Why and how far hunter-gatherers groups migrate

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Hunter-gathers around the world often migrate when food resources become scarce. Just how far and how often they move varies widely.

A new model developed by Marcus Hamilton and former SFI Research Fellow Eric Rupley, with Hyejin Youn, Geoffrey West, and Arizona State University's Jose Lobo, seeks to predict the residential mobility of hunter-gatherer groups by understanding the evolved biomechanics of humans and the available energy in their particular ecosystems.

"Our model explains and predicts the variation in observed residential mobility," write the authors of the study, published this week in Complexity Digest. "Specifically, we show that both the scale of hunter-gatherer mobility and variation in rates of mobility across different environments can be mathematically derived from fundamental ecological theory."

Like other mammals that migrate by walking, the distance humans can travel on foot is limited by body size. At the same time, how far and how often hunter-gatherers need to move depends on the food resources—the available energy—in the local environment.

While cultural, economic, and historical factors add variation to the model, environmental factors like temperature and humidity play more predictable roles. On a gross scale, the new model helps explain the ecological factors that guide hunter-gatherer migration.

"The overall constraints that shape hunter-gatherer spatial ecology are regular, predictable, and coarse-grained aspects of the environment," write the authors.

More information: The ecological and evolutionary energetics of hunter-gatherer residential mobility. arxiv.org/abs/1602.00631

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