

The illegal internet based trade in European pond turtle *Emys orbicularis* (Linnaeus, 1758) in Romania: a threat factor for conservation

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Abstract. The international and domestic wildlife trade in Europe is being reported with only a small number of species (including reptiles) – those that are regulated under the CITES. Therefore, we can presume a higher amount of monetary value gained from reptiles, since the trade also includes many more species that are not under CITES regulation. Amongst the traded species, aquatic turtles are favourite, being mostly traded as pets, and occasionally for food and use in traditional medicine. While the legal pet trade in aquatic turtles in Romania is focused almost exclusively on exotic species such as *Pseudemys* sp. and *Graptemys* sp. – except the banned *T. scripta* -, the illegal online pet trade with aquatic turtles is mostly composed of locally wild-caught individuals of the European Pond Turtle, *Emys orbicularis*, and has markedly increased in the last years. In the present study, we attempted to illustrate the volume of the online pet trade with wild-caught *E. orbicularis* in Romania and its impact on the efforts to conserve this threatened species. During the time period 2013-2015 we searched through main commerce websites with a Romanian domain for offers regarding *E. orbicularis*. We recorded 150 individual advertisements, resulting in a total number of at least 217 individuals that were offered for sale. The illegal domestic online trade with *E. orbicularis* is a threat factor for conservation of this species and must be urgently addressed. We made recommendations and proposed a few solutions for this problem: monitoring of the online market by authorities, a better legislation and training for enforcement officers to combat illegal online pet trade and founding of care- and rehabilitation centres for reintegration of captured turtles back into the wild.

Keywords: illegal online trade, domestic pet trade, European pond turtle, *Emys orbicularis*, conservation, Romania.

Introduction

The second strongest impact on reptile species after habitat loss, is harvesting (hunting or gathering), a threat closely followed by deliberate persecution, pollution and climate change (Cox & Temple 2009), wildlife smuggling or trafficking involves illegal hunting or gathering, and distribution of animals and their derivatives (Auliya 2003, Kala et al. 2007).

The Convention on International Trade in Endangered Species (CITES)-listed live reptile pet trade in the European Union was estimated at around EUR 8.5 million in 2013, accounting for 33% of all live imports by value (UNEP-WCMC 2015). The same report stated also that the monetary value of EU-reported CITES-listed animal imports was dominated by reptile commodities, with trade in reptiles accounting for 85% of the value of EU animal imports in 2013, reflecting the relatively high volume and importance of EU imports of this group.

For only a small number of European reptile species the international trade is regulated under the CITES (CITES; Robinson et al. 2015) or under the EU Wildlife Trade Regulations (EU WTR; Auliya 2003). However most reptile species are covered by some form of protective legislative acts in all European countries which protect native species from exploitation through restrictions of harvest and trade (Cox & Temple 2009). In 2014, according to the International Fund for Animal Welfare report (IFFAW 2014), reptiles and their derivatives were the second most traded group and items.

E. orbicularis is protected by Romanian law, like in any other country of its geographical distribution. This law bans any form of disturbing, collecting, capturing, killing, destroying or harming of specimens that are in their natural

environment, in any stages of their biological cycle, in any period of the year.

The Internet is a growing platform for illegal wildlife trade contributing enormously to online promotion of reptile acquisition and trade (Wu 2007, Kala et al. 2007). Virtual markets now allow buyers and sellers to connect with an ease and speed never before possible, as pointed by Wu in 2007. This statement is also true for 2016, and is also valid for Romania, a country ranked among the first in the world regarding the speed of its internet service (Anon. 2013).

Some reptile groups face disproportionately high extinction risks, particularly those associated with freshwater habitats (Böhm et al. 2013). Aquatic turtles belong to such a sensitive group; they are, in addition to other threats, traded extensively for food, use in traditional medicine and especially as pets (Gibbons et al. 2000, Moll & Moll 2004). As the demand is high, so is the pressure exerted on these animals. Hence, wild-caught individuals are fairly common as means to supply the market (Robinson et al. 2015). One of the many traded species of aquatic turtles, the European Pond Turtle, *Emys orbicularis* (Linnaeus 1758), is globally listed as Lower Risk/Near Threatened on the IUCN Red List (IUCN 2015), although it was proposed as Vulnerable within the 27 Member States of the European Union (EU 27; Cox & Temple 2009). The reasons for its status change are habitat loss-especially in developed regions-, direct human disturbance, pollution of aquatic environments, competition with invasive species (such as *Trachemys scripta* spp.) and, last but not least, poaching for keeping and/or trade (Fritz 2001, Cordero Rivera & Fernández 2004, Sos 2009, 2011).

The extent of wildlife being offered for sale over the Romanian-language Internet domains, in clear contravention of national and international laws, in a country where

monitoring of internet markets is still in its initial stages and in several types of online markets even inexistent, is alarming, although not surprising (Kala et al. 2007). With a simple search on the biggest Romanian auction site, we can easily find protected reptile species like *E. orbicularis* or even CITES-listed species like *Testudo* sp. offered for sale (own data). In the present study, we attempted to illustrate the volume of trade with *E. orbicularis* on the Romanian-language Internet domains and its possible impact on conservation of this threatened species. Our main goal was to provide the enforcement officers and other interested parties with a real image of the extent of this illegal trade and a better understanding of wildlife trade on the Romanian-language Internet domains. As a result, we would like to highlight the urgent need for integrating internet markets into the existing national and international regulatory structures.

