Projecting the redistribution of wild food species under future climate and land use changes in the context of current household dependencies on wild harvesting in rural communities of the Sakha Republic (Russian Far East).

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Abstract

Traditional food systems support the livelihoods and well-being of rural communities, contributing to reduce inequalities, particularly in remote, asset-poor areas. However, debates continue about the nature and extent of the dependence on wild food harvesting in mixed household economies and how existing dependencies may be affected by future climate and environmental changes. Here, we combine results from a comprehensive systematic household survey involving 400 households from 18 rural settlements across the Republic of Sakha (RS; Russian Far East), with projections of the future redistribution of 56 important wild food species under alternative climate and land use change scenarios to (1) profile current household dependencies on wild food harvesting in terms of consumption and shared income; and (2) compare them with future (2050s) projected changes in the regional distribution and local availability of wild foods under alternative climate and land use change scenarios. Whereas current total average household dependencies are in general relatively low across settlements, we find that wild foods represent a significant

proportion of the food consumed by food group evidencing their dietary importance. Trends are nonetheless associated to important regional variability with remote and isolated settlements in the Arctic region of the RS having larger consumption and income dependencies with stronger links to animal products, while those in more developed and better connected southern and central regions show lower dependencies dominated by non-animal (plant-based products and fungi). Meanwhile, our models project a clear gradient of strong future decreases in habitat suitability and range contractions of food species in southern regions and moderate increases in habitat suitability and range expansions in northern regions by midcentury. These changes, larger with increasing strength of emission scenario, anticipate low to moderate changes in species richness but important changes in species composition (via species turnover), which are likely to pose new challenges and opportunities for the local communities according to the existing current dependencies.