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Summary

Zusammenfassung

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Legal aspects of uncommon foodstuffs in Germany

Lebensmittelrechtliche Stellung ungewöhnlicher Lebensmittel in Deutschland

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In Germany, food diversity has been increasing because of uncommon foodstuffs (UFS; defined here as little-known non-German and local German foodstuffs incl. neozoa). E-commerce and specialized retail shops are the main sources for UFS. By means of 35 representative UFS, this paper analyses the possibilities of trade and veterinary inspection of these products in Germany, comparing EU and national food legislation with the idiosyncrasies many of the UFS present. Conservatory legislation bans the trade with endangered species (primates, cetaceans, songbirds), but for many of the species, this is a complex matter which may ban only subpopulations from trade. Some gaps exist in which official inspection would only be very basic, e.g. in the case of reptile meat and terrestrial invertebrates. This, along with deficient scientific knowledge, may alienate consumers.

Keywords: ethnic foods, traditional foods, European Union, protection of species, food trade

In Deutschland ist seit einiger Zeit eine Ausweitung des Nahrungsangebots um ungewöhnliche Lebensmittel tierischen Ursprungs (ULM; hier als wenig bekannte, nicht-deutsche Lebensmittel inkl. Neozoen und lokale, traditionelle deutsche Lebensmittel) zu beobachten. Handel übers Internet und Spezialgeschäfte sind die Hauptbezugsquellen für ULM. Anhand von 35 repräsentativen ULM werden die Möglichkeiten zum Handel und zur amtlichen Untersuchung dieser Produkte in Deutschland untersucht, indem das europäische und nationale Lebensmittelrecht mit den Besonderheiten abgeglichen werden, die vielen ULM zueigen sind. Der Artenschutz verhindert den Handel mit gefährdeten Arten (Primaten, Wale, Singvögel), doch stellt sich dieser Gesetzesbereich für viele andere Arten überaus komplex dar, da mitunter nur Subpopulationen entsprechend geschützt werden. Es bestehen für einige ULM „Lücken“ in den Gesetzen, in denen die Untersuchung sehr oberflächlich abgehandelt wird, z. B. bei Reptilienfleisch und landlebenden Wirbellosen. Zusammen mit fehlenden wissenschaftlichen Erkenntnissen kann dies zu einer Verunsicherung von Verbrauchern führen.

Schlüsselwörter: Ethno-Food, traditionelle Lebensmittel, Europäische Union, Artenschutz, Lebensmittelhandel

Introduction

According to Article 25.1 of the Universal Declaration of Human Rights, “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food (...)”. For most inhabitants of the European Union (EU), the scope has moved away from satisfying substantial demands towards the luxury of choosing the food under cultural and personal preferences. These preferences have undergone fundamental changes, as a wider array of products has been offered (Hopkins et al., 1999).

In Germany, this wider array is due to a series of factors, e. g.

- increasing wealth due to an increasing gross domestic product,
- diversification of trade alliances with European and third-party countries along with simplified trade bureaucracy,
- more awareness of uncommon foods due to increased travelling activities and globalization (e. g. tropical fruit, crustacean and fish species),
- increased information about (supposed) nutritional and/or curative properties of uncommon foodstuffs (e. g. noni [*Morinda citrifolia*] or kumyss),
- re-discovery of foodstuffs that played a role in human nutrition in Germany centuries ago (e. g. beechnut [*Fagus sylvatica*], spelt [*Triticum spelta*] or colostrum)
- immigration from many different European and third-party countries (“3PC”), i. e. of peoples with different cultural backgrounds that wish (or, by means of religious obligations, have) to maintain at least part of their customary diet (e. g. Asian foodstuffs, matzo or sucuk-type sausages),
- diversification of gastronomy considering European, 3PC, ethnic and religion-dominated cuisines,
- e-commerce that enables small retailers to make their products known to a wider section of the population and to trade these products (which initially might have had only local importance) on a (inter)national level.

All this translates into a variety of foodstuffs never experienced before in Germany: Common German foodstuffs may be obtained readily just like local specialties from Germany and the rest of Europe, along with ethnic foods and foodstuffs related with certain religions, e.g. meat products certified as “halāl” or “kosher” (Connor, 1994; de Haan et al., 1997; Hopkins et al., 1999; Sinan, 2000; Morath and Doluschitz, 2002; Giandolfi & Guidi, 2008).

While this condition on one hand adds to the choice of foodstuffs any resident in Germany can make, it also arises the question of food safety and food quality.

Genuine German food legislation comprised a complex collection of laws and regulations that reflected jurisdiction and history of the country and integration into the EU. Several years ago (between 2002 and 2005), the system for food legislation in Germany was modified as the EU harmonized food law for all member states. Food safety, food quality, good trading conditions and common evaluation parameters accepted in the entire EU were some of the goals pursued by this law harmonization. With this, a transition period started which in Germany ended in 2007 with the enacting of the “Regulation for the Implementation of the Prescription of the Community’s Food Hygiene Legislation” (RegImplPreComFHygLeg; *Verordnung zur*

*Durchführung von Vorschriften des gemeinschaftlichen Lebensmittelrechts*¹⁾). This regulation intends to eliminate the gaps and overlappings that the passage of the European food hygiene package (i. e., the EU regulation [REC] 178/2003, 852/2004, 853/2004, 854/2004, and 2073/2005) produced in the national German food legislation. Basically, it contains five new regulations, one list of changes in effectual laws and regulations, and another list of abolished legal texts. The five new regulations are:

- Article 1: “Food Hygiene Regulation” (FHygReg; *Lebensmittelhygiene-Verordnung, LMHV*)
- Article 2: “Regulation for the Hygiene of Food of Animal Origin” (RegHygFAnO; *Tierische Lebensmittel-Hygieneverordnung, Tier-LMHV*)
- Article 3: “Regulation for the Surveillance of Foods of Animal Origin” (RegSurvFAnO; *Tierische Lebensmittel-Überwachungsverordnung, TLMÜV*)
- Article 4: “Regulation Containing Food Legislation Prescriptions to Monitor Zoonoses and Zoonotic Pathogens” (RegFLegPreMZooZooPath; *Verordnung mit lebensmittelrechtlichen Vorschriften zur Überwachung von Zoonosen und Zoonoseerregern*)
- Article 5: “Regulation for Food Introduction” (RegFIn; *Lebensmitteleinfuhr-Verordnung, LMEV*)

Finally, a “General Administrative Provision for Food Hygiene” (GenAdPrFHyg; *AVV Lebensmittelhygiene, AVV LmH*) was issued in the same year to specify some aspects of food hygiene mentioned in REC 852/2004 and 853/2004.

