VBORNET Newsletter Year 2 Issue 3, February 2011

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CONTENTS

1. WEST NILE VIRUS ACTIVITY IN EUROPE, 2010

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In 2010, West Nile virus (WNV) activity in Europe seemed intensitied with the epidemiological situation in Greece, where West Nile fever (WNF) outbreak in humans appeared for the first time, and in southern Russia (largely the endemic area along the lower Volga river that involves wetland natural foci of WNV infections for years). Cases of equine WNF were reported from Spain, Portugal, Italy, and Greece. In the Mediterranean region outside geographic Europe, equine WNF was reported from Morocco, seven human WNF cases from Turkey (provinces Manisa, Aydin, Isparta – three patients died: ProMED Digest 8 Sep. 2010), and more than 20 human cases of WNF occurred in Israel during July and August 2010, mainly in the Tel Aviv area (ProMED Digest 2 Aug. 2010). Interestingly, two Dutch travellers were also infected with WNV in Israel in July 2010 (Aboutaleb et al. 2010).

Portugal
One human probable WNF case occurred in July 2010 (Dr J. Calheiros: ProMED Digest 2 Aug. 2010), and one equine case in Palmela; the disease started 4 Oct. 2010, the horse was euthanized on 19 October (Dr C.A. Pinheiro: ProMED Digest 28 Oct. 2010).

Spain
Equine cases started in Jerez and environs, Andalusia, on 26 August 2010. Several outbreaks involved three provinces (Cadiz, Seville and Malaga) with a total of 41 animals affected, 10 died. The equine cases occurred sporadically until late November 2010 (Carlos Alberto Cabrera: ProMED Digest 18 Nov. 2010). In addition 2 human cases were reported from the same region (FluTrackers.com: 13 Oct 2010).

Italy
Two previous years 2008 and 2009 revealed WNV circulation in many parts of northern Italian regions Lombardy, Emilia-Romagna, and Veneto (Barzon et al. 2009, Gobbi et al. 2009, Rico et al. 2009, Angelini et al. 2010, Calistri et al. 2010a), but also in other parts of Italy (Capobianchi et al. 2010). Humans, horses and several wild birds (corvids: crow, magpie) were affected. In 2010, however, equine cases were only reported near Trapani (Sicily) and Molise (central Italy) since 23 August 2010: 8 animals were affected, one horse was euthanized (Calistri et al. 2010b). One human case (encephalitis) occurred in Veneto on 28 August 2010.

Greece
In central Macedonia (northern Greece), about 261 human cases of WNF were reported from July through October 2010; a total of 191 of these patients had neuroinvasive form of the disease, and 34

had died (Papa et al. 2010; ProMED Digest 13 March 2011).There were also seven equine cases, one horse died and another was euthanized (S. Doudounakis: ProMED Digest 1 Oct. 2010). This was the first documented WNV epidemic in Greece. One virus strain was isolated from mosquito *Culex pipiens*, and it was identified as WNV lineage 2 (A. Papa, N. Nowotny and T. Bákonyi, pers. commun.).

Austria and Hungary
Avian cases (mainly birds of prey such as goshawks and sparrowhawks) were reported from both countries (eastern Austria, western Hungary) in 2008 and 2009, and the etiologic agent was WNV lineage 2 (N. Nowotny: ProMED Digest 15 Feb. 2009). About 14 human cases of WNF were observed in Hungary in August and September 2008 (Krisztalovics et al. 2008), some additional cases also in 2009 and 3 cases in 2010 (ECDC, 2010).

Romania
A total of 57 human patients with WNF (54 with neuroinvasive form) were reported in various parts of the country (19 districts, mainly southern, eastern and central regions) between July and October 2010 (peak from mid-August to mid-September), four of them died (Sirbu et al. 2011). Molecular investigation of samples from patients identified WNV lineage 2 genome (similar to the virus that circulated in Volgograd in 2007). This was the second greatest WNF outbreak in Romania since 1996.

