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題名	Development of an automatic sampling machine for mosquito surveillance
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概要	Mosquitoes are extremely dangerous because they carry infectious diseases such as dengue fever and malaria. Therefore, mosquito surveillance is being conducted around the world. The aim of this study is to reduce the burden on researchers who sample the mosquitoes for a long time. We have developed an automatic sampling machines which survey mosquitoes automatically by utilizing the techniques learned in Technology Education classes such as mechatronics and programming. Surveillance will last one to three days, and the attracted mosquitoes are sucked by a fan and sent to the insect trap container. By changing the insect trap container automatically by using a DC motor and ultrasonic sensor, it is possible to sample every hour. The developed sampling machine can independently catch mosquitoes over time, therefore it is possible to investigate the seasonal prevalence of mosquitoes. LEGO Mindstorms was used to develop the sampling machine. It is an effective kit for building new research and development of the system because it can be disassembled and assembled and it is easy to create a program. Based on the idea that mosquitoes sense carbon dioxide, body temperature, and by smell to search for a blood-sucking target. In this study, dry ice, chemical warmers, and Tricholoma matsutake oil were used to attract mosquitoes for surveillance. As the result of surveillance, we succeeded in capturing Aedes albopictus by using Tricholoma Matsutake oil as an attractant. Since different types of mosquitoes are caught depending on the attractant, it is necessary to select an appropriate attractant depending on the type of mosquito when conducting surveillance. In the future, we will develop and mass-produce small and inexpensive machines for surveillance over a wider area.
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