Materials and methods

Between April and October 2013, and June 2014 and November 2015, we actively searched the Romanian-language commerce, non-commerce or mixed websites for individual advertisements regarding *E. orbicularis* individuals. We used the number of unique advertisements (Fig. 1) in our statistical analysis, as it was impossible to determine in all cases if a trade was finalized or not. General advertising websites, wildlife- and/or pet-specific “thematic” sites with advertising services, virtual pet-shops, animal internet discussion forums and social groups such as Facebook groups were target of our search (Kala et al. 2007, Kala & Kepel 2010). We used keywords such as “țestoasă”, “broască țestoasă”, the Romanian terms for “turtle”, and the Latin name to find advertisements of live turtles (Wu 2007). Identification of the species was based on the claims of sellers and the photos used in advertisements. In several cases the source of the photo in the advertisements was identified as not original, obtained from Google Images, thus the species identity of the offered turtle was questionable. In such cases we asked for more information directly from the wildlife traders (“sellers”) to confirm the species identity.

Every online trade offer was recorded with information regarding the date of the offer, location of the seller and their telephone number (wherever it was available), URL of the offer and number of individuals offered (if the offer stated that multiple individuals were offered, but no exact number could be obtained, we considered that a minimum of 2 individuals would be up for sale and we used this number for our statistical analysis).

We also compared the map of individual advertisements with *E. orbicularis* with the map of the species’ distribution in Romania. Relative abundance of turtles on the territories of administrative-



Figure 1. Screen capture of an advertisement of a turtle trade offer. Next to the smaller exotic turtles (*T. scripta* spp.) a native *E. orbicularis* is offered too. The large adult size and thus the old age of the turtle could be considered as solid proof that the specimen was wild-harvested.

territorial units (counties) was assessed based on the reported presence of *E. orbicularis* in the 5 × 5 km UTM quadrants (Cogălniceanu et al. 2013, Sos 2013, own data), using a regression analysis in Excel 2013.

Results

A total of 150 individual advertisements with *E. orbicularis* was recorded in the study period (Fig. 2). In several cases the same advertisements were found posted more than once. At least 217 individuals of this protected species were offered for sale. While in 2013 and 2014 an almost equal numbers of advertisements were tracked (30, and 36, respectively) and similar numbers of turtles were offered for sale (47 and 52), in 2015 the number of advertisements (84) and turtles (118) offered for sale doubled. However this higher number of trade offers and turtles could also be the result of our increased effort in monitoring (i.e. more people involved, more time spent in tracking trade offers, more investigated websites). Nevertheless, the trend is alarming as these numbers represent the minimum estimates of domestic trade with *E. orbicularis* in Romania.

Two general advertising websites, which fused into a single one in 2015, were the most frequently used platforms for trading *E. orbicularis*, representing 94.6% of individual

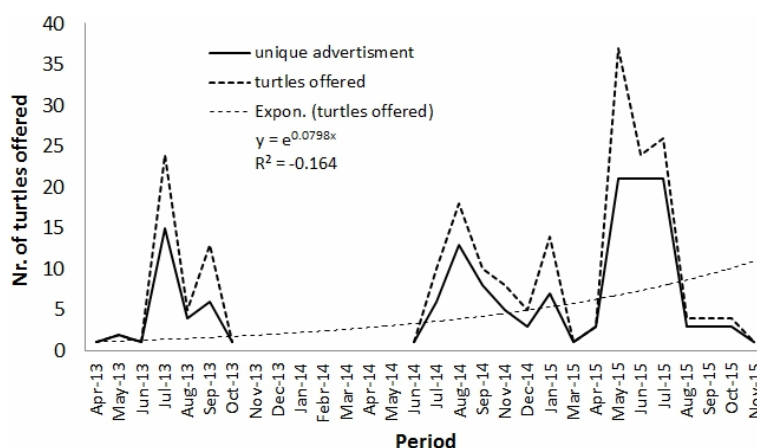


Figure 2. Numbers of *E. orbicularis* offered for sale online in the study period in Romania.

Table 1. Websites where *E. orbicularis* trade offers were found with numbers of individual advertisements and turtles offered.

Websites	Unique advertisements	Turtles offered
www.OLX.ro/mercador.ro	105	150
www.tocmai.ro	37	56
www.okazii.ro	4	4
www.aaz.ro	1	1
www.hobby-zoo.ro	1	1
www.zooloand.ro	1	1
www.facebook.com/testoasecom	1	4
Total	150	217

advertisements and 94.9% of offered turtles (Table 1). The remaining offers were identified on other two advertising and auction sites, pet-specific “thematic” sites with advertising services and on an online social group. Comment sections of articles on “thematic” websites have also produced a number of trade offers.

Comparing individual sellers to individual advertisements, we found an average of 1.4 turtles (with a median of 1) per offer. The maximum number of turtles offered in a single advertisement was 10, as found in an offer from Botoșani County.

