

Does greed help a forager survive?

July 12 2017, by Jenna Marshall



Credit: Santa Fe Institute

In a world of sometimes scarce resources, greed, the trait that encourages resource accumulation, would seem to be an evolutionary advantage. But, new research reveals that while greed may appear to be a

good strategy, it isn't often the best one.

"Greed is not necessarily good," explained investigator Sid Redner, SFI Professor. "When a forager wanders randomly and depletes resources, being greedy means you may stay far away from starvation, but being greedy also means you deplete your environment more quickly."

In the past, researchers have studied what happens to a forager that wanders in an environment, with either perfect or limited knowledge of the location of food resources. The new model incorporates both resource depletion—[areas](#) where a forager loiters that can become exhausted—and also "greed"—where the forager moves preferentially towards local resources rather than exploring new areas.

This foraging model builds on a long tradition of problems designed to strategize the best way to use or consume a given resource. While it might seem that greed would help a forager by providing more energy to continue on, that wasn't the case.

A greedy forager might initially do well, as it gathers energy stores to survive more effectively, but the more rapid depletion of resources will lead them into a type of death spiral, where the forager is eventually surrounded by an area where all the food has been consumed. Maximum survival occurred when greed was roughly three-fourths of its maximum possible value.

While some level of greed is beneficial, "too much greed is bad" said Redner.

"Does greed help a forager survive?" by Redner, SFI Graduate Fellow Uttam Bhat, and Olivier Bénichou of the Université Pierre et Marie Curie in France, is published in *Physical Review E*.

More information: U. Bhat et al. Does greed help a forager survive?, *Physical Review E* (2017). [DOI: 10.1103/PhysRevE.95.062119](https://doi.org/10.1103/PhysRevE.95.062119)

Provided by Santa Fe Institute

Citation: Does greed help a forager survive? (2017, July 12) retrieved 21 June 2024 from <https://phys.org/news/2017-07-greed-forager-survive.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.