

Mapping amphibian disease patterns

Noreen Parks

Over the past two decades the worldwide emergence of the fungal pathogen *Batrachochytrium dendrobatidis* (Bd), which causes chytridiomycosis, has drastically impacted populations of frogs, toads, and salamanders. Currently, as much as 40% of the roughly 6300 known amphibian species are deemed imperiled, and chytridiomycosis is widely considered the worst infectious disease ever recorded among wildlife. However, a novel online knowledge bank that provides real-time surveillance of the pathogen is now giving amphibian conservationists a powerful tool for curtailing this biodiversity crisis.

In 2007, US Forest Service ecologist Dede Olson (Corvallis, OR) initiated Bd-Maps to globally track the incidence of Bd and compile information on affected species. The effort soon became an international

collaboration. To date, the interactive online database – accessible to any interested party – includes some 36 000 records of organisms belonging to 1200 species, sampled at more than 4000 sites around the world. Maps of those data pinpoint where Bd testing has occurred and whether tested animals were infected. The information also allows researchers to extrapolate the probability of the disease occurring in specific locations and the severity of the threat facing local amphibian populations.

Thus far Bd has shown up in 42% of amphibian species tested and in nearly two-thirds of the 82 countries sampled. The analysis by Olson and her colleagues (PLoS ONE 2013; doi:10.1371/journal.pone.0056802) reveals that amphibian communities with higher species numbers are more likely to be infected. “This suggests that biodiversity may affect the occurrence and transmission of Bd”, Olson says. “Infection rates are lower in areas with larger ranges in temperature, indicating that climate also

plays a role in its spread. Bd is an aquatic fungus that grows optimally in cool, moist conditions, so the warming of high-latitude areas predicted by climate-change models could favor the expansion of its range”, she warns. Overall, the highest rates of Bd detection were in regions of montane grasslands and shrublands.

The rapid, continuing spread of Bd into new areas suggests that the disease has not yet reached a global equilibrium. Studies are underway to understand why some amphibian groups are more susceptible to Bd than others. Meanwhile, the Bd-Maps website (www.bd-maps.net) offers a forum for sharing information on field-tested strategies for forestalling the disease. “The goal is to move beyond trial-and-error conservation by stimulating scientific exchange on design studies and developing standardized methods for monitoring the effectiveness of various solutions over time”, explains Olson. ■

Germans curb waste through online food-sharing

Jen Fela

A network of individuals, retailers, and food producers is tackling the food-waste problem in Germany using a new online platform, www.foodsharing.de. Participants post “baskets” of unwanted but edible food that would otherwise end up being discarded; instead, the surplus food is reserved and picked up by other registered members. No money is exchanged.

Valentin Thurn, the director of the 2011 German documentary *Taste the Waste*, says he began the food-sharing project as a practical way for everyone to help solve the food-waste crisis: “The difference between food banks and food sharing is that at food banks people have to prove they are needy; it's like they have to take the scraps from the rich, so it's a bit stigmatized. With food sharing, the idea is to say that this is good

food and everybody can take it. You don't have to prove anything. Of course, people with little money use it more, but we don't ask anybody. You could be a millionaire – no problem.” As described in *Taste the Waste*, more than half of the food produced in Germany ends up in the trash; a total of 15 million tons of food – worth €20 million – is discarded in the country each year, and the quantity of food wasted in Europe and North America is enough to feed all of the hungry people on the planet three times over.

The program has been very successful since it was launched in January 2013, with over 14 000 registered members as of mid-March. According to the website, more than 6600 lbs (3012 kg) of food that would otherwise have been thrown



Ready to be shared – discarded food, as shown in the documentary *Taste the Waste*.

away has been shared among participants in those 2 months. Thurn says this figure does not include the often large quantities of food that are dropped at “hotspots” in cities like Berlin and Cologne.

Thurn hopes to spread the idea and start food-sharing networks in other countries, including the US. A food-sharing smartphone application is also currently being developed. ■