Trade offers peaked during the species’ yearly active period in all 3 years (March–September; Fig. 2). The winter trade of *E. orbicularis* was notable in winter 2014–2015, in a period outside the active period of the species.

Prices of *E. orbicularis* ranged from RON20 (EUR4.54) to RON500 (EUR113.63). The average price was RON120.55 (EUR27.39, N = 121) per *E. orbicularis* individual. In total, the illegal trades cumulated a value of RON14687 (EUR3337.95, N = 122). We made the conversion at a price of 4.4 RON per one Euro.

The geographic distribution of identified trade offers indicated more advertisements from the capital, Bucharest, its neighbouring counties and in the north-western and north-eastern area of the country (Fig. 3.1). The number of offered turtles showed a similar pattern with an increase in Constanța County (Fig. 3.2). A comparison with the relative abundance of *E. orbicularis* in the specific counties (Fig. 3.3) revealed that there was no correlation between the reported species presence in 5 × 5 km UTM quadrants and the number of unique advertisement ($y = -0.0031x + 5.2141$, $R^2 = 7E-05$, Fig. 4) or the number of turtles offered for sale ($y = -0.0358x + 4.1184$, $R^2 = 0.0223$), although a slightly decreasing

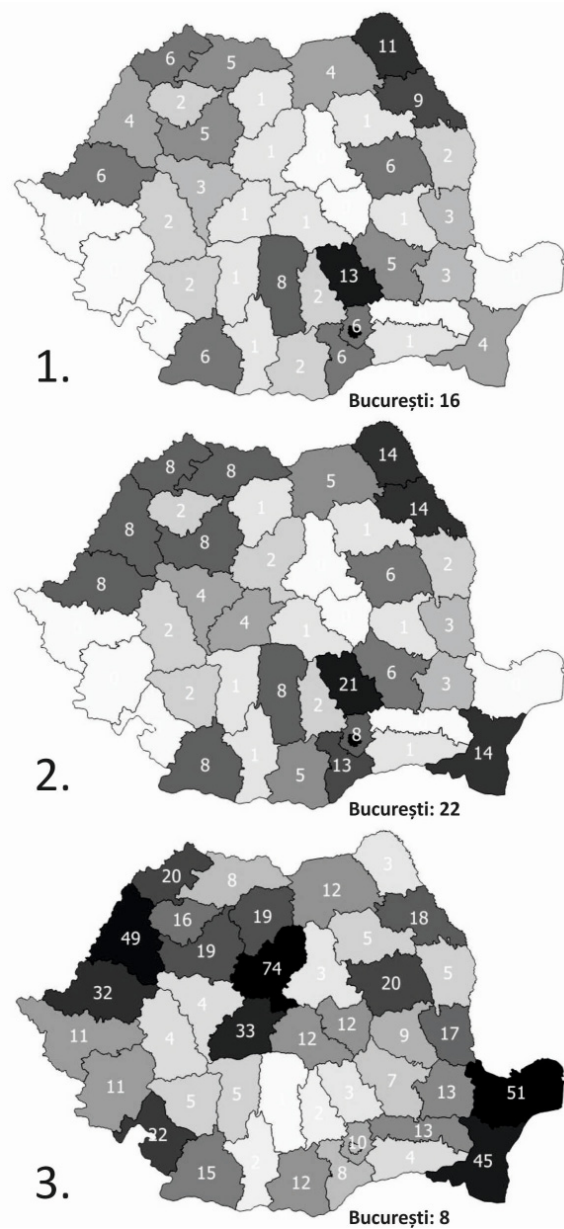


Figure 3. Numbers of individual advertisements (1) and *E. orbicularis* individuals offered for sale (2) in each county of Romania and in the capital in the study period. The relative abundance (3) of *E. orbicularis* in Romania assessed on the base of its reported presence in 5 × 5 UTM quadrants (Cogălniceanu et al. 2003, Sos 2013, own data).

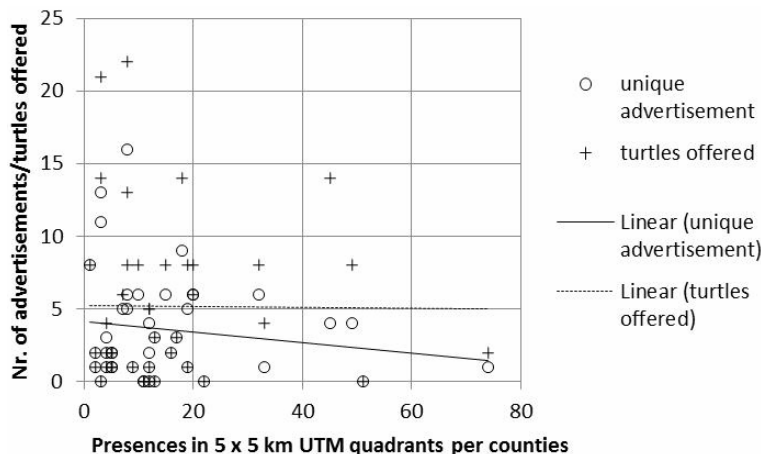


Figure 4. The relationship between the relative abundance of *E. orbicularis* counted on county territories (number of presence in 5 × 5 km UTM quadrants) and number of unique advertisements and turtles offered for sale.

tendency was observed in the number of advertisements in richer counties.