In any way, both EU and national food legislation seek to guarantee foodstuff safety and quality, a demand usually met when common products such as pork meat, cow milk or honey are considered. However, uncommon foodstuffs such as crocodile meat, Chinese midden crabs (*Eriocheir sinensis*) or fugu fish (several tetraodontid genera) sashimi might not be considered within the current legislation which in turn means that either their consumption is illegal or that there are no ways to evaluate food quality and food safety on an official base.

Since food legislation has adopted this dual character, analysis must also follow this pattern; for the present work which focuses on German legal bases, a selection of uncommon foodstuffs, the following questions were asked:

- What uncommon foodstuffs are legally tradable in Germany?
- Is there a legal base to evaluate their food safety?
- Is there a legal base to evaluate their food quality?

A complementary paper emphasizing on the European acts regarding this selection of foodstuffs is being prepared at present.

For this paper, a series of terms needs to be defined; for the present study, “uncommon foodstuffs” (UFS) comprises both “ethnic” (foods originating from foreign countries and cultural areas that are little-known in Germany, including neozoa) and “traditional” foodstuffs (consumed only regionally within Germany, sometimes using foodstuffs not consumed in other parts of the country). The UFS discussed in this paper are detailed in Table 1.

¹⁾ Original names of German legal texts are given in italics, while English abbreviations are introduced in order to allow a quick reference. When German abbreviations are commonly used, they are also set in italics.

TABLE 1: A selection of uncommon foodstuffs (Hopkins et al., 1999; Pople and Grigg, 1999; Fiedler, 1990; EFSA, 2007; Mickleburgh et al., 2009; Warkentin et al., 2010).

Foodstuff category	Taxa related to the foodstuff category*
domestic dogs and cats	<i>Canis lupus familiaris</i> , <i>Felis silvestris catus</i>
domestic rodents	domesticated species and those being domesticated, e. g. paca (<i>Agouti paca</i>), agoutis (<i>Dasyprocta</i> spp.), giant African rat (<i>Cricetomys gambianus</i>), guinea pig (<i>Cavia porcellus</i>), rats (<i>Rattus</i> spp.), capybara (<i>Hydrochaeris hydrochaeris</i>), coypu (<i>Myocastor coypus</i>) and grasscutters (<i>Thryonomys</i> spp.)
non-domestic rodents	beaver (<i>Castor fiber</i>), porcupines (<i>Hystrix africaeaustralis</i>), marmots (<i>Marmota</i> spp.), springhares (<i>Pedetes capensis</i>), and gray squirrel (<i>Sciurus carolinensis</i>)
chiropterans	flying foxes (<i>Eidolon</i> spp. and <i>Pteropus</i> spp.) and free-tailed bats (<i>Tadarida</i> spp.)
primates	red colobus species (<i>Ptilocolobus</i> spp.)
bovines	impala (<i>Aepyceros melampus</i>), springbok (<i>Antidorcas marsupialis</i>), bison (<i>Bison bison</i>), yak (<i>Bos grunniens</i>), water buffalo (<i>Bubalus bubalis</i>), wildebeests (<i>Connochaetes</i> spp.), blesbuck (<i>Damaliscus dorcas phillipsi</i>), oryx (<i>Oryx gazella</i>), eland (<i>Taurotragus oryx</i>), and kudu (<i>Tragelaphus imberbis</i> , <i>T. strepsiceros</i>)
cervids	red deer (<i>Cervus elaphus</i> spp.), fallow deer (<i>Dama dama</i>) and reindeer (<i>Rangifer tarandus</i>)
dromedary	<i>Camelus dromedarius</i>
dairy products from third-party countries	products from domestic and non-domestic species alike
colostrum	products from domestic and non-domestic species alike
plains zebra	<i>Equus quagga</i>
kangaroos	grey kangaroos (<i>Macropus giganteus</i> , <i>M. fuliginosus</i>), whiptail wallaby (<i>M. parryi</i>), common wallaroo (<i>M. robustus</i>), Bennett's wallaby (<i>M. rufogriseus</i>), red kangaroo (<i>M. rufus</i>), and Tasmanian pademelon (<i>Thylogale billardieri</i>)
cetaceans	rorquals (<i>Balaenoptera</i> spp.), sperm whale (<i>Physeter catodon</i>)
meat products of third-party countries	products from domestic and non-domestic species alike
organs of domestic mammals	products from domestic and non-domestic species alike
ratites	ostrich (<i>Struthio camelus</i>)
songbirds	European and South-East Asian Passeriformes
pigeons	rock pigeon (<i>Columbia livia</i>) and wood pigeon (<i>C. palumbus</i>)
swiftlets' nests	edible-nest swiftlet (<i>Aerodramus fuciphagus</i>) and black-nest swiftlet (<i>A. maximus</i>)
non-chicken eggs	domestic ducks and geese, quail (<i>Coturnix coturnix</i>), gulls (<i>Larus</i> spp.), and lapwing (<i>Vanellus vanellus</i>)
balut	nearly-developed duck or chicken embryos in their egg shells
crocodilians	freshwater crocodile (<i>Crocodylus johnstoni</i>), Nile crocodile (<i>C. niloticus</i>), and saltwater crocodile (<i>C. porosus</i>)
snakes	rattlesnakes (<i>Crotalus</i> spp.) and Burmese python (<i>Python molurus bivittatus</i>)
lizards	black iguanas (<i>Ctenosaura</i> spp.), green iguana (<i>Iguana iguana</i>) and ocellated lizard (<i>Timon lepidus</i>)
terrapins	European pond terrapin (<i>Emys orbicularis</i>), diamondback terrapin (<i>Malaclemys terrapin</i>) and Chinese soft-shelled turtle (<i>Pelodiscus sinensis</i>)
marine turtles	green turtle (<i>Chelonia mydas</i>)
amphibians	axolotls (<i>Ambystoma</i> spp.), crab-eating frog (<i>Fejervarya cancrivora</i>), giant Javan frog (<i>Limnonectes macrodon</i>), and American bullfrog (<i>Rana catesbeiana</i>)
sharks	e. g. dogfishes (<i>Squaliformes</i> spp.), smoothhounds (<i>Mustelus</i> spp.), catsharks (<i>Scyliorhinidae</i> spp.), makos (<i>Isurus</i> spp.), porbeagle (<i>Lamna nasus</i>), basking shark (<i>Cetorhinus maximus</i>)
fugu puffer fish	tetraodontid fish of the genera Takifugu, Lagocephalus, and Spheroides
arachnids	tarantula (<i>Theraphosidae</i> spp.) and scorpion (<i>Heterometrus</i> spp.) species
crustaceans	Chinese midden crab (<i>Eriocheir sinensis</i>), blue crab (<i>Callinectes sapidus</i>), flower crab (<i>Portunus pelagicus</i>), mud crab (<i>Scylla serrata</i>), and rice field crabs (<i>Somanniathelphusa</i> spp.)
insects	termites (Isoptera), grasshoppers (Acrididae), crickets (Gryllidae), shield bugs (Pentatomidae), giant water bugs (Belostomatidae), grubs (Scarabeidae), moth caterpillars (Saturniidae), ant (Formicidae), bee (Apidae) and wasp (Vespidae) eggs, larvae and pupae
earthworms	<i>Eisenia foetida</i> and <i>Lumbricus terrestris</i>
snails	giant African snails (<i>Achatina</i> spp.), common whelk (<i>Buccinum undulatum</i>), abalones (<i>Haliotis</i> spp.), escargots (<i>Helix</i> spp., <i>Iberus gualtieranus alonensis</i> , <i>Otala punctata</i>), periwinkles (<i>Littorina</i> spp.), rock snails (<i>Muricidae</i> spp.), conchs (<i>Strombus</i> spp.)
jellyfish	<i>Rhopilema esculentum</i> and <i>Stomolophus meleagris</i>

