in Romania, has higher abundant populations and its distribution extended over all the risk areas. Anopheles daciae, possible malaria vector, has an extended distribution and higher densities than Anopheles messeae everywhere.

**Conclusion:** The malaria re-emergence risk maintains in Romania in conditions of the climate and other environmental changes. There is need of the permanent surveillance of the factors influencing this risk to prevent and control malaria re-appearance.

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**Co-occurrence of mosquito larval in natural and artificial habitats in Mazandaran Province, northern Iran**


*Mazandaran University of Medical Sciences, Sari, Iran, Islamic Republic of

**Background:** Different species of mosquitoes may have a role in the transmission of various diseases. The presence of more than one species in a habitat suggests that they share similar environmental conditions. Notwithstanding the importance of mosquitoes in the potential transmission of disease and intra and inter-species association, yet accurate data in relation to ecology and co-occurrence of mosquito species in the habitats is not available. Therefore, determining co-occurrence of this species in different habitats can be important to provide basic information in relation to vector control programs in the region. The present study focused on incidence of co-occurrence among mosquito species in Mazandaran Province, northern Iran.

**Methods & Materials:** Larvae collections were carried out from natural and artificial different habitats by standard dipping (350 cc) methods during May to December 2014, in 30 rural of 16 counties. Larvae collected from each larval habitats individually were preserved in test tubes containing lactophenol and sent to the laboratory for identification by valid key.

**Results:** Larvae were sampled from 120 habitats and identified by morphological keys. Sixteen species of mosquitoes were identified: *An. claviger*, *An. hycanus*, *An. maculipennis*, *An. marteri*, *An. plumbeus*, *An. pseudopictus*, *Cx. pippins*, *Cx. tritaeniorhynchus*, *Cx. tormentium*, *Cx. perexiguus*, *Cx. territans*, *Cx. mimeticus*, *Cx. hortensis*, *Cs. annulata*, *Cs. longiareolata*, and *Cs. morsitans*. In total, larvae were seen in 1305 co-occurrences in natural and artificial oviposition sites during the study. The highest co-occurrence was observed associated with *Cx. pippins* (630 occurrences, 48.27% of the total), *An. maculipennis* (87 occurrences, 6.66% of the total), respectively. Of these, *Cx. pippins* was found in 123 occasions in related to *Cx. tormentium* which demonstrates the highest co-occurrences of the species. *An. marteri* (1, 0.07% of the total) and *Cs. morsitans* (2, 0.15% of the total) indicated the lowest occurrence in the province.

**Conclusion:** *Cx. pippins/Cx. tormentium* shows highest co-occurrence in larval habitats in the province. Co-occurrence strengthen the common needs of these two species in the area which could indicate necessity further studies related to the biomics *Cx. pippins/Cx. tormentium* species, to provide adequate and affordable basic data for control programs in the future in the province

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**Evidence of presence of antibodies against selected arboviruses in Ijara and Marigat Districts, Kenya**


1 USAMRD-K, Nairobi, Kenya, Kenya
2 USAMRD-K, Nairobi, Kenya
3 Ministry of Public Helath and Sanitation, Nairobi, Kenya
4 International Center for Insect Physiology and Ecology (ICIPE), Nairobi, Kenya
5 International Centre for Insect Physiology and Ecology, Nairobi, Kenya
6 Jomo Kenyatta University of agriculture and technology, Nairobi, Kenya
7 USAMRU-K, Nairobi, Kenya
8 USAMRIID, Washington DC, USA

**Background:** Arboviruses are transmitted by arthropods with humans becoming infected during blood feeding by infected mosquitoes, ticks and sandflies. Characterization of arbovirus circulation and transmission in industrialized countries has been well documented, but there are many knowledge gaps in developing nations. Entomological surveys conducted so far have indicated circulation of arboviruses of significant public health importance in Aedes, Anopheles and Culex species in vast populations in Kenya, suggesting the presence of competent vector systems.

**Methods & Materials:** The human involvement in the transmission cycle of these viruses has, however, not been demonstrated. This study sought to determine the circulation of a range of arboviruses including Chikungunya, Dengu, Sindbis, Sandfly Naples, Sandfly Sicilian, Uganda S, West Nile and Zika viruses in Ijara and Marigat Districts where vector surveillance has been done.

**Results:** A total of 351 patient serum samples were analyzed for presence of antibodies using IgG ELISA. Of these, 190 (54.2%) were female and 161 (45.8%) were female, with ages ranging between 1 and 73. These were hospital based patients who presented to the hospital with fever of unknown origin. The overall arbovirus percentage circulation among these patients was 53/351 (15.1%) with 7% (10/143) in Marigat and 21% (43/208) in Ijara. Of the positives, flaviviruses were 69%, alpha viruses 29.6% and bunyaviruses 1.4%. Uganda S Virus was the highest in circulation at 10%, followed by West Nile virus 6%, Sindbis 5%, Dengu 2%, Chikungunya 1.1%, Sandfly Naples 0.2% respectively. Semliki-forest virus-specific antibodies were detected by plaque reduction neutralization test in 3/351 (0.85%) persons tested. Antibodies against Sandfly Sicilian and Zika viruses were not detected. This study constitutes the first detection of antibodies against Sandfly Naples virus in Kenya.

**Conclusion:** The study has demonstrated the presence of antibodies against selected arboviruses in the two sites amongst the