Bulgaria
In October 2010, sub-clinical WNV infections were reported from 5 donkeys and 3 horses in the North-East part of Bulgaria (OIE, 2011). No clinical signs were observed at all. This indicates circulation of WNV as previously observed in the 60-70's (Hubálek, 2000).

Russia
A total of 480 human WNF cases were reported in Russia between July and September 2010, six of them fatal (ProMED Digest 22 Sep. 2010). For instance, 393 (five died) in Volgograd area, 53 in Rostov area (1 fatal), 25 in Voronezh area, 6 in Astrakhan, and individual cases in Krasnodar, Kalmikia, Chelyabinsk areas (A. Platonov, personal communication; ProMED Digest 3 Sep. 2010).

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2. SCIENTIFIC ADVANCES: MOSQUITOES

The Extinction of Dengue through Natural Vulnerability of Its Vectors.

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PLoS Neglected Tropical Diseases 2010 Dec 21; 4(12):e922.

BACKGROUND: Dengue is the world's most important mosquito-borne viral illness. Successful future management of this disease requires an understanding of the population dynamics of the vector, especially in the context of changing climates. Our capacity to predict future dynamics is reflected in our ability to explain the significant historical changes in the distribution and abundance of the disease and its vector.
METHODOLOGY/PRINCIPAL FINDINGS: Here we combine daily weather records with simulation modelling techniques to explain vector (*Aedes aegypti* (L.)) persistence within its current and historic ranges in Australia. We show that, in regions where dengue presently occurs in Australia (the Wet Tropics region of Far North Queensland), conditions are persistently suitable for year-round adult *Ae. aegypti* activity and oviposition. In the historic range, however, the vector is vulnerable to periodic extinction due to the combined influence of adult activity constraints and stochastic loss of suitable oviposition sites.
CONCLUSIONS/SIGNIFICANCE: These results, together with changes in water-storage behaviour by humans, can explain the observed historical range contraction of the disease vector. For these reasons, future eradication of dengue in wet tropical regions will be extremely difficult through classical mosquito control methods alone. However, control of *Ae. aegypti* in sub-tropical and temperate regions will be greatly facilitated by government policy regulating domestic water-storage. Exploitation of the natural vulnerabilities of dengue vectors (e.g., habitat specificity, climatic limitations) should be integrated with the emerging novel transgenic and symbiotic bacterial control techniques to develop future control and elimination strategies.

Link to the article:
http://www.plosntds.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pntd.0000922&representation=PDF
Key words: Dengue

VBORNET comment: 2011-03-16

Aedes aegypti is a highly specialized mosquito species feeding predominantly on humans and breeding in artificial water holding containers in urban areas, and currently restricted to subtropical and tropical areas. Williams *et al*. focus on the reasons why *Ae. aegypti* once occurred in locations where the mosquito does not occur anymore in Australia, the more temperate drier parts of the country. By means of mechanistic models (using CIMSiM), they challenge the idea that the historic range is climatically suitable for long term *Ae. aegypti* survival. They show that in some locations, the mosquito, for example, could only survive when permanent water holding containers were present. When prevalence of water tanks decreased, *Ae. aegypti* persistence reduced remarkably. Of course the reverse is also possible.
In Europe, until the beginning of the 20th century, the yellow fever mosquito was present in many areas and sea-ports along the Mediterranean coast, but disappeared rapidly during the 1950's. To our knowledge no report provides convincing evidence why this had happened. The current study might provide clues that the species became extinct through its natural vulnerability in this region. Recently *Ae. aegypti* has established itself again on the island of Madeira (Portugal) through reintroductions by trade activities as well as on the north-eastern Black Sea coast. Expansions of the distribution of this mosquito due to global warming are expected, but other unidentified non-climatic factors might preclude this from happening. Generally, *Ae. aegypti* is not anticipated to reach as far north as Western Europe

as it cannot withstand freezing temperatures. This study, however, makes you wonder whether man made changes or habits allow this mosquito to establish in apparently climatic unsuitable locations, as once seen in Australia. The authors conclude that *Ae. aegypti* is naturally vulnerable for extinction in certain conditions and that this vulnerability should be exploited in control programmes especially in subtropical and temperate regions. Yet, considering the increasing importance of *Ae.albopictus* as vector of dengue in these regions, it adds a level of complexity to such control programmes.