*) In fact, the foodstuff categories would, in some cases, include many more species, but selection was done to the typical representatives of a given category, and analysis data in the subsequent tables refers exclusively to the array of taxa presented in this table.

Legal trade of uncommon foodstuffs: protection of species

Consulting the EC trade product code, any UFS contained in Table 1 is potentially tradable, fitting at least into category 0410 (“edible products of animal origin, not elsewhere specified or included”).

However, conservation legislation restricts some of the UFS on global (CITES, 2009), EU (e. g. REC 338/97, Commission Directive [CDi] 92/43 and CDi 79/409) and national level. This sector of laws is relatively complex as it intends to consider a maximum of idiosyncrasies. Some taxa like e. g. cetaceans are generally endangered throughout their range and are therefore protected severely. Some species may be in danger of extinction in some countries (requiring protection) and have become almost a nuisance in others (being of “least concern”), e.g. the Cattle Egret (*Bubulcus ibis*) that originally was native to the Old World, is strictly protected when inhabiting Ghana (REC 338/97) but crossed the Atlantic by the 1930ies having invaded North and South America by now and amounting to an estimated world population of 4 to 7 million individuals (ISSG, 2008).

International, EU and German conservatory legislation

CITES and REC 338/97 recognize three levels of protection, i. e. one which forbids trade entirely, one that subjects trade to strict regulations and one that forbids the trade if a species originates from a certain country. In general, REC 338/97 is stricter as it contains more species (e. g. the Honduran rodents *Agouti paca* and *Dasyprocta punctata*) and puts some taxa under more severe protection, e. g. the cetaceans (that in CITES are mentioned in the first two categories) are placed entirely in the first category by this regulation. CDi 92/43 contains, in two appendices, those EU species which are protected, i. e., whose trade is not permitted. Regarding UFS, it lists the European beaver (*Castor fiber*), two cervid subspecies and several species of potentially edible insects and crustaceans. Germany put into practice this directive by considering species listed in appendix IV as worthy of protection in its national legislation (s. below). Finally, CDi 79/409 focuses on wild bird species, dividing them into several protection categories into which many songbirds and Charadriiformes (whose eggs are traditionally gathered in some areas) fit. In these cases, the degree of protection varies with the species and its country of origin.

In Germany, national wildlife legislation pertaining UFS is contained in four main acts:

- “Federal Hunting Law” (FedHuntL; *Bundesjagdgesetz, BJagdG*),
- “Federal Regulation for the Protection of Game Species” (FedRegProtGSp; *Bundeswildschutzverordnung, BWildSchV*)
- “Law for Protection of Nature and Landscape Conservation” (LProtNatLSC), also known as the “Federal Law for Protection of Nature” (*Bundesnaturschutzgesetz, BNatSchG*),
- “Regulation for the Protection of Wild Animal and Plant Species” (RegProtWAnPISp), also known as “Federal Regulation for the Protection of Species” (*Bundesartenschutzverordnung, BArtSchV*)

FedHuntL contains a list of 25 mammal and 16 bird species which are native to Germany. While hunting and eventually consuming these species is allowed under strict compliance of the FedHuntL, other species fall, by means of LProtNatLSC, into two categories, i. e. “severely protected” and “especially protected”. The “severely protected” species refer to those whose trade is not permitted in the EU (i. e. listed in appendix A of REC 338/97 and IV of CDi 92/43) and to some additional ones cited in the corresponding list of the RegProtWAnPISp, the “especially protected” ones to all species by the EU (i. e. listed in appendix A and B of REC 338/97 and IV of CDi 92/43), all European bird species and species mentioned in the corresponding list of the RegProtWAnPISp (LProtNatLSC § 7 [2] 13. and 14.). In any way, trade with these species is restricted.

UFS vs. conservatory legislation

As a general rule, the species concept as handled in these texts comprise all living forms of an animal species, dead specimens and products crafted from them (LProtNatLSC § 7 [2] 1.), and this would include foodstuff. Yet, the sources of UFS may be many, i. e. caught in wild in Germany (e. g. game), other EU member states (e. g. *Timon lepidus* in Spain) or 3PC (e. g. kangaroos in Australia), bred in captivity in Germany (e. g. farmed ostriches), other EU member states (e. g. escargots in France) or 3PC (e. g. crocodiles in Thailand). There is also the possibility to use European members of taxa known to be edible, although these given species have not been consumed due to cultural reasons so far (e. g. grasshoppers). Most of the acts center on wild specimens, excluding thus bred ones. § 39 (1) 1. of LProtNatLSC prohibits to kill any wild animal without a rational reason, being “rational” definitely a debatable term.

