Figure 1. *Verpa bohemica* from Northern Upper Appennines (Farné near Lizzano in Belvedere (BO), Italy). Photo by Nicola Sitta.

Early Morels and Little Friars,
or a Short Essay on the Edibility of *Verpa bohemica*

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Abstract

The spring ascomycete *Verpa bohemica* – the "early morel" – has a long tradition of consumption in Emilia-Romagna (Northern Italy), where it is regularly collected, safely eaten and officially traded, as well as true morels (*Morchella* spp.). Unfortunately, *V. bohemica* is still listed among suspect or toxic mushrooms in most of North American and extra-European texts, despite the lack of analytical confirmation for the occurrence of toxins such as gyromitrin and coprine, which *V. bohemica* has been allegedly blamed for in the past, and in the absence of sound toxicological evidence as well. In fact, poisonings occasionally reported in the old literature after consumption of *V. bohemica* might have well been misunderstood with the so-called neurological syndrome associated with ingestion of *Morchella* spp. which has been formally described only in recent years. Mushroom collectors should therefore be reassured that *V. bohemica* and true morels share the very same edibility status.

Riassunto

L'ascomicete primaverile *Verpa bohemica* ha una lunga tradizione di utilizzo a scopo alimentare in Emilia-Romagna, dove viene regolarmente raccolto, consumato e commercializzato, alla stregua delle spugnole propriamente dette (*Morchella* spp.). Purtroppo *V. bohemica* continua ad essere elencata tra le specie sospette o tossiche nella maggior parte dei testi nordamericani ed extraeuropei, nonostante la mancanza di conferme analitiche della presunta presenza di tossine quali la giromitrina e la coprina per cui *V. bohemica* è stata accusata in passato, e anche in assenza di chiari indizi tossicologici. Infatti, i casi di intossicazione riportati in passato in letteratura a seguito del consumo di *V. bohemica* devono essere piuttosto ricondotti ad un'errata interpretazione della cosiddetta sindrome neurologica associata al consumo di funghi del genere *Morchella* che è stata correttamente caratterizzata solo in anni recenti. È pertanto necessario rassicurare i raccoglitori circa lo status di commestibilità di *V. bohemica*, che è da considerare assolutamente identico a quello delle vere spugnole.

Mushrooms have featured an iconic role in Italian food tradition since time immemorial. There is plenty of historical evidence documenting the usage of mushrooms for food purposes by ancient Romans, who were particularly fond of *boleti* (*Amanita caesarea*) but did collect and also trade *suilli*, i.e. boletes (*Boletus edulis* and allied species) (Buller, 1914; Jaeger, 2011). Such a tradition of consumption has survived and further developed along the centuries in Italy, and the range of mushroom species that are used for food has meanwhile broadened. In fact, despite the fact that boletes (*porcini* in Italian) today represent *the* mushrooms *par excellence* in Italy and still account for most of the market share in mushroom trade (Sitta and Floriani, 2008), many edible fungal species other than *porcini* are widely collected and traded nationwide or on regional scale.

Such is the case of true morels (*Morchella* spp.), which are most prized and actively sought after in the whole of Italy under the trivial name *spugnole* (= little sponges). Morel hunting and consumption in Italy does not reach the popularity as in the US or in France – Italian mushroom hunters and gourmands have a passion for *porcini* above all! Nonetheless it is tempting to speculate that the springtime appearance of potentially tasty food items such as morels, which could be used as accompaniments to otherwise plain cereal-based staple foods, must have represented a major drive for collection in ancient times. In this respect, however, it is not clear when consumption of morels first appeared in Italy. Some claimed that Pliny the Elder might have made an explicit reference to them in his *Naturalis Historia* (Maggiulli, 1977), but such a speculation is somewhat questionable in our opinion. On the contrary, it is most likely that the first ever documentary evidence clearly describing the usage of morels for food purposes in Italy can be traced back to the Late Middle Ages.

