

Minimizing the impact of logging on ecological intactness in tropical forest ecosystems

Tim Rayden, WCS

Overview

IFLs and FSC

Brief review of recent literature and research

Existing best practices

Potential improvements to reduce impact



Preamble

Conserving intact forest is the most cost effective means to maximize land-based climate mitigation

Much larger amounts of forest to be allocated for *permanent protection*, which requires the global community to finance the conservation of these forests.

FSC certification 'governs' a minor proportion of the worlds IFL

Management standards in these forests are generally high, but *can be improved*

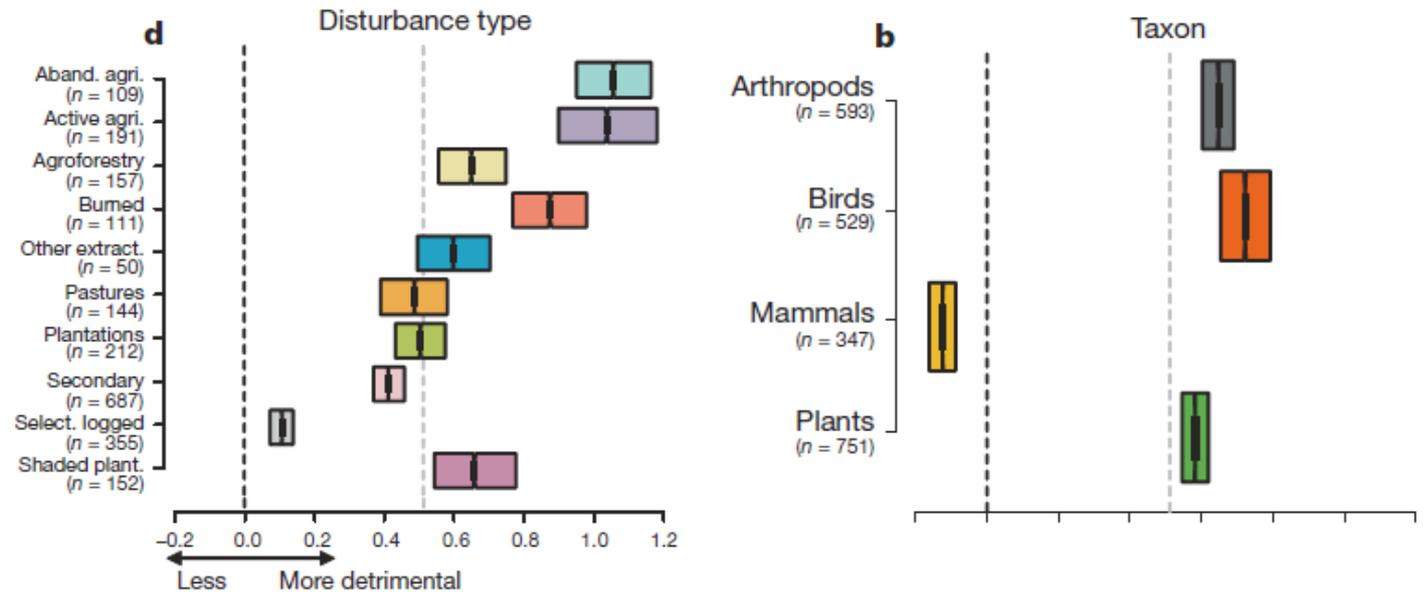


Overall biodiversity impacts

Gibson et al (2011)

Primary forests are irreplaceable for sustaining tropical biodiversity. Nature 10425

“Our findings suggest that protecting remaining primary forests and restoring selectively logged forests are likely to offer the greatest conservation benefits for tropical biota.”