Evidence of simultaneous circulation of West Nile and Usutu viruses in mosquitoes sampled in Emilia-Romagna region (Italy) in 2009.

Calzolari M [1], Bonilauri P [1], Bellini R [2], Albieri A [2], Defilippo F [1], Maioli G [1], Galletti G [1], Gelati A [3], Barbieri I [1], Tamba M [1], Lelli D [1], Carra E [1], Cordioli P [1], Angelini P [4], Dottori M [1].
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PLoS One. 2010 Dec 15; 5(12):e14324.

BACKGROUND: In recent years human diseases due to mosquito-borne viruses were increasingly reported in Emilia-Romagna region (Italy), from the chikungunya virus in 2007 to the West Nile virus (WNV) in 2008. An extensive entomological survey was performed in 2009 to establish the presence and distribution of mosquito arboviruses in this region, with particular reference to flaviviruses.
METHODOLOGY/PRINCIPAL FINDINGS: From May 6 to October 31, a total of 190,516 mosquitoes were sampled in georeferenced stations, grouped in 1,789 pools according date of collection, location, and species, and analyzed by reverse transcription polymerase chain reaction (RT-PCR) to detect the presence of RNA belong to *Flavivirus* genus. WNV was detected in 27 mosquito pools, producing sequences similar to those of birds and human strains obtained in 2008 outbreak, pointed out the probable virus overwintering. Isolation of WNV was achieved from one of these pools. Moreover 56 pools of mosquitoes tested positive for Usutu virus (USUV). Most PCR positive pools consisted of *Culex pipiens*, which also was the most analyzed mosquito species (81.4% of specimens); interestingly, USUV RNA was also found in two *Aedes albopictus* mosquito pools. Simultaneous circulation of WNV and USUV in the survey area was highlighted by occurrence of 8 mosquito WNV- and USUV-positive pools and by the overlaying of the viruses "hot spots", obtained by kernel density estimation (KDE) analysis. Land use of sampled stations pointed out a higher proportion of WNV-positive *Cx. pipiens* pool in rural environments respect the provenience of total sampled pool, while the USUV-positive pools were uniformly captured in the different environments.
CONCLUSIONS/SIGNIFICANCE: Obtained data highlighting the possible role of *Cx. pipiens* mosquito as the main vector for WNV and USUV in Northern Italy, and the possible involvement of *Ae. albopictus* mosquito in USUV cycle. The described mosquito-based surveillance could constitute the foundation for a public health alert system targeting mosquito borne arboviruses.

Link to the article: http://www.plosone.org/article/fetchObjectAttachment.action;jsessionid=B39D533985C4A92D5553C61D8561D96D.ambra02?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0014324&representation=PDF
Key words: West Nile Fever

VBORNET comment: 2011-24-02

Since 2009, an integrated WNV surveillance system including mosquitoes, birds, horses and humans has been implemented in the Emilia-Romagna region, Italy. The results of the mosquito surveillance of the first year are reported in this paper. Detailed information on arbovirus detection is presented in a comprehensive manner providing important insights in the ecology of, not only, WNV but also USUV. The authors provide evidence for simultaneous circulation of WNV and USUV in this region. Similarity of the sequences of WNV circulating in 2008 and 2009 strongly suggests that the virus had overwintered, in stead of being reintroduced. Despite similarities in the presence of positive mosquito pools for WNV and USUV in the same area and period and same mosquito specimen, data highlighted differences in ecology of the two viruses. For example, while WNV was only detected in *Culex pipiens*, USUV was also found in two *Aedes albopictus* mosquito pools.
The results confirm that, if mosquito trapping effort is intensive, detection of arboviruses in mosquitoes might precede virus activity in any other surveillance tools and possibly can serve as an early warning tool. Surveillance systems such as implemented in Emilia-Romagna will be able to provide important information on regional, national or even pan European mosquito-borne disease transmission risk. The research group has recently been involved in such risk assessment by the ECDC (http://www.ecdc.europa.eu/en/publications/Publications/Forms/ECDC_DispForm.aspx?ID=635&MasterPage=1).

