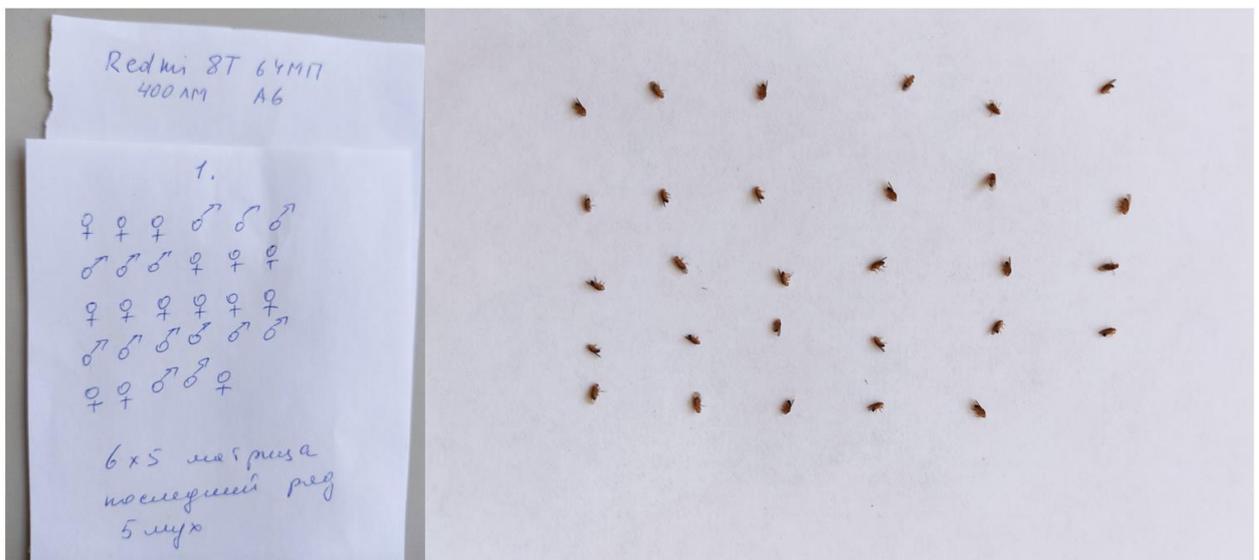


## Supplementary file for the paper

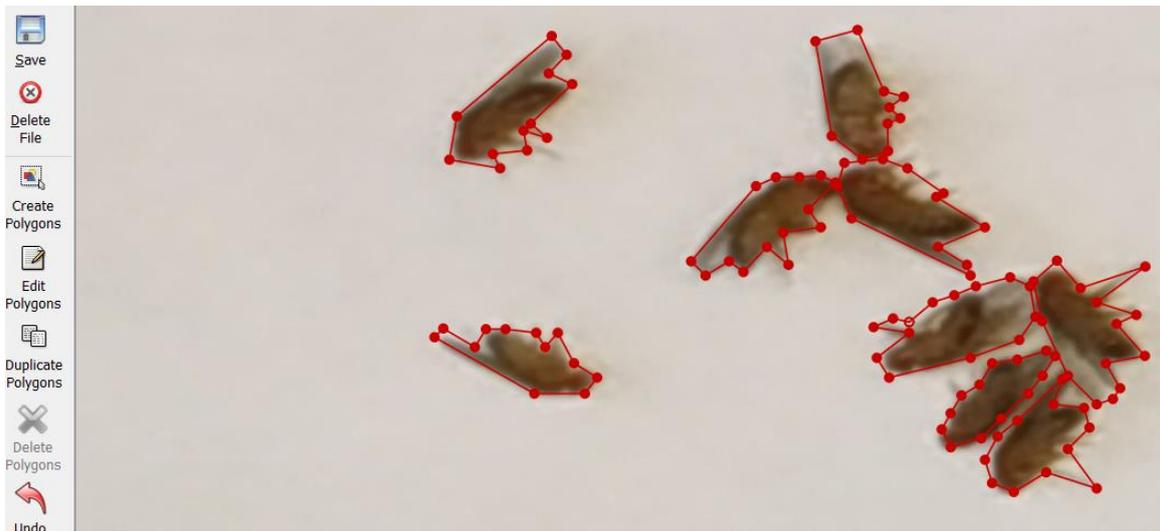
“Classification of fruit flies by gender in images using smartphones and the YOLOv4-tiny neural network“ by Genaev M.A., Komyshev E.G., Shishkina O.D., Adonyeva N.V., Karpova E.K., Gruntenko N.E., Zakharenko L.P., Koval V.S., Afonnikov D.A.



