Intermediate report

Contract no.:	**00.0303.PZ / K222-2998**
Reporting Period:	**01 June 2011 – 30 November 2011**
Project title:	**Mikrobiologisches Monitoring in der Schweiz von Mückenarten, die als Vektoren für human und tierpathogene Viren in Frage kommen**
1st Applicant:	PD Dr. O. Petrini Istituto cantonale di microbiologia (ICM) Via Mirasole 22A 6500 Bellinzona

1 Progress report

1.1 General considerations

The aim of this project is the monitoring of mosquito species that are either indigenous to the Ticino Canton or are slowly finding their way in the region as neobiota and are known potential vectors of human diseases, in particular of viral origin. The project has then been extended, as a pilot study, to selected parts of the Geneva Canton.

The project is a collaborative effort of ICM, Spiez Laboratory Dr. Olivier Engler, 2nd Applicant), the "Fondazione Bolle di Magadino" (FBM, Mr. Nicola Patocchi, 3rd Applicant), and the ETH Zurich (Prof. Dr. em. Peter Lüthy, 4th Applicant). BABS (Federal Office for Civil Protection) provides equal financial support to the study.

Specifically, the ***objectives of the study*** are:

1. monitoring and census of mosquito species in the regions studied that are known to be potential, competent vectors of emerging diseases [i.a. Chikungunya (CHIKV), Dengue (DENV), and West Nile Virus (WNV)];
2. Detection and possibly isolation of potentially pathogenic flaviviruses (including but not limited to CHIKV, DENV, and WNV) in the collected mosquitoes;
3. (as a follow-up study) cultivation of the isolated viruses in view further characterisation of future competence studies.

The work carried out during the reporting period was mainly related to the collection of mosquito samples in both regions. Work is now ongoing in the Spiez lab (2nd applicant, Dr. Olivier Engler) for the molecular biology detection of flaviviruses (CHIKV, DENV, WNV, Usutu virus, yellow fever virus, Japanese encephalitis virus and Sindbis virus). The results of these analyses will be included in a second intermediate report expected for April 2012.

1.2 Methods

Collection of mosquitoes was carried out by two entomologists (A. Rossi-Pedruzzi and E. Casati) with extensive experience in mosquito taxonomy, using gravid traps and CO_2 baiting. The sites visited in Ticino are presented in Figure 1.