3. SCIENTIFIC ADVANCES: TICKS

The importance of synanthropic wild birds in distribution of *Borrelia spirochetes*: analysis of spring collections of *Ixodes ricinus* ticks feeding on passerine birds in the Czech Republic.

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Applied and Environmental Microbiology 2011 Feb; 77(3):1115-7. Epub 2010 Dec 10.

Ixodes ricinus ticks collected from 835 birds and vegetation in the Czech Republic were analyzed. Host-seeking ticks (n=427) were predominantly infected by *Borrelia afzelii* (25%). Ticks (n=1012) from songbirds (Passeriformes) were infected commonly by *B. garinii* (12.1%) and *B. valaisiana* (13.4%). Juveniles of synanthropic birds, Eurasian Blackbirds *Turdus merula* and Song Thrushes *T. philomelos*, were major reservoir hosts of *B. garinii*.

Link to the article: http://aem.asm.org/cgi/reprint/AEM.02278-10v1.pdf
Key words: Borreliosis

VBORNET comment: 2011-21-02

The authors analyse the infestation rate and the *Borrelia* prevalence of passerine birds and questing ticks on two sites at two different seasons. Their objective is to see if there is a difference of infestation rate and infection prevalence between seasons and between one site close to human populations (synanthropic birds) and one site at higher altitude. The large sample of bird captures (n=835) is impressive. The study shows that tick infestation rate on birds is lower in spring than in the postbreeding period. Birds from higher altitudes are less infested by *Ixodes* ticks and infected by *Borrelia* spirochetes than the ones from lower altitude.
Only few studies have been conducted on birds as hosts of vector-borne diseases. This manuscript confirms that two bird species, Eurasian blackbirds and song trushes, are largely responsible for the distribution of *Borrelia* genospecies, which are usually found in birds in other European countries (*Borrelia garinii* and *Borrelia valaisiana*). Indeed, these two bird species carry more ticks and are more infected than other bird species. Besides, this study highlights the altitude-dependent tick density for birds, which has been already reported for questing ticks. Finally, the difference in infestation rate between seasons shown by this report may be explained by a potential cumulative effect on infestation rate of birds.
Identifying reservoir species for *Borrelia* is important to understand the epidemiology of the disease. We encourage this type of studies. Yet, a more advanced analysis (e.g. by using models) could have strengthen the conclusion.

An integrated database on ticks and tick-borne zoonoses in the tropics and subtropics with special reference to developing and emerging countries.

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Experimental and Applied Acarology 2010 Dec 12; DOI: 10.1007/s10493-010-9414-4 [Epub ahead of print]

Tick-borne zoonoses (TBZ) are emerging diseases worldwide. A large amount of information (e.g. case reports, results of epidemiological surveillance, etc.) is dispersed through various reference sources (ISI and non-ISI journals, conference proceedings, technical reports, etc.). An integrated database-derived from the ICTTD-3 project (http://www.icttd.nl) was developed in order to gather TBZ records in the (sub-)tropics, collected both by the authors and collaborators worldwide. A dedicated website

(http://www.tickbornezoonoses.org) was created to promote collaboration and circulate information. Data collected are made freely available to researchers for analysis by spatial methods, integrating mapped ecological factors for predicting TBZ risk. The authors present the assembly process of the TBZ database: the compilation of an updated list of TBZ relevant for (sub-)tropics, the database design and its structure, the method of bibliographic search, the assessment of spatial precision of geo-referenced records. At the time of writing, 725 records extracted from 337 publications related to 59 countries in the (sub-)tropics, have been entered in the database. TBZ distribution maps were also produced. Imported cases have been also accounted for. The most important datasets with geo-referenced records were those on Spotted Fever Group rickettsiosis in Latin-America and Crimean-Congo Haemorrhagic Fever in Africa. The authors stress the need for international collaboration in data collection to update and improve the database. Supervision of data entered remains always necessary. Means to foster collaboration are discussed. The paper is also intended to describe the challenges encountered to assemble spatial data from various sources and to help develop similar data collections.