Table 2 shows that conservation issues do pertain some of the UFS-providing species. However, the degree varies between strict trade bans (e. g. for cetaceans or primates) and trade limitations (banning some [sub]species, specimens of certain regions or wild specimens [as opposed to those bred in captivity]). Ostrich meat may be banned from trade if it originates from e.g. wild animals in Senegal, but ostriches farmed in EU do no pose a problem. Red deer (*Cervus elaphus*) may be hunted and consumed unless the specimens belong to subspecies *C. e. hanglu*, *C. e. bactrianus* and *C. e. barbarus*, the latter only if the animal originates from Tunisia.

To complicate things even further, confronting the list in Table 1 to the Global Invasive Species Database (GISD; ISSG, 2010), several species also are considered invasive and endangering thus other species and the environment. Similar as with the conservation legislation, this information might apply only to certain species in certain areas. However, catching for consumption would be one way to manage these invasive species. Several UFS-providing species are listed by GISD. Curiously, while there is no trade restriction for some of them (e. g. some rat species, Chinese midden crabs and some rock snail species), others are subjected to restriction despite being invasive. This may be due to the taxon level, as in the case of red deer, reindeer, some termite, ant, bee and wasp species, there is a match on the taxon level chosen for this investigation, but not on inferior levels (genus, species, subspecies) meaning that e.g. some termite species are invasive, and some are endangered. However, there are cases where taxon coincides (*Sciurus carolinensis*, *Columba livia*, *Python molurus bivittatus*, *Iguana iguana*, and *Rana catesbeiana*). Usually

the area of invasion differs from that of endangerment, but in Germany, *Sciurus carolinensis* is protected although it is an invasive species and is competing actively with the native red squirrel (*S. vulgaris*). To combat *Rana catesbeiana*, ponds are dried temporarily in Germany, a task that costs approx. 270,000 € per annum.

Each UFS lot has to be evaluated therefore carefully observing

- what species exactly was used for an UFS?,
- from what country resp. area does it originate?
- was it caught in the wild or bred in captivity?

Definite trade bans exist for flying foxes, primates, cetaceans, songbirds, gull and lapwing eggs, European pond terrapins, and marine turtles. Therefore, these UFS will not be treated in the rest of the evaluation.

TABLE 2: Details of conservatory issues regarding the species providing UFS as listed in Table 1.

UFS	Species	International (CITES)	European	Fed-HuntL	German RegProt-GSp	RegProtW AnimPLSp	trade restriction for
domestic rodents	<i>Agouti paca</i>	III*	1 C*				a, c
	<i>Dasyprocta</i> spp.	III*	1 C*				b, c
non-domestic rodents	<i>Castor fiber</i>		3 IV*-V*			s	a, c
	<i>Marmota</i> spp.	III*	1 C*, 3 IV*	+	1*	s*	a, c
	<i>Sciurus carolinensis</i>					b	d
chiropterans	<i>Pteropus</i> spp.	I*-II	1 A*-B			b	e
	<i>Tadarida</i> spp.					s	e
primates	<i>Ptilocolobus</i> spp.	I*, II	1 A*-B				e
bovines	<i>Bison bison</i>	II*	1 B*			b*	a, b
cervids	<i>Cervus elaphus</i> spp.	I-III*	1 A*-C*, 3 IV*	+		b*, s*	a, b
	<i>Dama dama</i>	I*	1 A*	+			a, b
	<i>Rangifer tarandus</i>		3 II*				a, b
cetaceans	<i>Balaenoptera</i> spp.	I*, II	1 A, 3 IV			s	e
	<i>Physeter catodon</i>	I	1 A			s	e
ratites	<i>Struthio camelus</i>	I*	1 A*			s	a, c
songbirds	<i>Passeriformes</i> spp.		2 I*, 2 II-B*	+	1*	s*	a-e
pigeons	<i>Columbia livia</i>		2 II-A	+		s	a, c, d
	<i>C. palumbus</i>		2 II-A, 2 III-A	+	1, 2	b	a, c, d
non-chicken eggs	<i>Coturnix coturnix</i>		2 II-B	+	1	b	a, c
	<i>Larus</i> spp.	I*	1 A*, 2 I*, 2 II-B*	+	1*	b*	a-e
	<i>Vanellus vanellus</i>		2 II-B			s	a-e
crocodilians	<i>Crocodylus johnstoni</i>	II	1 B			b	a, c
	<i>C. niloticus</i>	I-II*	1 A*-B			s	a, c
	<i>C. porosus</i>	I-II*	1 A*-B			s	a, c
snakes	<i>Crotalus</i> spp.	III*	1 B*-C*			b*	a-c
	<i>Python molurus bivittatus</i>	II	1 B				a
lizards	<i>Iguana iguana</i>	II	1 B			b	a
	<i>Timon lepidus</i>					b	a
terrapins	<i>Emys orbicularis</i>		3 IV			b	e
marine turtles	<i>Chelonia mydas</i>	I	1 A, 3 IV			s	e
amphibians	<i>Ambystoma</i> spp.	II*	1 B*			b*	a-c
	<i>Limnonectes macrodon</i>		1 D				none
	<i>Rana catesbeiana</i>		1 B			b	a
sharks	<i>Cetorhinus maximus</i>	II	1 B			b	e
arachnids	<i>Theraphosidae</i> spp.	II*	1 B*			b*	a, b
insects	<i>Isoptera</i> spp.		3 IV*				a-d
	<i>Acrididae</i> spp.		3 IV*			b*, s*	a-d
	<i>Gryllidae</i> spp.		3 IV*			b*, s*	a-d
	<i>Saturniidae</i> spp.		3 V*				a-d
	<i>Formicidae</i> spp.					b*	a, b, d
	<i>Apidae</i> spp.					b	a, b, d
	<i>Vespididae</i> spp.					b*	a, b, d
snails	<i>Haliothis</i> spp.	III*	1 C*				a-c
	<i>Helix</i> spp.		3 V*			b*	a-d
	<i>Strombus</i> spp.	II*	1 B			b	b

An asterisk (*) means that only certain taxa (genera, species, subspecies) or local populations are considered. Data in column "European" refer to the act (1 = REC 338/97, CDi 2009/147, 3 = CDi 92/43) and the appendix the taxon is listed in. Trade restriction data refers to a = wild specimens, b = some taxa, c = some countries, d = German population, e = complete trade ban (i.e. no trade is allowed).