Central & South America

Radachowsky *et al* (2004) Effects of Certified Logging on Wildlife in Community and Industrial Forest Concessions of Northern Guatemala (WCS)

- Of the more than 20 species of large vertebrates sampled with transects, only the mantled howler monkey (*Alouatta pigra*) demonstrated significantly lower encounter rates in logged areas ($p = 0.004$).
- Impacts on terrestrial mammals more pronounced at higher harvesting intensities

Polisar *et al* (2016) *Using certified timber extraction to benefit jaguar and ecosystem conservation*. *Ambio*. DOI 10.1007/s13280-016-0853-y

- Adequate logging management can maintain jaguar populations
- Encounter rates higher in sites that were:
 - Near pristine forest
 - Far from communities engaging in hunting



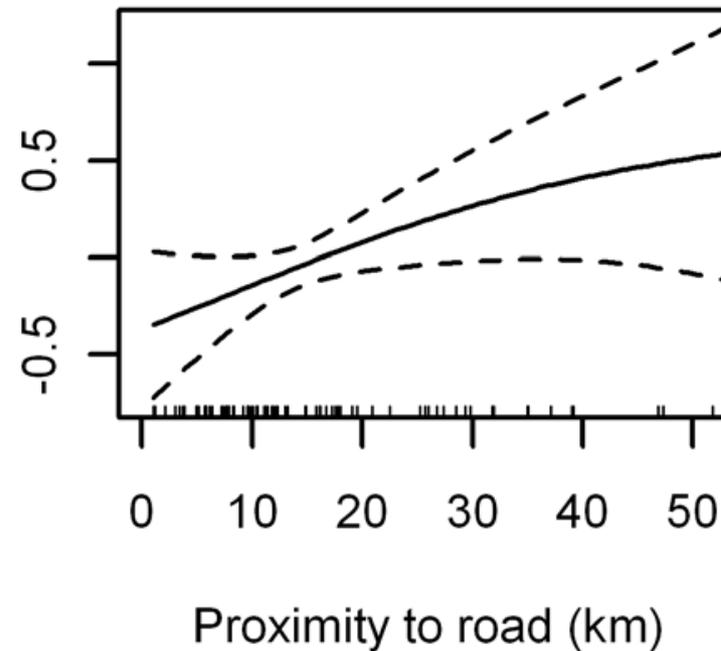
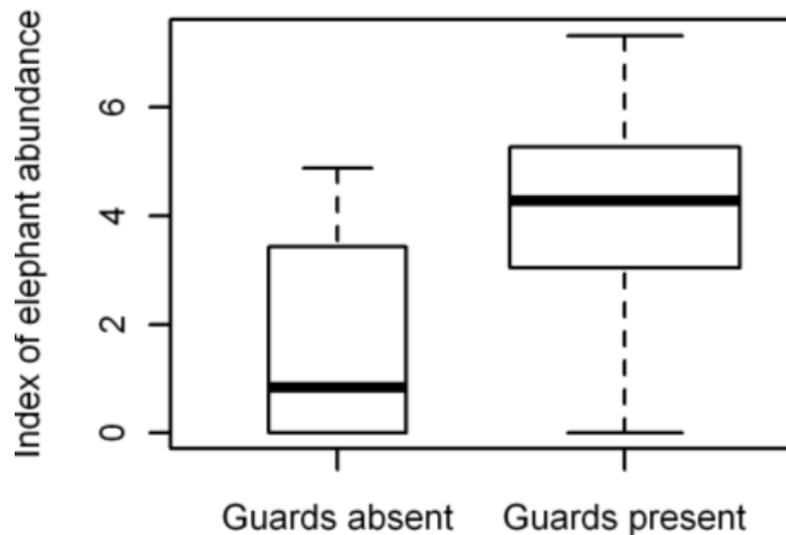
Central Africa

Elephants:

Maisels et al (2013) Devastating Decline of Forest Elephants in Central Africa. PLoS ONE 8(3):

e59469.doi:10.1371/journal.pone.0059469

- Dung density was significantly higher at sites with **wildlife guards** and with a designated official protection status
- Distance from **roads** & human population density also determinant



Central Africa

Great apes:

