ELIASSON, U. & KELLER, H.W. Coprophilous myxomycetes: updated summary, key to species, and taxonomic observations on *Trichia brunnea*, *Arcyria elaterensis*, and *Arcyria stipata*. *Karstenia* **39**: 1–10 (1999). ING, B. *The Myxomycetes of Britain and Ireland* An Identification Handbook (Slough, UK: Richmond Publishing): 374 pp. (1999). LADO, C. & PANDO, F. Myxomycetes, I. *Ceratiomyxales*, *Echinosteliales*, *Liceales*, *Trichiales*. *Flora Mycológica Ibérica* Real Jardín Botánico Madrid **2**: 323 pp. (1997). LI, Y., CHEN, S.L. & LI, H.Z. Myxomycetes from China X: additions and notes to *Trichiaceae* from China. *Mycosystema* **6**: 107–112 (1993). LISTER, A. *Monograph of the Mycetozoa* A Descriptive Catalogue of the Species in the Herbarium of the British Museum. Edn 3 (London, UK: Oxford University Press): 296 pp., 222 pls (1925). 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. & ALEXOPOULOS, C.J. *The Myxomycetes* (Iowa City, IA: Iowa University Press): 560 pp. (1969). 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 Слизевика 1*. Класс Миксомицеты [*An Identification Handbook of Russian Fungi 1*. Class Myxomycetes] (Санкт Петербург: Наука [Sankt-Peterburg: Nauka]): 288 pp. (1993). POULAIN, M., MEYER, M. & BOZONNET, J. *Les Myxomycètes*

(Sévrier, France: Fédération Mycologique et Botanique Dauphin-Savoie) **1**. *Guide de Détermination*: 568 pp., 15 pls; **2**. *Planches*: 544 col. pls (2011). RAMMELOO, J. *Arcyria stipata* (Schwein.) Lister. *Icones Mycologicae* (Meise, Belgium: Nationale Plantentuin van België) Plate 118 (1986). YU, L. [*Flora Fungorum Sinicorum* (Myxomycetes I) – *Ceratiomyxales*, *Echinosteliales*, *Liceales* and *Trichiales*]: 238 pp. (2008) [in Chinese].

See also the following internet pages:

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

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Issued by CABI, Bakeham Lane, Egham, Surrey, TW20 9TY, UK

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