Legal trade of uncommon foodstuffs: other trade impediments

Commercial trade

The most drastic trade impediment is the embargo. Presently (June 2010), Germany participates in the embargo imposed on several countries. Regarding URS, they may, on one hand, be considered as “delicatessen” which are included in the embargo against North Korea. Furthermore, UFS may be part of the normal goods a given company or person trades. Partial embargos (prohibiting, among others, any trade with goods) are directed towards certain organisations or persons held suspicious for major criminal acts. These partial embargos may be imposed on certain countries, i. e. Côte d’Ivoire, Democratic Republic of Congo, Iran, Myanmar, Serbia, Somalia, and Zimbabwe, or on an international organisation (in this case, Al-Qaida; BMF, 2010).

Another way to restrict the trade with certain 3PC is a common EU directive that foodstuff may be imported only from certified trade partners and establishments (REC 206/2010, RegFIN). The certification usually implies that comparable food safety standards have been implemented in that country and that transport to the EU is safe. While this is effective for well-known foodstuffs, many of the UFS precisely lack an equivalent product of European origin.

Some other regulations interfere directly with the UFS trade. On one hand, REC 853/2004, annex III, section VIII explicitly prohibits the trade with fugu puffer fishes because of their toxicity (“injurious”, as claimed in the text). In contrast, tetraodontid consumption in Japan and the USA is legal under certain regulations.

On the other hand, Germany banned the consumption of canids and felids (§ 13a of RegFIN), while e. g. obtention and consumption for personal use is legal in Switzerland if animal welfare issues are considered.

Foodstuffs from third-party countries for personal use

When visitors arrive a German borders, customs check includes, regarding foodstuffs of animal origin, two basic questions:

- Does the foodstuff originate from a protected species? If so, the product is confiscated.
- If not, does REC 206/2009 apply? If so, the product is also confiscated.

REC 206/2009 deals with the introduction of foodstuffs of animal origin from 3PC by individuals and for personal use by means of personal transportation inside the luggage or via mail (being either sent as a gift or a delivery from a previous order). It basically bans the introduction of any kind of meat and dairy product into the EU for personal use, with the exception of fish and other foodstuffs of animal origin e. g. honey. Some products may be introduced from other European non-EU countries. The debate on definitions which is common in many laws is mostly futile in this REC as it refers to the trade codes which encompass all foodstuffs (including UFS), so that only swiftlets’ nests, non-chicken-eggs and crustaceans are exempted from REC 206/2010. Balut however is debatable as it contains an embryo (i. e. poultry meat, code 0207) which may be still alive (code 010511) inside an egg (code 0407). If the meat is the primary feature, introduction according to REC 206/2009 would be forbidden.

Finally, substances with pharmacological effects also lead to trade bans, moreover if the 3PC does not have any system to avoid contamination of foodstuffs with them (RegFIN).

Summing up, trade bans exist for the following UFS:

- chiropterans, primates, cetaceans, songbirds, non-chicken eggs (when taken from the wild), terrapins and marine turtles
- certain taxa, when caught from wild, and eventually only from certain areas
- UFS from embargoed countries
- UFS from 3PC/areas not included in corresponding Commission Directives
- fugu puffer fish
- canid and felid meat
- meat and dairy products from 3PC introduced for personal use
- specimens contaminated with pharmacological substances or originating from countries with no notified HACCP programme to reduce contaminants

So, the following considerations refer to those UFS that are legally tradable, be it because they enter accompanied by corresponding papers, be it because they were bred in captivity.

Food quality and food safety of uncommon foodstuffs

Definitions and their flaws

Besides the trade codes, REC 178/2002 provides the broadest definition for “food”, i. e. “any substance, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans” (Chapter 1, Article 2). The definition includes both objective and subjective terms.

Annex 1 of REC 853/2004 contains definitions that are referred to in other, but not in all related acts. The same is true for the categories mentioned in other REC, e. g. 2073/2005.

Two flaws persist. On one hand, not all UFS may apply to these definitions. The only way to deal with it at present is to refer to more generic food definitions, e. g. the one contained in REC 178/2002. This however also leads to very general inspection recommendations that may not be effective.

On the other hand, one and the same product may fit into different categories. The problem of defining balut (poultry or egg product?) was already mentioned. The axolotl (*Ambystoma* spp.) is a newt and would therefore fall into category 3.1. which in fact excludes frogs. These in turn are considered in category 6.1., but only those of the genus *Rana*, while the rest refers to 8.1. Classifying insects generically is also difficult. Aquatic species (e. g. the belostomatid giant water bugs) would fit into 3.1. and eventually 7.4., while the rest would be categorised as 8.1.

Uncommon foodstuffs from third-party countries

UFS from 3PC may enter Germany either directly via an (air)port or via another EU member state which performed the veterinary inspection. While most UFS may not be introduced for personal use by individuals, commercial introduction of foodstuff and its veterinary inspection is, on EU level, mainly regulated by the REC 882/2004 and

854/2004, as well as by CDi 97/78. All member countries keep their own inspection routines, but a detailed description of each routine would surpass the scope of this paper.

In Germany, RegFln (i. e. Article 5 of RegImplPreComFHylgLeg) is the base for the veterinary inspection of

3PC foodstuffs and is complementary to the EU acts. In terms of food, the EU laws refer to the definition from REC 178/2002, RegFln to those in REC 853/2004.

As a general rule, only a) safe foodstuffs from b) known and certified sources meeting c) at least the same require-

TABLE 3: European and German acts pertaining uncommon foodstuffs which are legally tradable.