**Figure S1.** A sample image of flies sorted by gender on an A6 sheet for neural network training. On the left of the image are females and on the right are males. The males are additionally marked with a piece of white paper on a dark background.



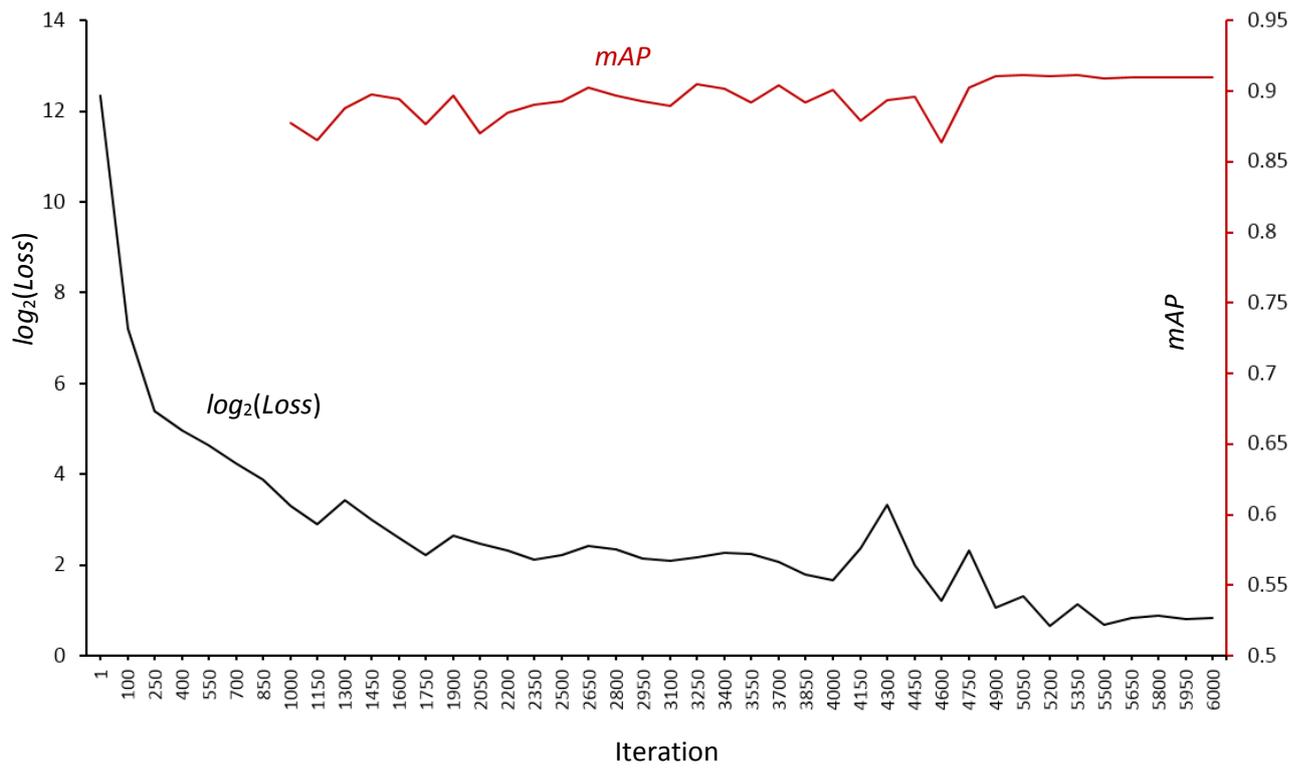
**Figure S2.** A sample image of flies arranged on a grid. On the left side there is a legend, on which for each of the flies of the image the gender is indicated. At the top of the legend the type of device is indicated, the caption in Russian at the bottom indicates the size of the grid with the arrangement of the flies.



**Figure S3.** Example of polygons of flies on the image obtained by LabelMe program.



**Figure S4.** Example of an artificially generated image of flies on a sheet of paper.



**Figure S5.** Changes of the loss function ( $Loss$ ) and mean average precision ( $mAP$ ) during training of the YOLOv4-tiny-synt+mosaic strategy for the validation dataset. X-axis: iteration number; left Y-axis:  $\log_2(Loss)$ , black line; right Y-axis:  $mAP$ , red line starting from the iteration 1000.