

Individual identification and extracting risk areas for reducing damage by
the Japanese black bear (*Ursus thibetanus japonicus*) in
the Satochi-Satoyama of Gunma Prefecture, Japan

Abstract of Doctoral Thesis

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In this study, we conducted individual identification of bears and extraction of the risk areas (hereinafter, [RAs]) for the purpose of elucidating the actual condition of the urban bear and proposing effective measures against damage in the Satochi where conflict between human and bears is occurring. We expect to be able to reduce the damage by bears in other areas by dealing strategically like the study area. The camera-trapping method and hair-trapping method were used for individual identification. This study was conducted in two years. As a result, there were 21 bears identified by the camera-trapping method and 41 bears identified by the hair-trapping method. In the camera trap, 4 bears were identified for two consecutive years. As a result of analyzing the status of the identified bears, we concluded that bears moved in and out of the study area frequently. Furthermore, the population density of bears in autumn was affected by the hard mast production. Based on the length of period during which inhabitation could be confirmed, we classified individuals into resident bears and transit bears. As a result, the 2 bears that approached the village for two consecutive years were resident bears. We considered that these 2 bears were urban bear, and likely involved in the damage at the village. In addition, we examined the possibility of the same bear for the identification individuals of both methods. From the result, we concluded that 90% of individuals inhabited the study area are transit bears and only 10% of resident bears. In study areas, reducing damage alone by capturing was difficult, and a method of proceeding in a complex manner including other measures is effective. Then, we identified the environmental factors involved in the intrusion of the bear, and extracted the place where they existed as RAs. The place where

measures should be taken preferentially became clear, and the direction of measures could be obtained by extracting RAs. In addition, RAs were confirmed over time and regional universality in the fruit tree area. Therefore, application of RAs was expected in fruit tree areas other than the study area. Finally, we could demonstrate that damage by bears can be reduced by protecting RAs with electric fence. Therefore, we concluded that extraction of RAs and installation of electric fence are effective against bear damage. We expect to be able to reduce the damage by bears in other areas by dealing strategically like the study area. We consider that the result of this study is knowledge that provides important information to strategically proceed measures against bear damage in the study area and other areas.