In addition to true morels, in Emilia-Romagna (Northern Italy) also *Verpa bohemica* (Krombh.) J. Schröt. (Figs. 1–3) has a long tradition of consumption and it is even traded officially on a local scale (Figs. 4–5). In the province of Modena *V. bohemica* fruits from March to early May, sometimes abundantly, whereas true morels appear two or three weeks later, under conditions of same elevation and slope orientation; *V. bohemica* grows under several species of broadleaved trees, in particular elms (*Ulmus* spp.), poplars (*Populus* spp.) and willows (*Salix* spp.), often along rivers and streams, and often hidden in dense thickets of bramble and wild roses (*Rubus* spp. and *Rosa* spp., respectively) in the understory. In moisture-rich locations it can also grow abundantly in degraded chestnut or beech woods, especially at the edge, or close to ruins of buildings and stone walls. Its distribution range spans from the foothills of Lower Appennines (and adjacent areas bordering the river Po plain) to the Upper Appennines, up to elevations of *ca.* 1500 m above sea level.

Known as the "early morel" in English-

Figure 2. *Verpa bohemica* from Northern Lower Appennines (Vignola (MO), Italy). Photo by Paolo Davoli.

speaking countries, in the province of Modena *V. bohemica* is usually referred to as *fratèin* in the local dialect (in Italian it translates as *fratino*, i.e. little friar), whilst true morels are collectively called *sfuracèli* instead (Bellei, 1999); sometimes the name *frê* (in Italian *frate* = friar) is also used for *V. bohemica*. By close analogy, the trivial names *fratèin/frê* are often applied locally also to *Mitrophora semilibera* (DC.) Lév. (syn. *Morchella semilibera* DC.). (Bellei and Benatti Spennato, 1994). It is worthy to note – at least from an ethnomycological viewpoint – that *Helvella crispa* (Scop.) Fr. is called in the local dialect *surèina* and *pritèin* (corresponding to Italian *suorina* and *pretino*) (San Donnini, 1899), i.e. little nun and little priest, respectively.

In the US *Verpa bohemica* is usually regarded as suspect or toxic by many field guides; even when it is reported as edible, it is generally not recommended for eating and caution is always given that it may cause gastrointestinal discomfort in some people. According to Beug et al. (2014), *V. bohemica* is *"edible for some but poisonous to many others, causing variable reactions, including severe gastrointestinal upset and temporary loss of coordination."* Similar information about the toxicity of early morels can be found on mushroom books aimed at a worldwide audience (e.g. Hall et al., 2003; Roberts and Evans, 2011) and also in some (albeit few!) Italian and European field guides, even though most of them always list *V. bohemica* as edible, and rightly so. In the FAO's compendium of wild edible mushrooms, *V. bohemica* is included in the global list of wild fungi used as food, and it is also listed between the "economically important wild fungi" (Boa, 2004). Also to the best of our knowledge *V. bohemica* can be safely eaten and it should therefore be included among edible fungal species. Accordingly, in Emilia-Romagna it is officially included at a regional level in the positive list of edible mushrooms allowed for trade (Italy, 1995; Emilia-Romagna, 1997). Clearly, it is one of those cases of contrasting evaluation of edibility that are often found in the (ethno)mycological literature (see Sitta and Davoli, 2012).

At least as far as the North American mycological literature is concerned, we believe that such a confusion about the edibility of *V. bohemica* stems from Lincoff and Mitchel's *Toxic and Hallucinogenic Mushroom Poisoning* (1977), an authoritative source of mycotoxicological information that still represents a leading reference in the field and which has been frequently quoted by mycologists in subsequent decades. In fact, Lincoff and Mitchel, quoting earlier and scattered cases of poisonings caused by ingestion of early morels, wrote: *"...it is possible that* Verpa bohemica*, or certain strains or fruiting of it, contain or can synthesize low levels of gyromitrin."* (Lincoff and Mitchel, 1977). To the best of our knowledge, however, the presence of gyromitrin in *V. bohemica* has never been demonstrated experimentally. Despite thorough bibliographical searches, we could not find a single reference that confirms unambiguously the detection of gyromitrin and analogues thereof in *V. bohemica*, neither before nor after the publication of Lincoff and Mitchel's book. Nonetheless their view has certainly consolidated over the years and must have remained widely accepted in the US and elsewhere. We wonder about the official status of *V. bohemica* in the US. For instance, is it allowed for