Discussion

Species on particularly high demand among illegal traders in Europe are those restricted to isolated geographical regions, comprising endemic fauna (Auliya 2003). In parallel with these tendencies a domestic trade with common, native species also flourishes. While the legal pet trade with aquatic turtles in Romania is focused almost exclusively on exotic species such as *Pseudemys* sp. and *Graptemys* sp. – except the banned *T. scripta* – (Mărginean personal observations), the illegal pet offer is composed of native *E. orbicularis* and in several cases of *T. s. elegans*, the other banned exotic freshwater turtle (EU WTR; Auyila 2003), and has seemingly increased in the last years (Fig. 2).

E. orbicularis is still a much appreciated species as pets in Romania, a country in which the domestic physical trade (pet-shops) with aquatic turtles is not diversified, although a rising tendency of offered species was observed in some online “thematic” groups (Mărginean own observations). Previous impressions that pet trade with wild-caught *E. orbicularis* in Romania would decrease, due to the fact that exotic species sold in pet-shops would be more attractive (Sos 2011), no longer seem to apply.

E. orbicularis is common in some regions of Romania (Cogălniceanu et al. 2013). Turtles are frequently encountered in their migrations to and from hibernation grounds, to reproduction or egg-laying sites as they cross stretches of land and roads, or when they are in copulatory embrace (Sos 2011). Emergence of hatchlings and their migration to aquatic habitats is another sensitive phase for the species (Trakimas & Sidaravicius 2008). In such vulnerable periods turtles also frequently become victims of traffic (Maciantowicz & Najbar 2004). Accidentally the turtles can be caught by anglers (and sometimes killed), when the turtle attacks the bait (Nemoz et al. 2004, Sos 2007) or are trapped in fishing or crab traps (Cordero Rivera & Ayres Fernández 2004, Sos 2011) or in other artificial traps (e.g. in archaeological sites; Sos 2011). These turtles are often taken home to be kept as pet or for trade (Fritz et al. 2004).

Although formally fully protected, a couple of years ago individuals were commonly offered for sale, and they were being sold in Romanian pet-shops (Sos, own observations). Apparently, the situation changed as we do not have any recent data about such offers. We consider that the decline in the physical (pet-shop stores) “thematic” trade may be the result of increased awareness of professional dealers and probably legislative controls and even of external factors such as the global economic climate (Robinson et al. 2015). Nevertheless, in the physical local markets, where the law is less enforced, turtles are still offered today (Sos 2009, own observations). However, a dramatic switch to virtual markets happened where the number of transactions increased, as also reported with other species (Chng & Bouhuys 2015). Virtual markets are not yet properly regulated, and this puts new pressure on wild populations of threatened species (Wu 2007). We consider that the rise in numbers of online trading websites and the increase in the

amount of people using the Internet in Romania is highly correlated with the rise of illegal trade with *E. orbicularis*.

In general, information on illegal trade with wild animals is difficult to obtain, due to its illicit and secretive nature (Auliya 2003). This is not the case in Romanian illegal online domestic trade in *E. orbicularis*. Here the sellers, whether in a pet-shop or on the online market, rarely have any clue about the species identity and are in general unfamiliar with its special conservation status and regulations (Mărginean personal observations). Therefore the law is often unintentionally broken and, at the same time, the buyer is implicated and misled into this illicit trade (Kala et al. 2007). Strategies to mask protected reptiles are rarely used (Morris 1996) and some turtles are even offered for “adoption” and get adopted. The risk of getting caught and the punishment for violating the specific laws is almost inexistent due to the passive nature of responsible authorities.

We found that most sellers were amateurs who acted on an occasional basis. An average of 1.4 turtles per offer indicates that most sellers are individuals and not professional wildlife traders or poachers (Wu 2007). Another situation was found in a parallel monitoring of the other two native but CITES-listed tortoise species (*Testudo* sp.), where several poachers were identified (unpublished data). Tourists are sometimes unwitting smugglers, unaware of national or international regulations (Velo-Antón et al. 2011). The turtles are encountered mostly by accident on their trips and taken home, mainly because turtles are considered ideal pets. Later these specimens are sold and re-sold for different reasons (“the turtle does not behave like a pet”, “there is not enough place for housing”, “too expensive to keep” etc.); at the same time the geographic origin of the turtles is lost and proper reintroduction into the wild is almost impossible – another negative aspect of this trade.

None of the Romanian sellers claimed that they had captive-bred turtles and most of the offered specimens were adults (Fig. 1). This is a solid proof that the turtles are wild-harvested. Some sellers even pointed this out in their description of the offer. This is the result of inexistent or improper law enforcement and poor regulations on these online platforms (Wu 2007). We considered that companies providing advertising websites would be aware of national or international wildlife regulations, but it was not the case. For example, OLX.ro only stated the prohibition of the trade of “animals in danger of extinction”, lacking even the simple references to the existent proclamations and legislation in Romania (OLX.ro 2017). The okazii.ro auction site lacks any references to the sale of protected wildlife as pets in their terms and conditions (okazii.ro 2017), making it possible for sellers to advertise online without flouting the websites’ conditions.

