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TAXONOMY LIST OF HYMENOPTERA VISITORS OF *COSMOS BIPINNATUS* INFLORESCENCES IN BELARUS

Studying of anthophilous insects has a great importance as they let the cross-pollination process to occur. Consequently pollinators provide the seed production process occur effectively. One can't deny that reproduction process of the majority of flowering plants is dependent on anthophilous insects. Native agricultural plants being pollinated by insects fruit well and there is no problems with symbiotic relations between plants inside phytocenosis. But when it comes to plants being introduced in our phytocenosis the importance of studying of symbiotic relations between plants and their pollinators becomes obvious. As the introduced species could be more competitive as native plants this introduction could lead to rearrangement of structure of whole phytocenosis. In this way the relevance of such researches is obvious.

So the research goal is to identify the taxonomy list of Hymenoptera visiting the inflorescences of *Cosmos bipinnatus* in Belarus.

Cosmos bipinnatus Cav. is annual plant. Height is about 1,25 meters. Flowers form large inflorescences located on the top of the stems. Central flowers are bisexual and colored yellow. Peripheral flowers (7 or 9 flowers per inflorescence) are colored red or white. Flowering lasts from July till October. *Cosmos bipinnatus* is a striking example of introduces species widely used as ornamental plant.

The collecting of insects was held during July 2015. Insects were caught on the territory of Leshnitsa village (Berezino district, Minsk region, Republic of Belarus). Insects were caught by hands while visiting the inflorescence of *Cosmos bipinnatus.* The taxonomic identification has been established with the key.

During the research we have registered 4 species of Hymenoptera as the visitors of inflorescences of *Cosmos bipinnatus.* Representatives of all 4 species are polythrophic pollinators of flowering plants. These species are listed in the following table.

Table 1. – Taxonomy list of Hymenoptera visitors of inflorescences of *Cosmos bipinnatus* Cav.

Family	Species
Apidae	*Apis mellifera* L.
	Bombus agrorum Fabricius
	Bombus lapidarius L.
Halictidae	*Halictus sexcinctus* Fabricius

All of these species were registered as the visitors of the inflorescences of *Cosmos bipinnatus* for the first time in Belarus.

In this way there were 4 species of Hymenoptera registered as visitors of inflorescences of *Cosmos bipinnatus* Cav. in Belarus. These species belong to Apidae and Halictidae families. All of these species were registered as the visitors of the inflorescences of *Cosmos bipinnatus* for the first time in Belarus.

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X-RAY DETECTORS USED FOR SIGNAL DETECTION IN COMPUTED TOMOGRAPHY

We consider detecting system in X-ray Computed Tomography (CT) is modelling of X-ray transport in the body of patient who undergoes CT examination.

Multislice spiral CT contain several rows of detectors. There are 512 to 1024 detectors in the rotation plane. Therefore the field size is 50 to 70 cm. There are 16 to 64 detectors in transverse plane, therefore field size is 0,2 to 4 cm.

Material is chosen based on the sensitivity of to different energies in X-ray spectrum. This characteristics of a material can be seen on a graph showing the dependence of cross-section of interaction of radiation with matter on energy. This dependence is not monotonic for low-energy radiation. Photoeffect is the main physical effect that occurs at these energies. This effect takes place when X-ray quantum transfers all its energy to a electron from one of electron shells. If the energy of electron of the electron shell (i.e. K-shell) is greater than the energy of X-ray quantum, the photoeffect is not possible. This effect is seen from the jump of cross-section at this energy (K-border). Different substances have different values of K-border. Different sources of literature state that depending on a particular X-ray detector material the value of K-border (or several K-borders if present) may significantly affect the effectiveness of absorption.

The typical detector material of CT is Gd_2O_2S. The thickness of the detector is 1 to 1,4 mm. Detectors are separated by Ta plates 100 um each. These plates lead to fall of effectiveness of registration by 20–30%. To solve this problem recently they suggest using such active substances as CdTe in detectors. Active substances transfer X-ray radiation directly into electric charge. This charge is collected for about 1 ns, that gives the possibility to detect single photons and even measure their energy.

Some CT produced by General Electric have working substance named Gemstone. CT scanner GE HiSpeed X/iF uses ceramic scintillator Highligh ($Y_2Gd_2O_3$:Eu).

Modern CT can produce images with the resolution of 512×512 pixels. The resolution of the image is increased by interpolation for better comfortable analysing.

There are four main generations of CT based on the detecting system position. An older "third" generation had detectors were situated in an arc that rotated with the same speed as the source. Currently this generation is most popular. The detec-

tors of fourth generation CT systems are fixed in space. This variant of detectors provides better signal registration.

Characteristics of detecting systems in CT may be improved by development of computer technology, new signal detection systems and other advances.

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GROWTH ASTACUS ASTACUS IN EXPERIMENTAL CONDITIONS AT DIFFERENT PLANTING DENSITIES

The aquaculture of crawfishes within long years developed in the countries with tropical and subtropical climate, but in midlatitudes industrial cultivation of hydrobionts takes quite modest place. Value of an aquaculture for Belarus which doesn't have an entry in the World Ocean, but possessing a significant amount of internal reservoirs is especially big. In our country their cultivation at the moment wasn't beyond researches.

The success of rearing juvenile crawfish in aquaculture is determined by many factors: quality of the water environment (temperature, pH, oxygen mode, purity of water, photoperiod, etc.), quality of a forage and diet, control of diseases, sizes and age of individuals and density of their landing.

For studying of growth of wide-brimmed cancer (Astacus astacus) at the different density of landing in vitro the juveniles of cancer were divided into control groups.

Further crayfish for convenience of carrying out experiment on dwelling in case of group landing were divided and placed in 3 aquariums, everyone in amount of 7 l. In an aquarium No. 1 5 individuals, in an aquarium No. 2 – 10 individuals, in an aquarium No. 3 – 19 individuals were replaced. Other larvae, in number of 10, put in separate glass reservoirs in amount 1 l for studying of density of landing in case of single dwelling.

At the age of 3 months the average mass of all 10 individuals in case of single landing constituted 283,1 mg, in 6 months – 452,5 mg, in 7 months – 488,5 mg, in 8 months – 625,9 mg. Further results for individuals in 3 aquariums in case of group landing are shown. At the age of 3 months average weight constituted 289,9 mg, in 6 months – 450,1 mg, in 7 months – 563,1 mg, in 8 months – 759,5 mg.

Researches showed that the number of the individuals who are in one reservoir influences death rate of crayfish. The more individuals is in one reservoir, the death rate is higher. From 10 individuals who lived one by one only 1 cancer died.

At the increased landing density final weight indicators were higher, than in case of lower. At the low density high survival and increase in weight, rather independent of density, are noted. In the conditions of the increased landing density