- Previous research has shown relative tolerance of logging disturbances by gorillas, while chimpanzees exhibit greater sensitivity
- Current research (WCS) suggests Significantly higher densities of both gorillas and chimpanzees in areas where guards were present compared to where they were absent.
- Review of field data (ongoing work) show chimpanzee densities were higher in areas where Canopy Height was > 25 m, and in particular > 36 m – indicating a stronger preference for more intact forest with a high canopy compared to gorillas



What we know about best practices

The main points here:

- Conservation areas are important (refuges, source areas, etc.)
- Reduced impact techniques (including road closures) help
- Control of hunting is essential
- Cheap alternative proteins are important to reduce demand for wild meat



Potential improvements to best practice

Increase set asides (e.g. IFL core areas)

Protect more large trees (Upper diameter limits)

Decommissioning of roads



Set asides

Current *biodiversity conservation* set-asides are 5-10% by area in most C Africa FSC concessions*

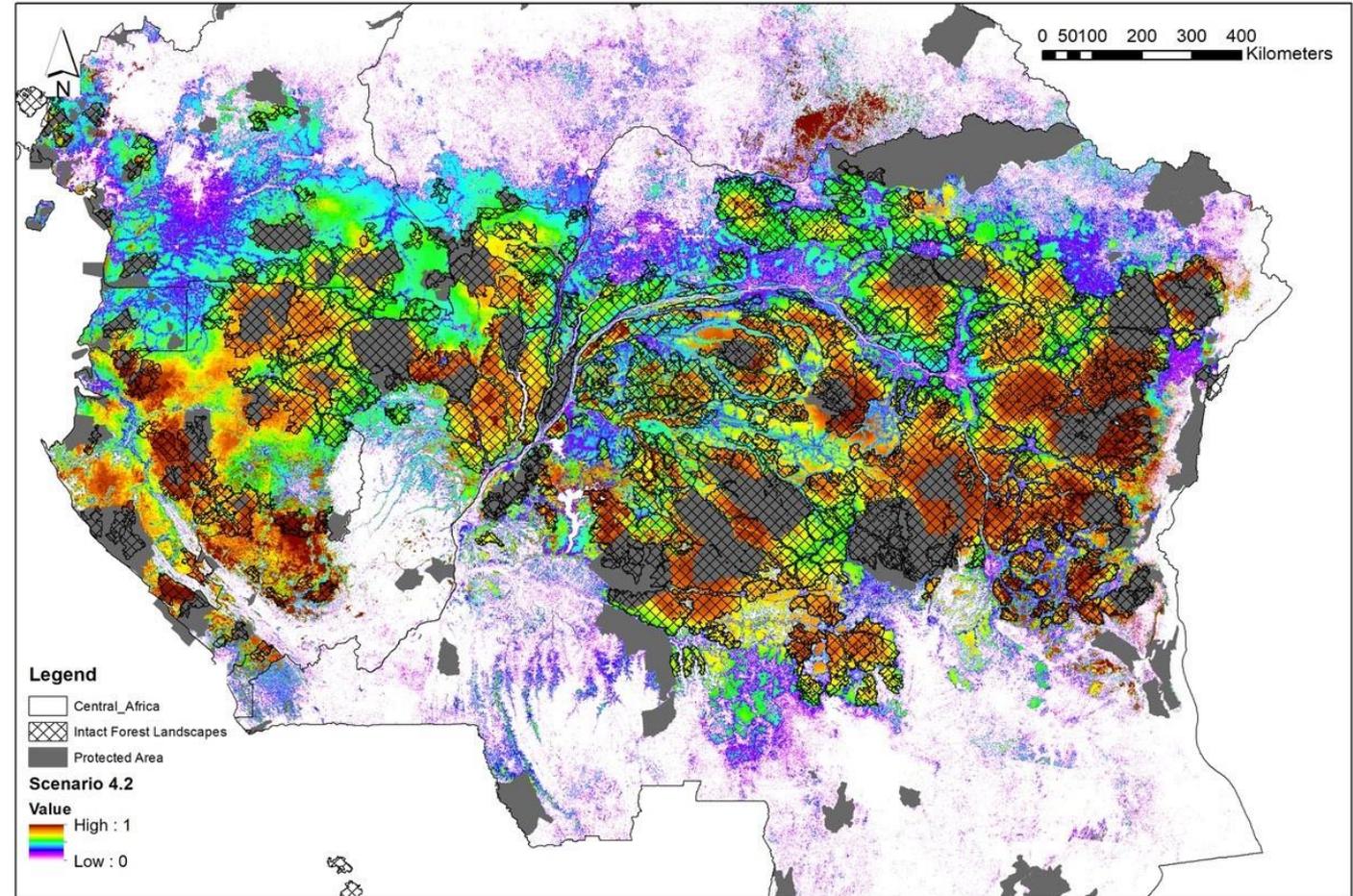
Representation of habitat types in conservation areas is often a weak point