Trade offers peaked during the warm season of the year, when the turtles are active (Fig. 2). This pattern seems to be another clue of the wild-harvested origin of turtles. However a winter peak (2014-2015) was also revealed. Winter trade offers would often be the result of the owners wanting to get rid of their “pets” captured earlier during the same year, as difficulties arise in the husbandry during that period of the year.

The prices at which the turtles were being sold varied highly. The sellers seemed not to have any clue about the value of the turtles, even if they recognized the species, as no such species could be found on the physical market. Sometimes they gave similar prices used for exotic species in pet-shops, like *Pseudemys* sp., but most of the prices highly exceeded these market prices. Most of the turtles were kept in the poorest conditions, in small enclosures, sometimes even without water as people knew that turtles were tough creatures or had no idea about their proper care. Under these conditions the profit gained from the trade would be maximized.

In terms of shipment, the advertising platforms typically offered distribution through a private courier service or in other ways, such as post office services or face to face delivery (Wu 2007). In the time when tocmal.ro existed (now part of OLX.ro) the delivery was free of charge. In this case, could the otherwise passive online platform be considered as an active part in the trade of protected species? However this question still persists in the case of private courier services, which are involved in such trades.

The geographical distribution of individual advertisements is not homogenous (Fig. 3.1-2). This pattern could be the combined result of different factors such as number of Internet users in an area (e.g. high in the capital, low in rural areas), the regional economic situation (e.g. poor economic situation in north-eastern part of the country), the level of proper education, the intervention of local authorities in wildlife trade and other factors that regulate the national online trade or the erroneous data used as the origin of offered turtles. The expectancy of higher numbers of individual advertisements and offered turtles in counties with higher turtle abundance was logical; however there is trade with turtles in other counties than the source ones, as tourists usually transport turtles across several counties. Multiple trades with the same turtles between buyers and sellers from different locations or geographical areas of the country create incoherence between the map with high presence of *E. orbicularis* and the map with high offers of *E. orbicularis*.

Geographical distribution of the species in Romania is also not homogenous (Fig. 3.3). Accurate data regarding the distribution of *E. orbicularis* in Romania is lacking (Sos 2009, 2013, Cogălniceanu et al. 2013) as temporal and geographical inconsistencies in terms of sampling effort were detected (Ruben et al., 2015). In several areas even erroneous data were reported (e.g. in Mureș county), where more populations were listed (Cogălniceanu et al. 2013) than actually observed in the area (own observations). In conclusion, the lack of or poor relationship detected is not unexpected (Fig. 4) and even some similarities could be observed (Fig. 3).

The harvesting of wild individuals has different regional impacts on the survival of turtle populations (Moll & Moll 2004). Populations with high size estimates and broad distribution could withstand certain levels of exploitation associated with wild trade or ranching, while collecting of species from small populations could easily lead to local extinctions (Andreone et al. 2006). Turtles, being among reptiles with narrow niche requirements (Böhm et al. 2013) and sharing life histories with prolonged adult survival, are

particularly vulnerable to anthropogenic threats and commercial exploitation (Pough 2013). In Romania there are certain regions with healthy populations reported, where the turtles are a common sight (e.g. the Danube Delta, the north-western and south-eastern areas of Romania; Fuhn & Vancea 1961, Cogălniceanu et al. 2013, own observation), but there also have been reports of rare presences and even local population extinctions as a consequence of human impact on their habitat (e.g. the Transylvanian Basin; Sos 2013). In most parts of the country the existent data derives mostly from the sighting of several specimens (Sos 2013) and there is therefore often limited information about the viability of wild populations (Pough 2013). In such sensitive areas the trade regulations should be more intensively implemented. Here it is not sufficient to only designate protected areas for *E. orbicularis*, such as the Natura2000 sites, but it is also extremely important how those areas are managed over time (Ioja et al. 2010). Close monitoring of human activities and regular patrols by authorities are needed to combat poaching of protected species in these areas.

Our activities did not end with the monitoring of the virtual market. Sellers were contacted and the protected status of *E. orbicularis* was presented to them. In some cases sellers agreed to give the turtles to us so that they could be reintroduced in the wild. In problematic cases where the turtles could not be retrieved, Romanian authorities and the online platform or community were informed about the illegal trades. Investigations may result in arrests, seizures, prosecution and convictions which would provide more robust data with which to estimate the scale of the illegal trade in native turtles. But the limited enforcement of laws by authorities in these cases and the lack of special wildlife trade authorities, make such investigations a slow and rarely successful process. One of the possible reasons behind this problem is probably the lack of training for enforcement officers (Kala & Kapel 2006). Another reason is that written complaints have to be registered with the authorities so that they can intervene (Kala et al. 2007), a process that can take up to 30 days. Such a long time frame limits the success of recovery of the poached animals. Therefore, it is imperative that the legislation is modified in future, to force Romanian authorities to intervene quicker and more efficient in cases of illegal online pet trade. This legislation must sanction websites hosting illegal trade offers with protected species such as *E. orbicularis*. These must be held accountable for or should at least consult with biologists to identify protected species before posting trade offers with animals. Sadly, there is no indication that national authorities take substantial actions aimed at combating the domestic illegal online wildlife trade.