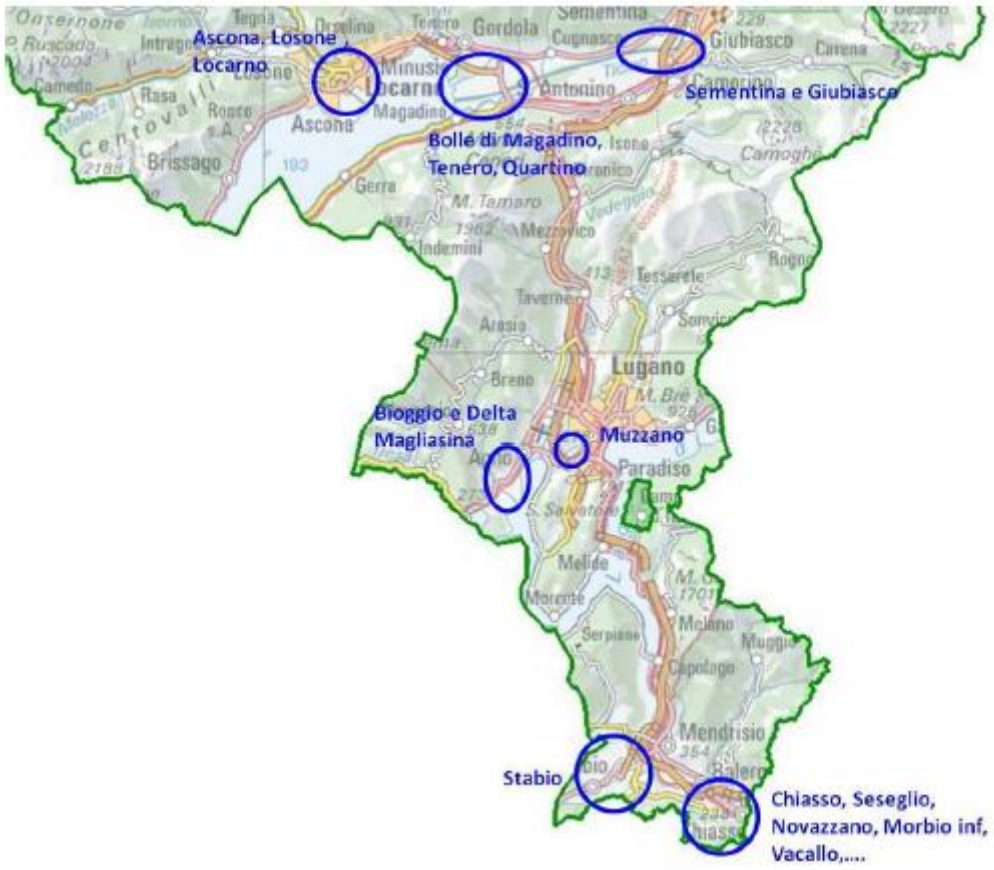

Fig. 1. Collecting sites in Ticino.

In the Geneva Canton collection was spotty and did not follow exact patterns, as this was considered a pilot study, similar to that carried out in Ticino in 2010. Depending on the outcome of the ongoing molecular analyses and the availability of financial support, it is foreseen to extend the sampling design to Geneva (and possibly Wallis) in 2012 and 2013.

Samples were stored at -80 °C until taxonomic identification; they were subsequently identified and stored again at -80 °C for further analyses.

Details on the molecular methods used for the detection and identification of vector-borne viruses will be provided in the second intermediate report.

1.3 Results

The list of the species collected and identified in Ticino is provided in Table 1. Additional details can be found in Appendix 1. No details on the species collected in Geneva are

provided here, the study having only an exploratory value, but no *Ae. Albopictus* were observed in Geneva.

Table 1. Species of mosquitoes collected in Ticino and currently used for molecular analyses are indicated in bolt

	female	male
Aedes albopictus	**402**	**303**
Aedes cinereus/geminus	356	
Aedes vexans	**1039**	
Anopheles maculipennis s.l.	173	
Anopheles plumbeus	8	
Coquillettidia buxtoni	2	
Coquillettidia richiardii	41	
Culex hortensis	5	
Culex pipiens	**2462**	
Culex sp. (females without abdomen)	416	19
Culex territans	1	
Culiseta annulata	3	
Ochlerotatus cantans	7	
Ochlerotatus caspius	4	
Ochlerotatus geniculatus	3	
Ochlerotatus intrudens?	1	
Ochlerotatus sticticus	465	

Overall, 953 female *Aedes albopictus*, 792 male *Ae. albopictus*, 1,039 *Ae. vexans*, 2,532 female *Culex pipiens*, 422 *Culex* spp. (identification not possible because the individuals were incomplete; prob *C. pipiens*) and some additional species were recorded. No *C. modestus* was collected.

1.4 Deviations from original research plan

No major deviations from the original research plan were needed. Overall, the only change was the introduction of sampling activities in Geneva, which were actually envisaged already in the original plan but due to changes to the extent of financial support were at first abandoned. ICM however decided to sponsor sampling in Geneva for one week to gather the necessary information for possible study extensions in 2012 and 2013.

1.5 Conclusions

The project is progressing well, with no major obstacles and according to the planned timelines. The molecular analysis should be completed by the end of February 2012 and we

expect results to be available by the end of March 2012 at latest. This will allow us to file a second, intermediate report by the end of April 2012 and prepare publications, if appropriate, by the beginning of Summer 2012.

2 Publications

So far no publications have been prepared or have appeared.

3 Submitted publications

So far no publications have been submitted.

4 Foreseen publications

Depending on the results of the virology investigation we foresee 1-2 publications: one related to the species collected as a short communication on an entomological journal, the other on the outcome of the virological monitoring.

Date: Bellinzona,

PD Dr. O. Petrini (on behalf of all applicants)