

Biofuel 'Pests' Key to Energy Conversion Storage

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In South Dakota, [news that researchers have discovered that an obscure but fast-growing moth species](#) [1] has a potentially destructive appetite for switchgrass, raises a question. Is the appearance of this destructive pest good news or bad news?

Generally, [pests and invasive species are considered very, very bad news](#) [2]. We are conditioned to think this way. The ISSG defines the [100 World's worst invasive alien Species](#) [3], as species that are a major threat to biodiversity (the collected wealth of the world's species of plants, animals and other organisms) as well as to agriculture and other human interests.

But isn't a pest just something that is more efficient than its competitors, and thereby upsets the existing order?

Is an invasive plant not simply one that has found a way to generate more growth from ambient CO₂, sunlight and water, in a given geography, than its rivals. Is not a pest simply an organism that has found a way to utilize waste (or underutilized) biomass more effectively as an energy source?

I mean no disrespect to the pest control industry, and clearly am affected by bubonic plague as much as the next person. But a reconsideration of the pest and the invasive species is in order. Our love of the china shop should not lead us to try and eradicate the bull.

Consider, for example, the termite. I haven't been able to calculate how much has been spent — but it is in the tens of millions of dollars — in search of a method that can efficiently convert wood cellulose to energy. Termites, none of whom have managed to put see of their sons and daughters win a major university grant or degree, have been doing it for eons.

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Consider, for example, bacteria. I haven't been able to calculate how much has been spent — but it is in the hundreds of millions of dollars — in search of a method that can efficiently convert all sorts of waste material to energy. Bacteria, none of whom are (formally) attending Stanford, have been doing it since, well, the dawn of time.

Consider, for example, algae. I couldn't tell you how much has been spent on the invention of solar energy storage systems and batteries, but it is probably in the zillions. Algae are rather good at converting sunlight to sugars, but second to none at converting excess sunlight into stored energy in the form of fats.

So much of what we are doing in biomass-based research is, in fact, a form of interviewing pests and invasive species to unlock their secrets. Worth considering as we routinely apply antibacterial lotions, chemicals to wipe out algal blooms, and hire the local Orkin representative to come and wipe out a nest of termites.

We define pest as a threat to a native crop — which is to say “a threat to the existing order”, which is a remarkable activity, when you think about it, not completely dissimilar than Luddites destroying early industrial machines of the early 1800s in hopes of preventing the onset of the Industrial Revolution.

“Native crop,” as it happens, is simply what we found there when we, as humans, latterly arrived. What, ultimately, is native to Florida, or the Sahara, or northern India. The Himalayas are growing, and the Atlantic is spreading, and in some measure of eons what grows in a given geography will be utterly changed by evolution and continental drift.

Conservative steps in the development of alternatives to the current eco-system are, generally, a good idea, but we should probably recognize it as a crazy fondness for the conditions that favor ourselves, and certain favored species, rather than a true embrace of biodiversity. Unless, of course, someone is willing to embrace a world in which we cease to fight against disease — the central premise of which is the competition between two groups of organisms (that is, you and the invading organism) for control of the feedstock.

Protection of the ecosystem should probably be recognized, on so many levels, as protection of what we like, or what we found in a place we like. Consider Lane's Theorem, that “protection of biodiversity is proportional to size of the organism”, when next you wash your hands with soap and water to remove the bacteria, before picking up a newspaper made from crushing and scalding cellulose, to read sympathetically about the extravagant efforts to save the whales.

Meanwhile, there are the invasive plants. There are the invasive plants we like and can control — and the ones that don't respond well to our entreaties. After all, the potato is an intruding plant, in most geographies, and the carrot and the orange and the apple. The cause of wheat's success in the Middle East — that gave rise to the birth of agriculture and human civilization? Success in invading territory whose energy was previously soaked up by lesser competitors.

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What should we make of arundo, jatropha, kudzu, duckweed, or algae. All considered invasive species by one group or another — and, on a given Sunday when you have it in your pond, pool, or drainpipe, probably by yourself.

Yet they are keys to a host of innovations in energy conversion and storage that, whatever the future of biofuels may be, are of enduring importance.

What should we make of termites and bacteria. Platforms of species that are considered, broadly, as pests, yet again they are models of efficient energy conversion and storage that we have much to learn from.

There is much to worry about when it comes to pests and invasive species, but it is probably well worth remembering that the most invasive species is, after all, *homo sapiens sapiens* — and the extravagant threat that we are fighting, in climate change, is being engaged not on behalf of the downtrodden species of the world, but rather on behalf of ourselves and a war to preserve the favorable climactic conditions under which we have, over a few million years, savagely seized power over the competing domains of life and over which we imperiously and rudely rule.

The biodiversity movement? It's a joke. There will be as much biodiversity in "[life after people](#) [4]" as before. In our efforts to save or rehabilitate a few favored species, we are utterly ignorant of our impact on thousands of species we are yet to discover. Who knows which washing of which hand wiped out a species?

We are fighting, not for biodiversity, but for a flavor of biodiversity that favors ourselves and is pleasant and familiar to our eyes.

Savages that we are — ignorant hunter-gatherers of energy just as our brute forefathers on an earlier time — we should embrace a few invasive species, and celebrate a few pests for their superior skills at energy storage — before we find out too much more about what a world is like where there is no previously stored up energy for us to find, raid, steal, and convert to our own giddy purposes.

Jim Lane, editor and publisher of Biofuels Digest, is known to indiscriminately swat mosquitos. For more information, please visit www.biofuelsdigest.com [5].

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[1] <http://www.mitchellrepublic.com/event/apArticle/id/D9D1HNFG0/>

[2] [/WorkArea/%20http://www.biofuelsdigest.com/blog2/2007/10/11/jatropha-is-a-weed-but-not-on-list-of-worlds-most-invasive-species-say-authors-of-misquoted-australian-study/](#)

[3] <http://www.issg.org/database/species/search.asp?st=100ss>

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[4] http://www.history.com/content/life_after_people

[5] <http://www.biofuelsdigest.com>