Link to the article: http://www.springerlink.com/content/t6r3p245608g4263/
Key words: Tick-borne zoonoses

VBORNET comment: 2011-17-02

This is an interesting paper presenting one of the outputs of the ICTTD initiative: the building of a database on TBZ in tropics and subtropics reporting as much as possible information available about TBZ occurrences in this region (pathogen species, geo-location, date or time period, diagnosis method, type of data -passive or active surveillance, human or animal or tick sample-, vectors and reservoirs if possible...).This initiative is very similar to those currently in Europe by EFSA and ECDC on animal and human TBD, respectively. They all show that there is a common interest to develop tools to synthesize epidemiological data useful for decision makers, surveillance systems and scientists and to keep available both historical information and unpublished results. However, such initiatives point out several new questions: (i) Should we develop only a consultative tool or also a tool that allows data uploading? (ii) How to deal with data validation coming from unknown or not referenced experts? (iii) And also how to deal with the evolution of pathogen or vector systematics and also the progress in diagnostic methods, even consensus identification or diagnosis techniques have been previously defined? (iv) How to encourage experts to deposit their data and to avoid providing “a nice empty box” to public? (v) How to organize non homogeneous datasets with different reporting dates, different sampling method or different spatial resolutions for example, with the crucial need to avoid “over-interpretation” of non accurate data? (vi) And finally, after first basic recording effort to create the database, how to organize the epidemiological watch to update the database and the resulting reporting maps?

Discovery of *Dermacentor reticulatus* (Acari: Amblyommidae) populations in the Lubuskie Province (Western Poland).

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The distribution of the meadow tick, *Dermacentor reticulatus* (Fabricius) is divided into two separate areas-Western Europe and Eastern (Russian). The break in distribution of this species falls in Poland, as well as other sites. The populations of *D. reticulatus* in Poland, which have been confirmed by collecting ticks from vegetation, are located in the north-eastern and western parts of the country, although there are also reports of *D. reticulatus* occurring on hosts in several parts of Poland which have not been confirmed by collecting ticks from vegetation. Until this research was carried out, the view was that this species does not occur in the western part of Poland in the area between the Vistula and Oder rivers. In the site surveys conducted in the Lubuskie Province (western part of Poland around the city of Zielona Góra, about 55 km from the Polish-German border), during the springtime activity peak for adult stages looking for hosts, seven natural implantations of *D. reticulatus* were discovered where 208 tick specimens were collected by flagging. These were exclusively adult stages, including 127 females and 81 males. Because of the distance (around 350 km) from the nearest focus in Mazuria in North-eastern Poland, the populations discovered have been named the *D. reticulatus* "Lubuskie Focus". The research proves for the first time that *D. reticulatus* occurs in Western Poland. The research indicates that *D. reticulatus* is the second most important tick in Poland, after *Ixodes ricinus* (L.), which is epidemiologically very important, especially as a parasite on dogs and cattle. The proliferation of the meadow tick in Central Europe is inseparably linked with the expansion of canine babesiosis.

Link to the article: http://www.springerlink.com/content/t3487445317k7111/fulltext.pdf

Key words: Tick-borne diseases

VBORNET comment: 2011-03-01

This paper presents new insights on the distribution of *D. reticulates* in Europe by finding questing adult specimens in the western region of Poland where it was usually considered that the species was absent. This area defined as a break in distribution of the species between the "western European tick population from UK to Germany and Moldova" and the "north-eastern Russian tick population from north-eastern Poland to Siberia". As mentioned by the author, a further study should be conducted in Poland. This discovery points out many unresolved questions: (i) Was this break real or did it reflect a lack of sampling effort in this area? Do we know only what we look for? (ii) Do these two tick populations exist and do they show morphological, ecological or genetic differences?, (iii) Is this new tick population in Western Poland a distinct foci or an extension from the German population? (iv) Is this new population connected or going to be connected to the north-eastern population and what would be the epidemiological consequences of such phenomenon?