Monitoring the internet can produce immediate and effective enforcement action if desired. Virtual markets need to be governed by the same regulatory authorities used for physical markets (Wu 2007). Romanian authorities should create a national internet intelligence officer dealing with the illegal online wildlife trade and ensure that wildlife crime and other policing and customs units collaborate on this issue (IFAW 2014). Wildlife law enforcement authorities should be encouraged to develop specific strategies to police virtual markets. Specific training for enforcers about wildlife crime is an important step to make in this direction. Sellers

on the internet should be regulated, as are retailers in physical markets, and should be required to provide explicit information on their offers (IFAW 2014). Internet shoppers should be alerted of the growing use of Internet for illegal wildlife trade, and their role in keeping their purchases legal (Wu 2007). Reptile conserving associations and online communities should inform their members and customers about the legislative measures, conservation issues and welfare requirements related to the domestic and international trade (Auliya 2003).

Internet service providers and individual websites need to take responsibility and maintain a greater role in stopping illegal trade, by providing clear and easy access to information on wildlife trade regulations to sellers and buyers (e.g. by “pop up” notices) and by improving their filtering systems for illegal offers (Wu 2007, IFAW 2014). Identifying and reporting suspicious trading behaviour to national law enforcement authorities should be a common daily behaviour of these platforms. An important request to the traders is to ask for a confirmation that they understood their responsibilities under relevant national and international legislation related with wildlife trade (IFAW 2014).

Illegal wildlife trade on the Internet needs to be viewed with concern given the efficiency with which the Internet brings together buyers and sellers, the clearly illegal nature of much of the trade, and the vast size of the potential market (Wu 2007). The present study suggests that the illegal pet-trade with wild-caught *E. orbicularis* in Romania is thriving and is a hindering factor in the conservation of this species, which must be urgently addressed as the trade shifts online. This will create new challenges in monitoring and eliminating trade of the species, as it is particularly difficult to monitor the online trade comprehensively and prove the legality of advertised wildlife (IFAW 2014). While there is a need to prevent online trade offers with *E. orbicularis*, there is also an equal need to devise a plan to successfully reintegrate into the wild the individuals retrieved from captivity. Therefore it is necessary to found care- and rehabilitation centres for this species and devise a genetic map of the distribution of *E. orbicularis* in Romania, so that reintegration of individuals is made in the same region from where they were initially captured, an information that can, in most cases, be obtained only by genetic testing, since owners can often not provide this detail.

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References

Andreone, F., Mercurio, V., Mattioli, F. (2006): Between environmental degradation and international pet trade: conservation strategies for the threatened amphibians of Madagascar. *Natura* 95: 81–96.
 Anon. (1993): Law no. 13/1998 for Romania's accession to the Convention on the conservation of wildlife and natural habitats in Europe adopted at Berne

