



Eat the Problem? Why we can't eat our way out of our invasive species problem

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Invasive species are a major driver of extinction around the world (IBPES 2023). Controlling these species has proven difficult and expensive. A strategy that has been continually proposed is to commercialise the control of overabundant invasives, i.e. eat our way out of the invasive species problem (Pasko & Goldberg 2014).

On the surface, it is an appealing argument: encouraging greater harvest of the target species, utilising what would otherwise be a 'wasted resource', and generating economic revenue from the control efforts. Additionally, consuming invasive species offers a more sustainable and ethical option than current industrial farming practices. Some of Australia's most problematic invasive species are considered to be good food sources, such as rabbits and deer.

However, despite the many attempts around the world, there are no compelling examples of a commercial market successfully controlling, let alone eradicating an invasive species. More often, the set-up of markets has proven counterproductive (see Nunez, et al., 2012; Pasko & Goldberg 2014).

At best, these strategies have made a minimal and ephemeral impact on the population due to the limited impact harvests generally have on the population size. At worst, the establishment of commercial markets to bolster invasive species management exacerbates the issue, causing more harm than good (reviewed in Nunez, et al., 2012).

The first issue with the 'eat the problem' idea is one of population dynamics. While it seems logical that each animal harvested contributes to reducing a population, shrinking a population over time is more complex than that. The only way to reduce a population over time is to remove more animals each year than are being born. For animals with high reproductive rates, such as rabbits, this can mean more than 80% of the population must be killed each year. Any harvest rates below this rate will not reduce the population size, but only slow how quickly the population is growing. Commercial harvests are rarely able to achieve sufficient removal rates over the timeframes required to eradicate invasive species from a region (e.g. Cresswell et al. 2023, Pople & Froese, 2012, Ramulaetal et al., 2008, Zeng & Gerritsen 2012). Even the most successful commercial markets set up to control invasives, such as those created for lionfish removal in the USA and feral deer control in New Zealand have failed to make a substantial impact on the population as a stand-alone strategy (Barbour et al.2011; Malpica-Cruz et al., 2021; Nugent and Choquenot, 2004).

The second issue is one of economics and markets. The objective for most, if not all, invasive species management programs is to reduce the population to the point where it can be eradicated or the negative impacts are acceptably low. The objective of a commercial market, once established, is to self-perpetuate and keep generating revenue; these objectives are at odds with one another (Malpica-Cruz et al., 2021). Invasive species management wants to remove animals from the landscape but a market creates an incentive to keep that species in the landscape. In some cases, this financial incentive has led to the deliberate introduction of invasive species for greater profits (e.g Elmendorfetal.2005). For example, a major driver of the spread of feral pigs in southern USA has been the pig bounty as pigs were introduced into new areas as a source of profit (McCann et al., 2018). A similar situation has been observed with feral pigs in WA (Spencer and Hampton 2005).

Are there any positives to the 'eat the problem' strategy? Eat the problem type campaigns have served as an educational outreach tool, highlighting the need to control invasives. Several "Eat the problem" campaigns have assisted in bringing greater attention to the threats posed by invasive species.

However, these campaigns risk trivialising the issue, leading the public to believe that a quick fix exists for invasive species issues. For example, statements like 'Ordering lionfish when it's presented on menus or going lionfish fishing on holiday are ways to help combat this major issue in these oceans,' make it seem like a serious invasive pest can be managed simply by consumers eating a different type of meat. Effective invasive species management requires coordinated, resourced efforts at the landscape scale with very targeted goals around population reduction or eradication.

Overall, the commercialisation of invasive species control has yet to be proven as effective of a strategy as promised. In some instances, it has worsened the situation. However, strategies for the use of at least some culled individuals can be important for gaining public support for control activities of some species.

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