A Population Model to Describe the Distribution and Seasonal Dynamics of the Tick *Hyalomma marginatum* in the Mediterranean Basin.

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Transboundary and Emerging Diseases 2011 Jan 12; doi: 10.1111/j.1865-1682.2010.01198.x. [Epub ahead of print]

A dynamic population model of *Hyalomma marginatum*, the vector of several pathogens in the western Palearctic, was developed to simulate effects of temperature and water vapour deficit (VD) on tick survival, development rates and seasonality. Base tick survival and development rates were obtained from laboratory-controlled experiments or calculated from reported data. These rates were modelled as temperature-dependant time delays or accumulated mortality by temperature and water VD stress. Using daily data derived from a gridded data set at 10-min resolution, the model reached stable and cyclical equilibria in an area that corresponds largely with the reported distribution of the tick in western Palearctic. The model did not identify a potential range of suitable climate for the tick out of the known distribution area, implying that under current climate conditions, there is no potential to spread at the spatial scale of the model. Tick die-out at northern latitudes was attributed to a steady increase in duration of the development rates of engorged nymphs to adults and hence increased mortality in this stage. Low developmental rates in northern latitudes produced the accumulation of most of the nymphal stock in late summer and early autumn, which cannot moult to adults because of the low temperatures of late autumn and winter. The tick did not produced self-sustained populations in areas where yearly accumulated temperatures were below 3000-4000°C, a limit roughly found at latitudes north of 47ºN. Tick die-out in sites southern to 34ºN was attributed to the mortality rates of engorged nymphs, which moult in late spring and summer, in the season where temperatures and water vapour stresses were highest. These findings and future applications of the model in investigating the dynamics of pathogens potentially transmitted by *H. marginatum* are discussed.

Link to the article: http://onlinelibrary.wiley.com/doi/10.1111/j.1865-1682.2010.01198.x/pdf
Key words: Crimean Congo Haemorrhagic Fever

VBORNET comment: 2011-03-17

This paper provides the first report of a process-based, population dynamics model for *Hyalomma marginatum* (Acari, Ixodidae), a widespread tick of major veterinary and public-health importance. It is considered as the main vector for Crimean-Congo haemorrhagic fever virus. A considerable work, including laboratory experiments, has been achieved to build and validate the model and assess its outcome. The dependence of tick life traits on temperature and water vapour deficit was used to predict the geographic distribution of areas favourable to the installation of *H. marginatum* populations, and the seasonality of the different tick instars. This model has many potential uses, e.g. for CCHF epidemiology, or to assess tick control strategies, etc. However, another more methodology-oriented paper would be useful for a more thorough exposition of the model, including details on the simulation strategy and sensitivity analysis which are crucial in this kind of study.

4. SCIENTIFIC ADVANCES: PHLEBOTOMINE SAND FLIES

Efficacy of commercial mosquito traps in capturing phlebotomine sand flies (Diptera: Psychodidae) in Egypt.

Hoel DF [1], Kline DL [2], Hogsette JA [2], Bernier UR [2], El-Hossary SS [3], Hanafi HA [3], Watany N [3], Fawaz EY [3], Furman BD [3], Obenauer PJ [3], Szumlas DE [4]