Analysis (biodiversity heat mapping) shows strong overlap of biodiversity with intactness in many (not all) of the intact forest areas within timber concessions

Significant opportunity to use regional HCV mapping to guide the creation of new set aside areas

FSC could support claims for carbon compensation payments for additional conservation areas

*not including un-loggable areas excluded from production



Importance of large trees

Direct impacts of timber harvesting:

Feldpausch et al. / Forest Ecology and Management 219 (2005) 199–215

RIL vs CL in Southern Amazon, Brazil

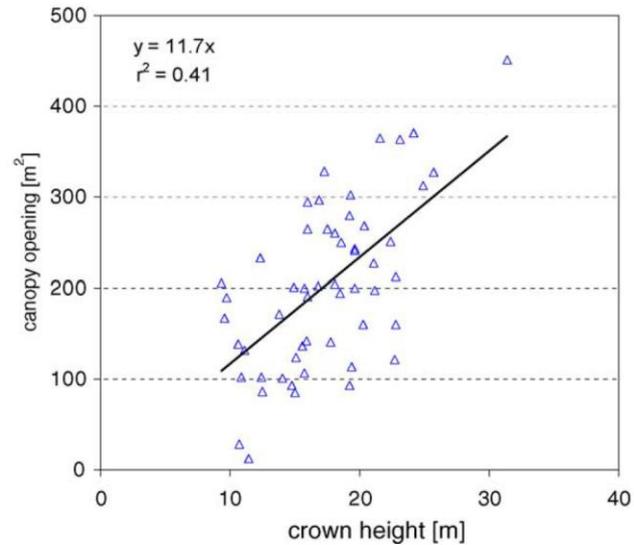


Fig. 2. Tree crown height vs. canopy opening formed during tree felling in 54 single-tree gaps in Fazenda Rohsamar, southern Amazonia, Brazil. Crown height is defined as the height from the first bifurcation to the top of the crown.