Foodstuff category	REC 853/2004	REC 854/2004	Annex 2 RegFln	Annex 4 RegFln	REC 2073/2005	small amounts	NPCR
domestic rodents	1.4.	I	11	III		+	
non-domestic rodents	1.4.	I	11	III		+	
bovines	1.2.	I	9	III	2.1.1/2.1.3	+	
cervids	1.5.	I	12	III		+	+
	1.6.	I	11	III		+	+
	1.8.	I	9, 12	III		+	+
dromedary	1.6.	I	11	III		+	+
dairy products from third-party countries	7.2.	IV	1	IV	2.2.1–2.2.8		+
colostrum	*	IV	1	IV	2.2.1		+
plains zebra	1.6.	I	9, 11	III	2.1.1/2.1.3	+	+
kangaroos	1.8.	I	12	III		+	+
meat products of third-party countries	1.9.	I		III	2.1.1–2.1.5	+	
	1.10.	I		III		+	
	1.13.		13	III	2.1.6		
	1.15.		13	III	2.1.8		
	7.1.		14, 15	III			
organs of domestic mammals	1.12.	I		III		+	
	8.1.		16				
ratites	1.6.	I	9	III		+	+
pigeons	1.3.	I		III		+	+
	1.5.	I	12	III		+	+
	1.7.	I	12	III		+	+
swiftlets' nests	8.1.						
non-chicken eggs	5.1.		2	VI		+	
balut	1.3.	I	2	III	2.1.5	+	+
	7.3.			VI	2.3.1	+	
crocodilians	8.1.	I					
snakes	8.1.						
lizards	8.1.						
amphibians*	3.1.	III	3	V		+	+
	6.1.			V			
	7.4.			V			
	8.1.						
sharks	3.1.	III	3	V		+	+
	3.5.	III				+	
	7.4.			V			
arachnids	8.1.						
crustaceans	3.1.	III	3	V	2.4.1	+	+
	7.4.			V	2.4.1		
insects*	3.1.	III	3	V		+	+
	7.4.						
	8.1.						
earthworms	8.1.						
snails*	6.2.		3	V			
	8.1.	II	3, 8	V			
jellyfish	3.1.	III	3	V		+	+

REC 853/2004 refers to the food categories defined in its Annex 1. "REC 854/2004" relates to the Annexes I to IV that contain special veterinary inspection procedures. The code in "Annex 2 RegFln" refers to the foodstuff number; see the original for details on the documentation required. "REC 2073/2005" contains the foodstuff classes applicable to the process hygiene criteria. "Small amounts" refers to the annexes of Articles 1 and 2 of RegImplPreComFHylgLeg insofar as a "+" claims that requirements for the delivery of a specific foodstuff exist. A cross in the column "NPCR" refers to a UFS that can be sampled within German residue control. * = see text

ments as comparable European products may be introduced and traded inside the EU. If this is not the case, the foodstuffs are withdrawn from the trade (REC 882/2004, articles 19–21). Regarding safety, REC 178/2002 refers to “unsafe” when a foodstuff is “injurious to health” or “unfit for human consumption”, regarding the “normal conditions of use of the food”, “information provided to the consumer”, probable short and long-term effects and particular food sensitivities, and whether a food is “unacceptable to human consumption according to its intended use” (article 14). Among these postulates, the only term which is not debatable without falling into euro-centrism is “injurious to health”.

RegFIn states in its § 5 that the introduction is only possible when the batch was inspected accordingly at an official customs office. Fishery products and some living marine invertebrate taxa (bivalves, gastropods, echinoderms and tunicates) from Iceland and Faroese are exempted if inspected according to local laws (§ 5[2]1–2) as are certain foods which are altogether a) no meat products, b) contain less than 50 % of animal foodstuff, c) are storable at ambient temperature or thermally treated in a way to visibly having denatured the animal foodstuff, d) are clearly marked for human consumption, e) contained in sealed packages and f) accompanied by corresponding documents (Annex 1). This may eventually apply to some UFS preparations.

The bases to issue a list of certified 3PC sources (countries and/or establishments) for foodstuffs are summarized in Annex 2 of the RegFIn. It is usually based on Commission Directives but also points out that for several products (in case of UFS eggs, egg products, snails and frogs), there are no EU bases to edit a list of providing establishments. Besides, not all UFS can be matched with the categories of this annex (Table 3).

Recently, REC 206/2010 was issued dealing with a list of 3PC from which it is possible to introduce fresh meat (REC 853/2004 category 1.10.) of all Equidae and some “ungulate” taxa which in this case includes the orders Artiodactyla, Perissodactyla and Proboscidea, according to the definition which is reused from CDi 2004/68. However, REC 206/2010 only applies to domesticated species and specimens and excludes meat preparations. The definition provided in CDi 2004/68 would include all UFS mentioned under “bovines” and “cervids”, but the limitations expressed by REC 206/2010 reduce the bovines considered to yaks, water buffaloes, and possibly elands.

Being defined as foodstuffs, all UFS would be subjected to the basic veterinary control procedures at the moment they enter EU territory (CDi 97/78, Article 4, Annexes I to IV REC 854/2004, § 7 and Annex 4 RegFIn). Aleatory samples must be analysed for contaminants and with regard to the microbiological criteria (REC 2073/2005, see below). Specific tests are mandatory for certain product classes (Table 3). With regard to UFS, this inspection scheme bears some problems:

- Identity checks will be hard to perform when the UFS contains no entire animals. Frog legs e.g. are usually skinned, and species identification is difficult, even in their countries of origin (Warkentin et al., 2010).
- Regarding the physical check, there is a gap regarding frog legs and all products categorised as 8.1. by REC 853/2004.

- Sensory tests will be difficult if the customs staff is not acquainted with the quality characteristics of a given UFS.

- For UFS not covered by REC 854/2004 (eggs, some reptiles and invertebrates), only the ambiguous CDi 97/78 applies on EU level.

Besides, definitions provided in RegFIn sometimes differ from those listed in REC 853/2004. This however is positive since it allows more products to be submitted to official inspection.

Surely many of the UFS listed here play no real role by means of imported quantities (e. g. swiftlets’ nests or insects), but reptile meat ranges on a different scale. Together with Belgium and the Netherlands, Germany is a leader in importing this good within the EU, a business with a total EU import value of 251 600 EUR in 2005 with a growing tendency (EFSA, 2007).

