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Agroferstation and beekeeping: the LIFE VAIA project

Authors: Paolo Fontana[1] and Valeria Malagnini[1], [1]Edmund Mach Foundation

Abstract: Storms, floods, fires: the occurrence of extreme climatic events, with the dramatic repercussions they have on our territories, is the testimony of climate change in recent decades. The VAIA storm that hit North East Italy in 2018 caused extensive damage to mountain areas and their delicate ecosystems. Extreme weather events quickly create open spaces where there were forests. Agroforestry is a solution that can provide for the exploitation of the new habitat, both by introducing temporary crops and through the implementation of beekeeping. In fact, in these environments we can observe the rapid and abundant appearance of a nectarous and polleniferous flora.

A little known insect order: general information, collection, breeding and study of Italian and Mediterranean Embioptera

Authors: Paolo Fontana[1], Filippo Maria Buzzetti[2] and Stancher Gionata[2], [1]Edmund Mach Foundation, [2]Fondazione Museo Civico di Rovereto

Abstract: The Embioptera or web spinners, are perhaps the least studied and therefore least known insect order in Italy. In order to stimulate and facilitate new studies on these unique insects, general information on their biology, collection, breeding and study techniques and current knowledge on their presence in Italy and Europe are presented. A key to identify genera and an extensive bibliography are also provided.

A mobile phone application to survey and monitor the wild colonies of Apis mellifera

Authors: Paolo Fontana[1], Daniele Andreis[1] and Valeria Malagnini[1], [1]Edmund Mach Foundation

Abstract: Although Apis mellifera have been reared by humans for millennia, it remains a wild animal) as reported by ancient authors and modern beekeepers and researchers. Until a few decades ago, wild colonies of A. mellifera were largely common. However, since the early 1980s there has been a rapid and underestimated rarefaction of the “wild” colonies due to a parasite, the fearsome Varroa destructor mite. The effect of the Varroa mite on unmanaged colonies was so strong that today in Europe most of the survived honey bees live in hives managed by beekeepers. Indeed, for many years it has even been thought that in Europe wild honey bees were disappeared. Rather surprisingly, there are no scientific studies on this phenomenon and the only available information deals with the number and distribution of honey bees colonies owned by beekeepers. In recent years, reports and interest in wild honey bee colonies have increased significantly and today we can say that even in many areas of Europe these colonies are still there. The app BeeWild intends to survey and monitor these wild colonies through a typical citizen science action.

Fruit fly invasion a global phenomenon with huge agricultural and trading implications

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Abstract: Fruit flies (Diptera: Tephritidae) comprise a major group of pests including several invasive species, such as the Mediterranean fruit fly, the oriental fruit fly and the peach fruit fly that threaten sustainable fruit and vegetable production worldwide. Because of the extremely high economic relevance invasion events have documented since the beginning of the last century. Intense government-mandated eradication campaigns are implemented after the documentation of an invasion event of a fruit fly of economic importance that almost always declared as successful. New invasion events following an eradication campaign often trigger debates regarding the success of the operation. The risks of arrival, establishment and range expansion of invasive fruit flies are expected to escalate because of global climate change, increased trade and human mobility. Establishment of an invasive fruit fly in a new area, besides having a huge direct impact on fruit and/or vegetable production, increases insecticide use and dramatically affects trading of fresh commodities and impose quarantine regulations. Incursion of invasive fruit flies in Australia, north America and Europe is estimated to result in losses of billions of Euros because of direct and indirect damage. And a single eradication campaign costs several million Euros. The current paper covers several aspects of the fruit fly invasion biology, including (a) historical perspectives, (b) the enormous impact on local, national and regional economies, (c) interception and detection efforts, (d) management of invasion event including eradication campaigns, and (d) predictive ecological and climatic modelling. The need for revisiting existing policies is also highlighted.