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Four types of commercial mosquito control traps, the Mosquito Magnet Pro (MMP), the Sentinel 360 (S360), the BG-Sentinel (BGS), and the Mega-Catch Ultra (MCU), were compared with a standard Centers for Disease Control and Prevention (CDC) light trap for efficacy in collecting phlebotomine sand flies (Diptera: Psychodidae) in a small farming village in the Nile River Valley 10 km north of Aswan, Egypt. Each trap was baited with either carbon dioxide (CO2) from combustion of butane gas (MMP), dry ice (CDC and BGS traps), light (MCU and S360), or dry ice and light (CDC). Traps were rotated through five sites in a 5 x 5 Latin square design, repeated four times during the height of the sand fly season (June, August, and September 2007) at a site where 94% of sand flies in past collections were *Phlebotomus papatasi* (Scopoli). A total of 6,440 sand flies was collected, of which 6,037 (93.7%) were *P. papatasi*. Of the CO2-baited traps, the BGS trap collected twice as many *P. papatasi* as the MMP and CDC light traps, and at least three times more *P. papatasi* than the light-only MCU and S360 traps ($P < 0.05$). Mean numbers (+/- SE) of *P. papatasi* captured per trap night were as follows: BGS 142.1 (+/- 45.8) > MMP 56.8 (+/- 9.0) > CDC 52.3 (+/- 6.1) > MCU 38.2 (+/- 6.4) > S360 12.6 (+/- 1.8). Results indicate that several types of commercial traps are suitable substitutes for the CDC light trap in sand fly surveillance programs.

Link to the article: http://ddr.nal.usda.gov/bitstream/10113/46183/1/IND44458866.pdf
Key words: Leishmaniasis

VBORNET comment: 2010-02-04

Sticky traps have generally been used for determining the sand fly species composition of an area, sampling randomly the species where they are set as they have no specific attractiveness. CDC light traps attract better phototropic sand flies and previous studies revealed that their effective range was less than 5 meters (Wheeler et al. 1996, Comparison of sticky-traps and CDC light-traps for sampling phlebotomine sandflies entering houses in Venezuela. Med Vet Entomol 10: 295-29). Although the results obtained from both CDC light traps and CO2-baited traps may not be reliable with respect to human–vector contact, in terms of trapping efficiency these two trapping methods appeared so far to be the most productive for both estimating the abundance of sand flies and the species composition in a study area. Commercial mosquito control traps have been developed for the residential homeowner and have gained wide acceptance for use as tools to reduce backyard mosquito populations. Beside, trap-out programs to reduce biting fly populations to a tolerable level have recently been explored using commercial mosquito traps. Some success has been achieved recently in several field studies. For instance, in Iraq, MMP traps collected over 600,000 sand flies during high season, an extraordinarily high number compared to traditional CDC light traps (Blow et al. 2007, Challenges of effective vector control: Operation Iraqi Freedom 05-07. U.S. Army Med Dep J: 46-53). Such results suggest that commercial mosquito traps might be good candidates for inclusion into integrated sand fly control programs in desert settings. They might also be employed to provide superior surveillance results commonly used traps (i.e., sticky traps or CDC light traps).
The purpose of this study was to assess whether each of four commercial mosquito traps examined in the study could catch a larger number and greater variety of sand flies than the CDC light trap. Results indicate that these commercial traps are suitable substitutes to the CDC light trap in sand fly surveillance programs. In particular, authors have showed two important results: 1) CO2-baited traps catch higher numbers of sand flies than light traps without CO2; CO2-baited unlighted traps (BGS and MMP) show to be the most efficient for sampling *P. papatasi*. 2) The BGS trap offers *P. papatasi* a large, visually attractive, unlighted target; another advantage is that it is setup directly on the ground, where sand flies are likely to rest during the day and from where they begin to forage for blood meals during the night. The results of this study suggest that BGS and MMP traps are worth using as sand fly surveillance tools and might be useful in an integrated sand fly control program.

5. VECTOR BORNE DISEASE EVENTS

TTP7 TICKS AND TICK-BORNE PATHOGENS INTERNATIONAL CONFERENCE

Dates: from August 28th to September 2nd Zaragoza (Spain)

The main theme of the conference is Integration: studies aimed toward inclusion of different strategies to solve problems in the complex world of ticks and tick-borne pathogens. Integrative and comprehensive studies intended to solve the complex puzzle of pathogen-vector-host-habitat interactions.

The congress web site http://www.unizar.es/ttp7/TTP7/Main.html
Scientific program: http://www.unizar.es/ttp7/TTP7/Science.html
Abstract submission: http://veci.eventszone.net/ttp7/abs_01.php – Deadline May 1, 2011.