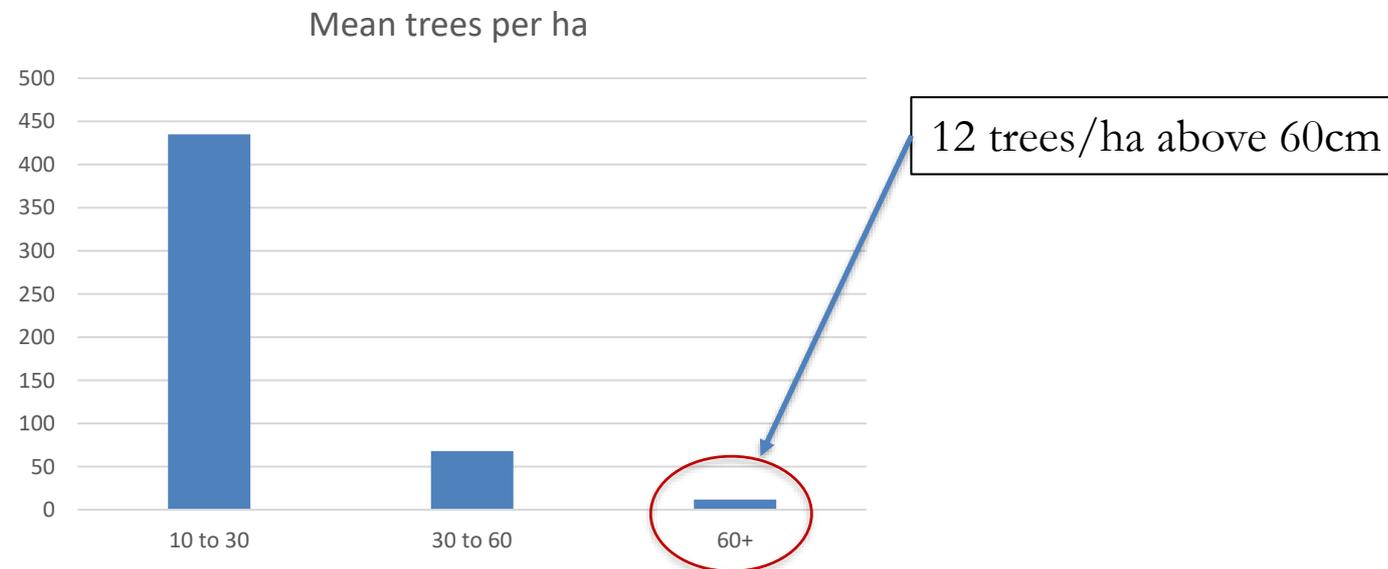


Number of large trees per ha

Feldpausch et al. / Forest Ecology and Management 219 (2005) 199–215

- No of trees harvested per ha: 1.1
- Mean diameter of harvested trees: 75cm

Congo & Gabon:
Legal maximum diameter = 200cm

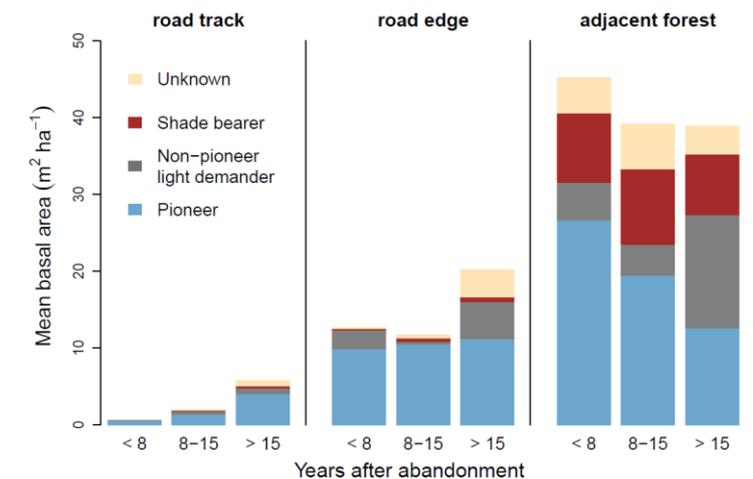


Decommissioning of roads

Kleinschroth *et al* (2016) *Journal of Applied Ecology*,
“After 15 years following abandonment, road tracks had recovered ...6% of that in the adjacent forest”

Roads continue to provide access, create edge, increase dryness etc *for a long time*.

De-compaction of the road surface will greatly accelerate regeneration and rapidly reduce accessibility and edge effects from roads



Take home

Impacts of logging are unavoidable BUT:

Selective logging on wildlife is relatively benign when compared to other forms of productive land use and *where strict controls of hunting and access are enforced*

Controlling access and hunting must remain the focus of management interventions aimed at reducing impacts on wildlife

Impacts of logging can be further reduced by:

- Increasing conservation set-sides (where possible, contiguous with existing PAs)
- Reducing the number of very large trees felled
- De-compacting roads for faster regeneration & restrict access