Figure 3. *Verpa bohemica* from Northern Lower Appennines (Vignola (MO), Italy). Photo by Paolo Davoli.

trade? As far as we know, according to the FDA, *V. bohemica* is lumped with *Gyromitra* spp. and *Helvella* spp., and all of them are considered toxic (FDA, 1984; Gecan and Cichowicz, 1993). We have found official reports from the FDA whereby detection of *V. bohemica* in consignments of dried and canned morels for US import resulted in non-compliance of the shipment and failure to obtain custom clearance (see for example FDA Import Alert 25-02, 2011). Caution is certainly required when dealing with *Gyromitra*, but officially listing *Verpa bohemica* as toxic in the absence of any sound experimental evidence looks a bit too precautionary...

Today it is acknowledged that almost all edible wild mushroom species can cause poisonings with gastrointestinal symptoms for reasons such as incomplete cooking, ingestion of old specimens or over-indulgence in consumption itself. Although this may have well occurred also with *V. bohemica*, we surmise that the gastrointestinal and neurological symptoms reported after eating early morels might have always been misunderstood with the so-called "cerebellar syndrome" associated with the consumption of conspicuous quantities of *Morchella* spp., which has been clearly documented only in recent years (Pfab et al., 2008; Berndt, 2010; Saviuc et al., 2010). In fact, the presence of neurological symptoms in the cerebellar syndrome match perfectly with the descriptions of poisonings by *V. bohemica* reported in earlier literature, whereby uncoordination or lack of muscular coordination was observed.

The alleged occurrence of coprine in *V. bohemica* has been also invoked to explain poisonings that were reported after consumption of early morels in conjunction with alcoholic beverages. Despite the absence of any experimental confirmation from an analytical viewpoint, we find it most surprising that such a speculation has crept up in the (myco)toxicological literature, so that *V. bohemica* may still be found listed among coprine-containing toxic mushrooms responsible of disulfiram-like syndrome (Graeme, 2014). As for gyromitrin, the postulated occurrence of coprine in sporophores of *V. bohemica* has never been demonstrated so far (see also Michelot, 1992) and it must likewise be accounted as an unsubstantiated piece of information that still awaits chemical confirmation, if any. In our own experience, in Emilia-Romagna the consumption of *V. bohemica* is usually accompanied by a glass of good wine, and no cases of poisoning with coprine-like syndrome have ever been reported.

Figure 5. Close-up of a basketful of *Verpa bohemica* ready to be offered for sale. Photo by Paolo Davoli.

In conclusion, therefore, we can safely ensure that the edibility status of *V. bohemica* and true morels (*Morchella* spp.) is identical. Both of them are definitely edible, provided that they are thoroughly cooked, and they represent undoubtedly an economically important food item in several countries in the world.

