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Welcome to Matt Ridley's Blog

Matt Ridley is the author of provocative books on evolution, genetics and society. His books have sold over a million copies, been translated into thirty languages, and have won several awards.

Please note that this blog no longer accepts comments (there was too much spam coming in!). If you're reading this blog and want to respond then please use the contact form on the site.

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Badgers versus hedgehogs

Published on Monday, June 17, 2013, updated Monday, June 17, 2013

In the absence of predators to control lesser predators, people have a role

My article in the Times on 13 June 2013

‘We are as gods and have to get good at it,” the Californian ecologist and writer Stewart Brand said recently. Worldwide there has been a sea change in the ecological profession. These days most ecologists recognise that there is no such thing as a pristine wilderness and that the best biodiversity is produced by active management to control some species and encourage others.

That means you, Mr Brock. There is little doubt that the forthcoming badger cull will work. It will drastically reduce tuberculosis among cattle, but only if the fanatics opposing it let it achieve its targets. All the older objections — that badgers may not carry TB, that killing them in sufficient numbers is impractical, that letting them die of TB is more humane, that vaccination alone can work — have fallen away and opponents are left only with a circular argument: the cull won’t work because they won’t let it.

Similar culls of wildlife dramatically reduced TB in cattle in New Zealand, Australia, the US and other countries. Ireland has reduced TB in cattle by badger culling over the very period when disease incidence has been rising steeply among cattle in Northern Ireland. Controlled experiments do not come much clearer than that. See here and here and here for further information.

What is not often appreciated is just how much good the cull will do to the ecosystems of rural England above and beyond its impact on bovine TB. The badger is what ecologists call an example of “meso-predator release”: a middle-ranking generalist predator whose numbers are abnormally high because they no longer face predation from larger, “apex” predators.

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This is a common phenomenon. Raccoons, foxes, baboons, crows, mink and other meso-predators have boomed where human beings have got rid of wolves, leopards, bears, eagles and other large carnivores. The consequence is a diminution in the numbers of animals on which meso- predators prey: in some cases to the point of local extinction. In moorland areas, a long study in Northumberland by the Game and Wildlife Conservation Trust found that without fox or crow control, the breeding success of curlews, lapwings and golden plovers is below 20 per cent because there are too many meso-predators. With control, breeding success was north of 60 per cent.

In most countries wildlife managers are well aware of this "meso-predator- release" problem and discuss openly how to manage it. In Britain, the debate is decades behind. Try using the phrase on a middle manager from Natural England and you will get blank looks. Although quite prepared to admit that predation plays a big role in the population dynamics of smaller animals — Natural England rightly opposes the introduction of fish into ponds with newts in them, because the fish eat the young newts — such people generally hold a theological objection to admitting that predation affects bird and mammal populations.

I know where this theology comes from because I was taught it at university: the dogma was that prey numbers control predator numbers, not vice versa. There were equations and graphs to prove it. But this is only true for specialist predators eating only one kind of prey, such as parasitoid wasps eating aphids, or lynxes killing snowshoe hares. Where predators generalise they can indeed drive a prey species to the brink of extinction. Lynx cannot thrive if hares get scarce, but a generalist predator can switch partly to an alternative diet and keep on driving down the prey.

When I was studying zoology in Oxford, the near total absence of hedgehogs from Wytham Woods was remarked on by a colleague. Then somebody pointed out the abundance of badgers in the woods. Sure enough, it transpires that badgers, undeterred by the spines, are enthusiastic predators of hedgehogs. The boom in badger numbers is undoubtedly one chief cause of the decline of hedgehogs. A 2006 study noted "the exclusion of hedgehogs from rural habitats in areas where badgers are abundant".

Likewise, badgers are eager predators of bumble bee nests, leaving surprisingly medieval scenes of entomological devastation when they find one. It is by no means impossible that some local declines in bumble bees are down to too many badgers.

Moreover, if you subsidise a meso-predator with human-derived food, somewhat paradoxically you often exacerbate the decline of its prey. A sudden decline in desert tortoises in the Mojave Desert in California turned out to be down to the opening of a nearby landfill site that boosted the population of ravens, which were killing the tortoises. In this country, meso-predators such as crows, foxes and badgers are heavily subsidised by roadkill, landfill and bird tables, with a big impact on their prey.

The best thing you can do for biodiversity, therefore, is to control unnaturally large populations of meso- predators. One way is to reintroduce apex predators. The return of the wolf has greatly increased the population of small mammals in parts of the American West, both because they kill foxes and coyotes, which eat mice and squirrels, and because they kill deer, leaving more grass for the rodents to eat. In Europe otters (in Britain) and sea eagles (in Finland) have greatly reduced the number of mink to the benefit of water birds and voles.

In places where the return of wolves and bears is impractical — Gloucestershire, for example — we humans must adopt the role of apex predator ourselves. It is no good saying we don't want to interfere. We already have. On the North Sea coast, for example, catching lobsters enables their rivals, crabs, to move into shallower water, but crabs eat more sea urchins, which would normally graze on kelp, so kelp thrives, providing a better nursery for young cod. Reducing lobsters boosts cod numbers — the choice is ours.

The biologist Emma Marris, in an outstanding book, *The Rambunctious Garden*, chronicles the recent change of heart within ecology with examples from Hawaii to the Netherlands. She argues that ecosystem management is a dynamic and active process, not a matter of passive protection.

To have allowed TB to increase sixfold in cattle and to explode in badgers, as the previous Government did, is irresponsible, not least when so many other countries are demonstrating successful control of bovine TB through the culling of wildlife. Intervention is a matter of ecological management of the kind we humans have to accept. It will in the long run benefit badgers as well as many other species, including hedgehogs and probably bumble bees.

By: Matt Ridley | Tagged: rational-optimist, the-times

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