The impact of understory vegetation management on predators in oil palm plantations in Sumatra, Indonesia

Amelia (Millie) Hood
Sustainable Land Management, the University of Reading
Oil Palm

Palm Oil

Many Products

- 85% production in Malaysia & Indonesia
- Most produced & traded vegetable oil in the world (~60MT/yr, ~25Mha)
- Found in ~1/2 of all packaged products sold in the supermarket
UK Food Information Regulations 2014
Vegetable Oil, Vegetable Fat, Palm Kernel, Palm Kernel Oil, Palm Fruit Oil, Palmate, Palmitate, Palmolein, Glyceryl, Stearate, Stearic Acid, Elaeis Guineensis, Palmitic Acid, Palm Stearine, Palmitoyl Oxostearamide, Palmitoyl Tetrapeptide-3, Sodium Laureth Sulfate, Sodium Lauryl Sulfate, Sodium Kernelate, Sodium Palm Kernelate, Sodium Lauryl Lactylate/Sulphate, Hyrated Palm Glycerides, Etyl Palmitate, Octyl Palmitate, Palmityl Alcohol
Oil Palm Causes Deforestation
Boycotting would make the problem worse

1. Producers look for other customers and lower their prices
   - Lower prices increase demand from markets which have less interest in sustainability
   - This reduces the incentive to produce environmentally sustainable palm oil

2. Companies buy alternative oils
   - Other oils use up to nine times as much land as palm oil
   - This increases natural habitat loss, species loss and other impacts

Oil palm and biodiversity
A situation analysis by the IUCN Oil Palm Task Force
Boycotting would make the problem worse

1. Producers look for other customers and lower their prices
   - Lower prices increase demand from markets which have less interest in sustainability
   - This reduces the incentive to produce environmentally sustainable palm oil

2. Companies buy alternative oils
   - Other oils use up to nine times as much land as palm oil
   - This increases natural habitat loss, species loss and other impacts

Oil palm and biodiversity
A situation analysis by the IUCN Oil Palm Task Force
Testing real management strategies
Testing real management strategies

Reduced
All understory removed

Normal
Business as usual

Enhanced
Vegetation allowed to regrow
Pests

~5% yield reduction
Puan et al 2011

Up to 30%
Potineni & Saravanan 2013
Pre-treatment
1 yr post-treatment
2 yrs post-treatment

4 replicates
1502 camera trap nights

Rat trapping

Pre-treatment
1 yr post-treatment
2 yrs post-treatment

4 replicates
1502 camera trap nights

Rat trapping

Leopard Cats are controlling rats

Removing understory vegetation reduces Leopard Cat activity

Ant suppression experiment

Physical barrier & poison
Ant suppression experiment

Six model herbivores
Control & treatment plots x6
Pre- and post-treatment

Physical barrier & poison
Ants are the primary predators of caterpillars
Ants are the primary predators of caterpillars
Pitfall traps
Pre- and post-treatment
18 traps per treatment
3 days per trap
Removing understory vegetation reduces ant abundance

Pitfall traps
Pre- and post-treatment
18 traps per treatment
3 days per trap

But not species richness
Better for ants

Reduced
All understory removed

Normal
Business as usual

Enhanced
Vegetation allowed to regrow

Better for Leopard Cats
Other predator studies
oilpalmbiodiversity.com

Thanks to

For Funding & Permission
Whitten Studentship & Tim Whitmore Fund, Cambridge
Sinar Mas & SMART Research Institute
The Natural Environment Research Council [NE/K016377/1]
The Isaac Newton Trust, Cambridge
Sumitomo Chemical, Australia
RISTEK Indonesia

E C Turner
A A K Aryawan
A D Advento
A Ashton-Butt
M Naim
S Suhardi
Sudharto P S
J P Caliman
W A Foster
S Luke
M Pashkevich
R Wahyuningsih
D Purnomo
J Snaddon