

Snakes: The new, high-protein superfood

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Efficient food source: Lead author Dr Dan Natusch, pictured, handles an Australian water python, one of 39 different python species. Credit: Derek Henderson

Farmed pythons may offer a sustainable and efficient new form of livestock to boost food security, according to new research from Macquarie University.

A study of two South-East Asian commercial python farms led by

Honorary Research Fellow Dr. Daniel Natusch from the School of Natural Sciences, found pythons convert feed into [weight gain](#) remarkably efficiently compared to conventional livestock such as chickens and cattle.

"In terms of food and protein conversion ratios, pythons outperform all mainstream agricultural species studied to date," Dr. Natusch says.

"We found pythons grew rapidly to reach 'slaughter weight' within their first year after hatching."

Snake meat is white and very high in protein, Dr. Natusch says.

The multi-institutional research team included scientists from Macquarie University, the U.K.'s University of Oxford, the University of Adelaide, Johannesburg's University of the Witwatersrand and the Vietnamese Academy of Science and Technology in Hanoi. The research is [published](#) in the journal *Scientific Reports*.

The researchers compared reticulated pythons (*Malayopython reticulatus*) and Burmese pythons (*Python bivittatus*) farmed at commercial python farms in Thailand and Vietnam, testing the effects of different food regimes.

Flexible solution for food insecurity

"Climate change, disease and diminishing natural resources are all ramping up pressure on conventional livestock and plant crops, with dire effects on many people in [low-income countries](#) already suffering acute protein deficiency," says Dr. Natusch.

Failures in conventional agrifood systems leading to widespread food insecurity is driving interest in alternative food sources, he says.

Snake meat is a sustainable, high protein, low-saturated fat food source already widely consumed across South East Asia and China.

"However, while large-scale python farming is well established in Asia, it has received little attention from mainstream agricultural scientists," says Dr. Natusch.

"Snakes require minimal water and can even live off the dew that settles on their scales in the morning. They need very little food and will eat rodents and other pests attacking food crops. And they were a delicacy, historically, in many places.

"Our study suggests python farming complementing existing livestock systems may offer a flexible and efficient response to global food insecurity."

Costs and benefits

Co-author Professor Rick Shine, from Macquarie University's School of Natural Sciences says this is the first study taking an in-depth look at the inputs and outputs, costs and benefits of commercial snake farms.

"There are clear economic and adaptability benefits to farmers who raise pythons rather than raising pigs," Professor Shine says.

"Birds and mammals waste about 90% of the energy from the food they eat, simply maintaining a constant body temperature," says Professor Shine.

"But cold-blooded animals like reptiles just find a spot in the sun to get warm. They are hugely more efficient at turning the food they eat into more flesh and body tissue than any warm-blooded creature ever could."

Hiding the broccoli

The research team trialed groups of pythons on different "sausages" of waste protein from meat and fish off-cuts, and found intensive feeding of juveniles prompted fast growth rates with no apparent welfare impacts.

Despite pythons being solely carnivorous in the wild, they could digest soy and other vegetable protein, and some sausages included about 10% vegetable protein, hidden among the meat.

"It's a bit like hiding broccoli in the meatballs to get your kids to eat their veggies," Dr. Natusch says.

"We showed that snake farms can effectively convert a lot of agricultural waste into protein, while producing relatively little waste of their own."

When processed, about 82% of a python's live weight yields usable products, including the high protein dressed carcass for meat, the valuable skin for leather, and the fat (snake oil) and gall bladder (snake bile) which both have medicinal uses.

Kilo for kilo, reptiles produce far fewer greenhouse gases than mammals. Their sturdy digestive systems, which can even break down bone, produce almost no water waste and far less solid waste than mammals.

Pythons can fast more than four months without losing much weight, and rapidly resume growth as soon as feed restarts, so consistent production can continue even when [food](#) is scarce," says Dr. Natusch.

"We also found some farms outsource baby pythons to local villagers,

often retired people who make extra income by feeding them on local rodents and scraps, then selling them back to the farm in a year."

Professor Shine says this study shows the extraordinary efficiency of reptiles in turning waste into useable products, highlighting big opportunities in countries where there is already a cultural precedent for snake meat.

However, it's unlikely that Australia or Europe will adopt python farming, he says.

"I think it will be a long time before you see python burgers served up at your favorite local restaurant here."

More information: D. Natusch et al, Python farming as a flexible and efficient form of agricultural food security, *Scientific Reports* (2024).

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