on September 19, 1979. Official Monitor no. 62 of 25th March 1993, Bucharest.
 Anon. (2011): Law no. 49/2011 which approves with amendments the Government Emergency Ordinance no. 57/2007 on the regime of protected natural areas, preservation of natural habitats, wild flora and fauna. Official Monitor no. 262 of 13 April 2011, Bucharest.
 Anon. (2013): Top 10: Where to Find the World's Fastest Internet. Bloomberg. <<http://www.bloomberg.com/slideshow/2013-01-23/top-10-countries-with-the-fastest-internet.html#slide7>>, accessed at: 2015.12.20.
 Auliya, M. (2003): Hot trade in cool creatures: a review of the live reptile trade in the European Union in the 1990s with a focus on Germany. TRAFFIC Europe, Brussels, Belgium.
 Böhm, M., Collen, B., Baillie, J.E.M., Bowles, P., Chanson, J., Cox, N., Hammerson, G., Hoffmann, M., Livingstone, S.R., Ram, M., Rhodin, A.G., Stuart, S.N., Dijk, P.P., Young, B.E., Afuang, L.E., Aghasyan, A., Garcia, A., Aguilar, C., Ajtic, R., Akarsu, F., Laura R.V. Alencar, L.R.V., Allison, A., Ananjeva, N., Anderson, S., Andrén, C., Sánchez, D.A., Arredondo, J.C., Auliya, M., Austin, C.C., Avci, A., Baker, P.J., Lima, A.B., Barrio-Amorós, C., Basu, D., Bates, M.F., Batistella, A., Bauer, A., Bennett, D., Böhme, W., Broadley, D., Brown, R., Burgess, J., Captain, A., Carreira, S., Castañeda, M.R., Castro, F., Catenazzi, A., Cedeño-Vázquez, J.R., Chapple, D.G., Cheylan, M., Cisneros-Heredia, D.F., Cogalniceanu, D., Cogger, H., Corti, C., Costa, G.C., Couper, P.J., Courtney, T., Crnobrnja-Isailovic, J., Crochet, P.A., Crother, B., Cruz, F., Daltry, J.C., Daniels, R.R., Das, I., Silva, A., Diesmos, A.C., Dirksen, L., Doan, T.M., Dodd Jr., C.K., Doody, J.S., Dorcas, M.E., Filho, J.D.B., Egan, V.T., Mouden, H., Embert, D., Espinoza, R.E., Fallabrino, A., Feng, X., Feng, Z.J., Fitzgerald, L., Flores-Villela, O., França, F.G.R., Frost, D., Gadsden, H., Gamble, T., Ganesh, S.R., Garcia, M.A., Garcia-Pérez, J.E., Gatus, J., Gaulke, M., Geniez, P., Georges, A., Gerlach, J., Goldberg, S., Gonzalez, J.C.T., Gower, D.J., Grant, T., Greenbaum, E., Grieco, C., Guo, P., Hamilton, A.M., Hare, K., Hedges, S.B., Heideman, N., Hilton-Taylor, C., Hitchmough, R., Hollingsworth, B., Hutchinson, M., Ineich, I., Iverson, J., Jaksic, F.M., Jenkins, R., Joger, U., Jose, R., Kaska, Y., Kaya, U., Keogh, J.S., Köhler, G., Kuchling, G., Kumlutas, Y., Kwet, A., La Marca, E., Lamar, W., Lane, A., Lardner, B., Latta, C., Latta, G., Lau, M., Lavin, P., Lawson, D., LeBreton, M., Lehr, E., Limpus, D., Lipczynski, N., Lobo, A.S., López-Luna, M.A., Luiselli, L.L., Lukoschek, V., Lundberg, M., Lymberakis, P., Macey, R., Magnusson, W.E., Mahler, D.L., Malhotra, A., Mariaux, J., Maritz, B., Marques, O., Márquez, R., Martins, M., Masterson, G., Mateo, J.A., Mathew, R., Mathews, N., Mayer, G., McCranie, J.R., Measey, G.J., Mendoza-Quijano, F., Menegon, M., Métrailler, S., Milton, D.A., Montgomery, C., Morato, S.A.A., Mott, T., Muñoz-Alonso, A., Murphy, J., Nguyen, T.Q., Nilson, G., Nogueira, C., Núñez, H., Orlov, N., Ota, H., Ottenwalder, J., Papenfuss, T., Pasachnik, S., Passos, P., Pauwels, O.S.G., Pérez-Buitrago, N., Pérez-Mellado, V., Pianka, E.R., Pleguezuelos, J., Pollock, C., Ponce-Campos, P., Powell, R., Pupin, F., Diaz, G.E.Q., Radder, R., Ramer, J., Rasmussen, A.R., Raxworthy, C., Reynolds, R., Richman, N., Rico, E.L., Riservato, E., Rivas, G., Rocha, P.L.B., Rödel, M.O., Schettino, L.R., Roosenburg, W.M., Ross, J.P., Sadek, R., Sanders, K., Santos-Barrera, G., Schleich, H.H., Schmidt, B.R., Schmitz, A., Sharifi, M., Shea, G., Shi, H.T., Shine, R., Sindaco, R., Slimani, T., Somaweera, R., Spawls, S., Stafford, P., Stuebing, R., Sweet, S., Sy, E., Temple, H.J., Tognelli, M.F., Tolley, K., Tolson, P.J., Tuniyev, B., Tuniyev, S., Üzümlü, N., Buurt, G., Sluys, M., Velasco, A., Vences, M., Vesely, M., Vinke, S., Vinke, T., Vogel, G., Vogrin, M., Vogt, R.C., Wearn, O.R., Werner, Y.L., Whiting, M.J., Wiewandt, T., Wilkinson, J., Wilson, B., Wren, S., Zamin, T., Zhou, K., Zug, G. (2013): The conservation status of the world's reptiles. *Biological Conservation* 157: 372–385.
 Chng, S.C.L., Bouhuys, J. (2015): Indian Star Tortoises: Shop sales fall as internet trade increases. *TRAFFIC Bulletin* 27: 73–78.
 Cogalniceanu, D., Rozyłowicz, L., Székely, P., Samoilă, C., Stănescu, F., Tudor, M., Székely, D., Iosif, R. (2013): Diversity and distribution of reptiles in Romania. *ZooKeys* 341: 49–76.
 Cordero Rivera, A., Ayres Fernández, C. (2004): A management plan for the European pond turtle (*Emys orbicularis*) populations of the Louro river basin (Northwest Spain). *Biologia* 59(Suppl. 14): 161–171.
 Cox, N.A., Temple, H.J. (2009): European Red List of Reptiles. Office for Official Publications of the European Communities, Luxembourg.
 Fuhr, I.E., Vancea, Ș. (1961): Fauna Republicii Populare Române - Reptilia. Editura Academiei R.P.R., București.
 Fritz, U. (2001): *Emys orbicularis* (Linnaeus, 1758) - Europäische Sumpfschildkröte. In: Fritz, U. (ed.), *Handbuch der Reptilien und Amphibien Europas*. Schildkröten I. Aula-Verlag.
 Fritz, U., Guicking, D., Lenk, P., Joger, U., Wink, M. (2004): When turtle distribution tells European history: mtDNA haplotypes of *Emys orbicularis* reflect in Germany former division by the Iron Curtain. *Biologia* 59(Suppl. 14): 19–25.
 Gibbons, J.W., Scott, D.E., Ryan, T.J., Buhlmann, K.A., Tuberville, T.D., Metts, B.S., Greene, J.L., Mills, T., Leiden, Y., Poppy, S. (2000): The global decline of reptiles, déjà vu amphibians. *Bioscience* 50: 653–666.