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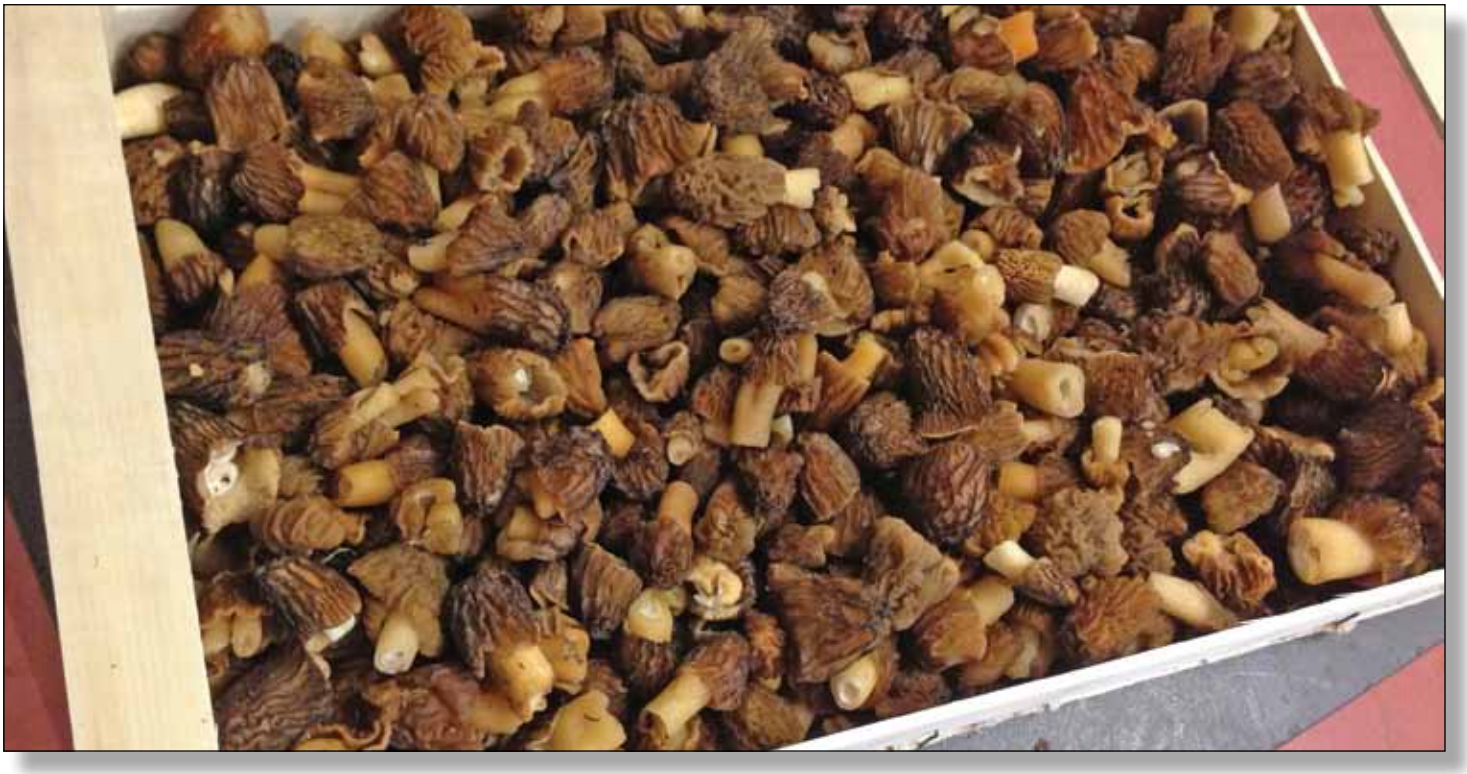

Figure 4. *Verpa bohemica* on sale at a market stall. Photo by Luigi Paganini.

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PUBLISHER'S NOTES: Although many wild mushrooms are quite palatable, some are deadly poisonous. It is advisable to avoid eating any wild organisms, including fungi, unless absolutely certain of identification. And although some mushroom species are edible for many people, those same species may cause allergic reactions or illness in others. When in doubt, throw it out. FUNGI wants to ensure that all readers are long-term subscribers. It is a good idea to have any wild mushroom checked by an expert before eating them. It should be understood that the Publisher and all Editors are not responsible for any consequences of ingesting wild mushrooms. Furthermore, the Publisher and all Editors are not engaged, herein, in the rendering of any medical advice or services. All readers should verify all information and data before administering any drug, therapy, or treatment discussed herein. Neither the Editors nor the Publisher accepts any responsibility for the accuracy of the information or consequences from the use or misuse of the information contained herein. Unauthorized reproduction of published content of FUNGI is strictly forbidden, and permission for reproduction must be obtained by application in writing to the Publisher.

