

October 23, 2017

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Bee honey production and ecological knowledge: Knowledge transmission for sustainable NTFP production

Public and scientific interest in degradation of pollination-related ecosystem services is increasing. That is a global environmental issue related to the loss of biodiversity. Human interventions including beekeeping can contribute to the management of ecosystem services. Ecological and local traditional knowledge of management is transmitted with different content and quality (Park & Youn, 2012; Kohsaka et al., 2015). Ecosystem services of pollinators are gaining importance globally. For example, the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem services (IPBES) issued one of the first thematic reports focusing on pollination (IPBES, 2016).

As the current trend of beekeeping in Japan, production of bee honey is gradually increasing, and the number of households with beekeepers has been increasing from the year 2005. Small-scale beekeeping is implemented with various methods in the country, for instance, beekeeping in urban areas such as central business districts in Tokyo is conducted by participatory approaches. Satoyama ecosystems in Japan include urban and rural ecosystems, and pollination services are expected to contribute to maintain such complex ecosystems. To maintain ecosystem services including pollination services, monitoring and indicator based managements with relevant incentives for stakeholders are necessary.

The role of beekeeping as a human intervention in pollination has been highlighted in the national and international arenas for sharing the relevant knowledge and experience. However, the status and trend of knowledge transmission in beekeeping have been overlooked, partially due to relatively small share of products from beekeeping in the national economy (and the difficulty of capturing the real economic share) in some countries. Transmission of ecological and local knowledge in individual regions can contribute to sustainable beekeeping as an underpinning factor. In this research, status of knowledge transmission and the relevant issues in the transmission are analyzed. Identifying the information channels of beekeeping can be expected to contribute to implementation of relevant policies and activities.

The research site is the Nagano Prefecture, Japan which is well-known as the largest

producer of the bee honey in Japan. Nagano has a diverse topography including mountainous areas and flatlands with rivers. By a questionnaire survey, information channels and productivity of bee honey of individual beekeepers were identified. The respondents of the questionnaire were members of the association of beekeepers in Nagano. The questionnaire survey was conducted in 2017. In this survey, we sent the questionnaires to all members, 280 in total, and obtained answers from 153 members.

As a result of the analysis, the effect of different information channels of beekeeping on productivity was identified. The beekeepers who obtained knowledge from their parents or relatives had a relatively large number of bee colonies. Secondly, the director, district leaders, and the younger generations' leader frequently recognized and mentioned the need to maintain the ecological condition of bee habitats in discussions and interviews in the annual meeting of their association. Their parents are beekeepers in most cases. It seemed that they tended to understand the importance of healthy ecological conditions for sustainable beekeeping through their experience.

There is a challenge to open the knowledge transmission channels beyond family members, transforming the knowledge from tacit knowledge shared by limited members to an explicit manualized knowledge. This is potentially a fundamental question not only for beekeeping but for forestry, agriculture, and other related practices. The task is urgent as some of the knowledge can be lost where there are no successors in the family or neighboring regions. As an example of countermeasure, the Japanese government is collecting tacit knowledge of experts by using information and communications technologies (ICT) for transmission of the knowledge to future generations and to protect the knowledge as intellectual property. Recording and compiling this knowledge is an urgent task in depopulated and aging society.

Reference

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