- IFAW (2014): Wanted-Dead or Alive: Exposing Online Wildlife Trade. International Fund for Animal Welfare. London, UK.
- Iojă, C.I., Pătroescu, M., Rozyłowicz, L., Popescu, V.D., Verghel, M., Zotta, M.I., Felciuc, M. (2010): The efficacy of Romania's protected areas network in conserving biodiversity. *Biological Conservation* 143: 2468-2476.
- IUCN (2015): The IUCN Red List of Threatened Species. Version 2015-4. <<http://www.iucnredlist.org>>, accessed at: 2015.12.20.
- IUCN (2002): IUCN Guidelines for the Placement of Confiscated Animals. Prepared by the IUCN/SSC Re-introduction Specialist Group. IUCN, Gland, Switzerland and ERWDA, Abu Dhabi, UAE. <<https://portals.iucn.org/library/efiles/edocs/2002-004.pdf>>, accessed at: 2016.01.05.
- Jepson, P., Ladle, R.J., Sujatnika (2011): Assessing market-based conservation governance approaches: a socio-economic profile of Indonesian markets for wild birds. *Oryx* 45: 482-491.
- Kala B., Kepel A. (2010): e-CEETES. Central & Eastern European Trade in Endangered Species. CEEweb. <<http://www.ceeweb.org/wp-content/uploads/2011/12/e-CEETES.pdf>>, accessed at: 2016.01.05.
- Kala, B., Kelemen, M.A., Kepel A. (2007): e-CEETES. Central & Eastern European Trade in Endangered Species. CEEweb. <<http://www.ceeweb.org/wp-content/uploads/2013/05/CEETES.pdf>>, accessed at: 2016.01.05.
- Maciantowicz, M., Najbar, B. (2004): Distribution and active conservation of *Emys orbicularis* in Lubuskie province (West Poland). *Biologia* 59(Suppl. 14): 177-183.
- Moll, D., Moll, E.O. (2004): The ecology, exploitation and conservation of river turtles. Oxford University Press, UK, 391p.
- Morris, P. (1996): Understaffed and Overworked. The US Fish and Wildlife Service tries to monitor trade in illegal species. *The Bridge*. Dec 96/Jan-Feb 97.
- Nemoz, M., Cadi, A., Thienpont, S. (2004): Effects of recreational fishing on survival in an *Emys orbicularis* population. *Biologia* 59: 185-189.
- okazii.ro (2017): Termeni și Condiții. <<http://ajutor.okazii.ro/termeni-si-conditii>>, accessed at: 2017.04.27.
- OLX.ro (2017): Termeni și condiții OLX.ro. <<http://olx.ro/termeni-de-utilizare>>, accessed at: 2017.04.27.
- Pough, F.H. (2013): Biodiversity of Reptiles. In: Levin, S.A. (ed.), *Encyclopedia of Biodiversity*. Vol. 6, 2nd ed. Academic Press.
- Robinson J.E., Griffiths, R.A., A St. John, F.V., Roberts, D.L. (2015): Dynamics of the global trade in live reptiles: Shifting trends in production and consequences for sustainability. *Biological Conservation* 184: 42-50.
- Ruben I., Birsan, C.-C., Székely, P., Cogălniceanu, D. (2015): Spatio-temporal bias in the European freshwater turtle distribution in Romania. Program and abstracts of 5th International Symposium on *Emys orbicularis* and the other European freshwater turtles, 19-21 August - Kiten, Bulgaria: 34-35.
- Sos, T. (2007): Notes on distribution and actual status of herpetofauna in the northern area of Brașov County. *North-Western Journal of Zoology* 3(1): 34-52.
- Sos, T. (2009): The European Pond Turtle in Romania. In: Rogner, M. (Ed.), *European Pond Turtle (Emys orbicularis)*. The genus *Emys*. Edition Chimaira.
- Sos, T. (2011): În obiectiv: Țestoasa de apă europeană, *Emys orbicularis*. Asociația Ecouri Verzi, Cluj-Napoca, Romania.
- Sos, T. (2013): Conservation activities for European pond turtles (*Emys orbicularis*) in Romania. *Herpetology Notes* 5: 147-148.
- Trakimas, G., Sidaravicius, J. (2008): Road mortality threatens small northern populations of the European pond turtle, *Emys orbicularis*. *Acta Herpetologica* 3(2): 161-166.
- UNEP-WCMC (2015): EU Wildlife Trade 2013: Analysis of the European Union and candidate countries' annual reports to CITES 2013. UNEP-WCMC, Cambridge.
- Velo-Antón, G., Wink, M., Schneeweiss, N., Fritz, U. (2011): Native or not? Tracing the origin of wild-caught and captive freshwater turtles in a threatened and widely distributed species (*Emys orbicularis*). *Conservation Genetics* 12: 583-588.
- Wu, J. (2007): World Without Borders: Wildlife Trade on the Chinese-language Internet. *TRAFFIC Bulletin*, v.21(2): 75-84.