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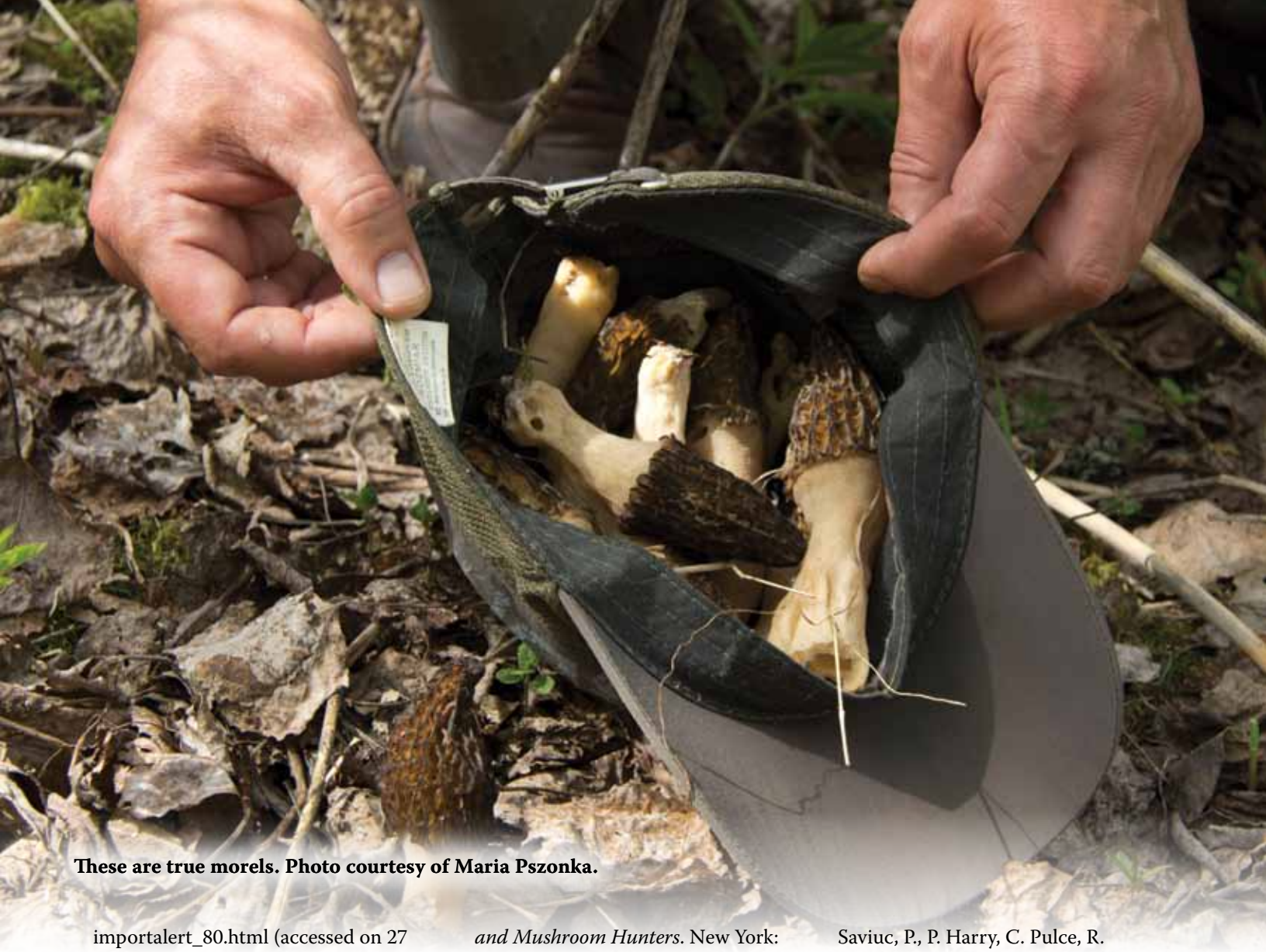

These are true morels. Photo courtesy of Maria Pszonka.

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