Uncommon foodstuffs from EU countries

Products entering Germany from EU countries may be of different origin; either they were introduced from 3PC and passed customs and veterinary inspection successfully or they were produced in an EU country and transported to Germany. In the case of UFS, farmed bisons, fallow deer, ratites, quails (for egg production), crocodiles, ocellated lizards and terrestrial snails are good examples. For living animals farming conditions are usually contemplated in Commission Directives, i. e. acts that require national regulation in order to enact. It depends on the member state if this was done for specific animal species.

In any way, food safety was defined in REC 178/2002. Concrete parameters are contained in REC 854/2004, 882/2004, and 2073/2005 (as amended by 1441/2007 and 365/2010). The foodstuffs they regulate are defined in REC 853/2004 and 178/2002 for REC 854/2004 and 882/2004, resp. REC 2073/2005 provides its own classification (Table 3). REC 882/2004 lays down the basic principles for the EU veterinary inspection.

On European level, the basic food safety measures are considered; all UFS would be analysed for listeriae, many for salmonellae, and the more similar a product is to a well-known foodstuff, the more parameters can be employed to check food safety. However, the questions arise whether

- thresholds of common foodstuffs are also applicable to UFS (this will frequently not be the case, as the species itself along with the management it received [e. g. feeding] may alter the values), and
- UFS pose some specific risks not contemplated for common foodstuffs (see “Safety hazards of uncommon foodstuffs”).

Uncommon foodstuffs made in Germany

German law does not recognize UFS as such and sticks to the EU definitions considered in REC 178/2002 and 853/2004. The “Code for Foods, Commodities and Feeds” (CoFComFed; *Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch, LFGB*) is the central act for food safety and refers, in terms of food definition, to REC 178/2002. Section 2 deals with foodstuffs; it postulates that foods that injures the consumer (cf. REC 178/2002), contains illegal food additives, substances with pharmacological effects, herbi and pesticides, (or illegal doses of legal composites and irradiation) cannot be placed on the

market. The same is true for products labelled in false pretence and with misleading medical advertisement on them (§ 5 to 12). This also applies to all UFS. Lists of allowed substances are detailed in subsequent regulations. The legislative tools to ensure this goal are specified in § 13 and contain, among others, veterinary inspections, requirements for manufacture, composition and labelling of foodstuffs as well as prohibition of certain products, additives or procedures. Many different acts derive from the CoF-ComFed, of which some were abolished with the enactment of the EU hygiene package and the RegImplPre-ComFHygLeg.

Although UFS are not defined in any way, a new category of so-called “traditional food” is introduced in the FHygReg; it contains dairy products, naturally-ripened raw sausages and raw salted meat products. Annex 3 specifies EU (REC 852/2004) and German requirements for their manufacture. A connection to UFS is arguable but seems feasible if traditional German products are either manufactured with UFS (e. g. a cheese with yak milk) or 3PC meat and dairy products are made in Germany (e.g. nem chua, a traditional Vietnamese fermented raw sausage).

An interesting concept which is attended in both European and German acts is that of small amounts of foodstuffs, for which regulations usually are not as severe as for larger quantities. As most of the UFS are not sold in huge amounts, these regulations could apply to the retail shops that trade them. Annex 2 of Article 1 and Annex 1 to 4 of Article 2 RegImplPreComFHygLeg specify the requirements to deliver so-called ‘small amounts’, a food category that applies to some UFS (Table 3).

Interestingly, both Articles are based on the generic REC 853/2004 class 8.1., a category used for many reptile and invertebrate UFS. With this, at least the basic hygiene principles must be applied to these little-known products. Still, all specifications refer exclusively to more popular foodstuffs, and so they may be applied only to the more similar UFS, e. g. Annex 5 of Article 2 which contains further specifications for the manufacturing and treatment of mammal and poultry meat, minced meat and meat preparations, meat products, eggs and egg products, and dairy products (including those made with raw milk).

Several other German regulations exist, remnants of the times before the EU hygiene package and adapted to the modern needs. In German legislation, a regulation derives

from a law, and regulations usually are based on the same definitions as the law. As the “Meat Law” is focused on beef, pork and mutton, UFS are not contemplated in subsequent regulations. Something similar happens with the “Milk and Fat Law” that deals exclusively with cow milk. In contrast, the “Milk and Margarine Law” claims that milk may be produced from any species which is kept for dairying purposes. So, some deriving regulations only refer to cow milk (e. g. “Milk Quality Regulation”), while some (e. g. the “Cheese Regulation”) includes milk of other species. The “Milk Product Regulation” defines a series of standard products but also regulates, in its § 6, “foreign” products (defined as non-German, i. e. European and 3PC), stating that they may be placed on the market if they were produced in accordance with the legislation of the country of origin, and if the marked differences that may eventually exist to the standard products are clearly specified on the label. However, not all 3PC have a corresponding food legislation that may be consulted whether a UFS was or not produced accordingly.

German standards, guidelines and criteria

The previous chapter showed that veterinary inspection of UFS can be a very complex matter in which many different acts on EU and national level have to be considered. Complexity increases as the origin of a foodstuff decides on the further inspection mode and the category it is classified in which in turn may be based on objective facts or, eventually, subjective assumptions.

Besides act-related inspections, there is a series of parameters that were established by both governmental and non-governmental instances that intend to evaluate food safety and composition, regardless the origin of the product. Having generally originated in Germany before the introduction of the hygiene package, they focus on German foodstuffs, but this part of the discussion will analyse if these standards may also apply to UFS.

The “Ministerial Collection of Analysis Methods” (MiColAnaMeth; *Amtliche Sammlung von Untersuchungsmethoden*) is the official German standard and derives from § 64 of CoFComFed. Being so, definitions originate from REC 178/2002 including therefore all UFS. Methods are classed and codified using a similar technique as for

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trade codes. Next to those methods applicable for all foodstuffs (general methods commencing with “L 00.00” and “L 00.90” for sensory tests), there are specific tests for certain food categories:

- milk and dairy products (L 01.00 to L 04.00), milk-based infant formulae (L 48.00)
- eggs and egg products (L 05.00)
- meat and meat products of homoeothermic animals (L 06.00 to 08.00)
- fish (L 10.00)
- fishery products (L 11.00)
- crustaceans, molluscs and other animals incl. products made of them (12.00)

Definitions mostly coincide with the ones stated in REC 853/2004, however, the meat definition of MiColAnaMeth encompasses all species without making the EU distinctions. In fact, every UFS could be analysed using official methods. Yet, certain problems arise:

- Feasibility to perform standard analysis methods on UFS: To give an example, it was seen that chhurpi, a typical Bhutanese yak whey cheese, was so hard that the standard procedure to obtain bacterial counts (i. e. to pestle with liquid) was impossible to carry out. Instead, chhurpi cubes were drilled open sterilely and the dust was used for analysis (Grabowski & Klein, 2010).
- Reasonability of standard methods with regard to UFS idiosyncrasies: Methods described in L 12.00 (animals not considered in other methods) focus on injurious substances of marine origin. These would not play any major role in freshwater or terrestrial organisms.
- Inexistence of UFS reference values: The best example is the somatic cell count in milk which, at bulk tank level, should be < 400,000 /ml in the case of cow milk, but for other species, physiological cell counts remain unknown, let alone commercial benchmarks (REC 853/2004).

Another act that derived from the CoFComFed is the “German Food Code” (GerFC; *Deutsches Lebensmittelbuch*) which contains guidelines for certain foodstuff classes. The guidelines define foodstuffs and refer to their physical properties. Intended as recommendations, they may be considered as legal norms in case of disputes.

Guidelines exist for meat of homoeothermic species, fish, crustaceans and molluscs, as well as for ice creams and slaughtered animals’ fat. Eggs, other dairy products and poikilothermic species are unattended. The guidelines for fish, crustaceans and molluscs in its present form (June 2010) enlists a series of taxa, among them also expressedly UFS like the genera *Haliotis*, *Littorina*, *Buccinum*, *Helix*, *Achatina*, and the family *Muricidae*. Currently, this list is debated, and a new version is expected towards the end of the year (BMELV, 2010). Regarding meat, all homoeothermic species are included so that labelling of UFS meat is possible. By adding the name of species, even meat preparations and products would pose no problem. Regarding ice creams however, it is prescribed that the milk used for its manufacture must be cows’ milk as the guidelines refer to a corresponding definition in REC 2597/97.

The German Society for Hygiene and Microbiology issues a series of benchmark and critical values regarding certain pathogens in foodstuffs. As with the guidelines, these values have a recommending character. Possible intersections between UFS and these values are:

- deep-frozen products that have to be heated completely before consumption (*E. coli*, coagulase-positive staphylococci [CPS], presumptive *Bacillus [B.] cereus*)
- whipped cream (aerobic mesophilic bacterial counts [AMBC], Enterobacteriaceae, *E. coli*, salmonellae, CPS, *Pseudomonas* spp., *Listeria monocytogenes*)
- milk-based infant formulae (AMBC, Enterobacteriaceae incl. *E. coli*, *B. cereus*, sulphite-reducing clostridia spores, moults, CPS, salmonellae, *Listeria monocytogenes*)
- marine fish (AMBC, *Pseudomonas* spp., anaerobic Enterobacteriaceae, *E. coli*, salmonellae, *Listeria monocytogenes*, eventually *Vibrio* spp.)
- meat products and minced meat (AMBC, Enterobacteriaceae, *E. coli*, CPS, lactococci, yeasts, salmonellae, sulphite-reducing clostridium spores, *Listeria monocytogenes*, *Pseudomonas* spp.)
- ice creams (AMBC, Enterobacteriaceae, *E. coli*, CPS, salmonellae, *Listeria monocytogenes*)

So, some UFS apply to these categories, while others do not.

Finally, chemical contaminants are surveyed in a risk-orientated manner on a national basis (“National Plan for Residue Control”, NPRC). Table 3 shows the matches between the monitored categories and the UFS.

Safety hazards of uncommon foodstuffs

Any foodstuff is prone to bear food safety hazards. In addition to the classical hazards (salmonellosis, listeriosis, shigellosis etc.) however, they may yield UFS-specific hazards, e.g. anaphylaxis induced by swiftlet’s nests (Goh et al., 2000), avitaminosis or toxicity due to massive ingestion of raw saturniid caterpillars (Adamolekum et al., 1997; Akinnowo et al., 2002) and certain parasitoses that are either not diagnosed on a routine basis or even elude these routine procedures, e.g. toxoplasmosis, echinostomiasis (by freshwater or brackish water molluscs, crustaceans, fish and amphibians; Graczyk and Fried, 1998), and paragonimiasis (by freshwater snails and crustaceans; Liu et al., 2008), as well as several verminoses and pentastomiasis by consuming raw or undercooked fish, amphibian or reptile meat (Dorny et al., 2009) or cysticercosis by *Taenia serialis* (host: rodent *Cricetomys gambianus*, accidentally also man; Lacasse et al., 2005). Chemicals (pesticides, rodenticides, molluscicides etc., even toxic substances used for warfare) may also pose a problem, depending on the area a food is produced and the position of the animal within the food web (Fiedler, 1990; Kim Oanh et al., 1995; Biradar et al., 2007). While some foods, e.g. crustaceans are contemplated within national residue monitoring plans, others (e. g. rodents) are not. In fact, recent data showed that residues were found frequently in 3PC crustaceans (BVL, 2009).

Conclusion

This analysis showed that UFS represent a problem in current EU and German food legislation. The first “trade barrier”, i. e. the protection of species, resulted a complex, at some moments rather intransparent system of regulations aimed to protect certain species or subpopulations. Once trade barriers are overcome, the decisive element is

the food category definitions; some UFS adapt to them (sometimes even to several ones at a time), some definitely do not, and some may, depending on the interpretation of subjective terms such as “normal”. Food inspection quality varies in relation to the degree in which an UFS may be contained within a certain foodstuff category; the “closer” an UFS is to a common product, the easier it is to establish satisfying monitoring schemes, while for those products that do not fit into the common food classes, e. g. reptile meat or terrestrial invertebrates, inspection as prescribed remains on a unsatisfying level. Interaction between EU and German legislation seems to be efficient, despite flaws and gaps on both levels.

On the other hand, little is known on consumer risks related to many UFS, and there is an urgent need to increase scientific knowledge. If regulations and science fail, officials and consumers should employ common sense, but in a broad-minded way, as “normal” is very debatable word.

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