

# ASSESSING ECOLOGICAL RISK WITH INDIGENOUS COMMUNITIES: TROPICAL SAVANNAS NORTHERN AUSTRALIA



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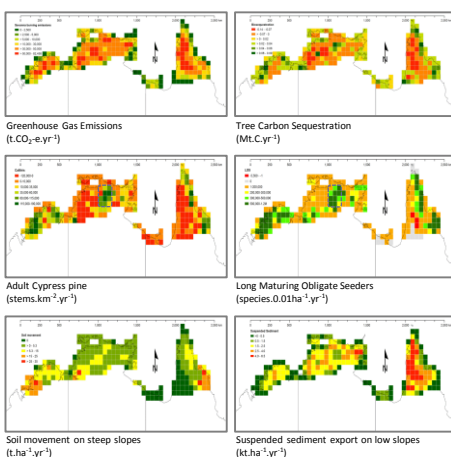
**THIS PROJECT BUILDS UPON SUBSTANTIAL WORK PREVIOUSLY UNDERTAKEN WITHIN THE FACILITY OF THE BUSHFIRE CRC “NORTH AUSTRALIA FIRE MAPPING” PROJECT. WE DEVELOPED FIRE SEVERITY MAPPING FOR NORTH AUSTRALIAN VEGETATION. FIRE MAPPING WAS APPLIED IN A SAVANNA-WIDE ANALYSIS USING ROBUST MODELS TO ASSESS THE RISK TO: GREENHOUSE GAS EMISSIONS; CARBON SEQUESTRATION; BIODIVERSITY; AND SOIL EROSION. TO CHARACTERISE THE EFFECTS OF FIRE ON ECOSYSTEM SERVICES UNDER VARIOUS FIRE MANAGEMENT REGIMES AND CLIMATE CHANGE SCENARIOS.**

## BACKGROUND

The potential to earn an income from Land Management is referred to as the Payment for Ecosystem Services (PES) (Costanza *et al.* 2014).

Northern tropical Australia is relatively pristine compared to many other parts of the world, therefore one would suspect that if methods to measure the various values of the ecosystem were developed then PES could provide valuable and appropriate incomes for remote areas of Australia where income potential is currently scarce.

The following robust ecologically-based models were applied using accurate fire mapping across north Australia to show the areas worst affected by wildfire:



These preliminary savanna-wide ecological analyses suggested that the most deleterious effects to ecosystems occur on large tracts of Indigenous owned or managed Land. Thus indigenous lands and the communities that reside on them are potentially most at risk.

## COLLABORATION

The project is involved in consultation with lead indigenous land management groups primarily NAILSMA (the North Australia Indigenous Land and Sea Management Alliance), but also the Land Councils and other indigenous land management organisations:



## Project Areas

Specific project areas are being identified in consultation with Risk co-projects within the Northern Hub. Research will be conducted with and through a group of indigenous researchers based out of Charles Darwin University known as ARPNet (Aboriginal Research Practitioners Network). It is widely accepted that there must be effective engagement between researchers and communities (Reynolds *et al.* 2007). ARPNet uses a suite of Participatory Action Research tools referred to as the Dilly Bag. ARPNet work with culturally appropriate cohorts and language to answer research questions (Sithole *et al.* 2009). The work of ARPNet demonstrates how engagement by Aboriginal people can be strengthened when the right tools are made available, and aboriginal people are engaged in an appropriate manner. Through ARPNet we will gather community derived data.



## PROJECT SUMMARY

Greenhouse gas emissions, mostly from fire-prone high rainfall regions of north Australia, contribute 2-4% of Australia's inventory (ANGA 2011). The emissions calculations model, and others, indicate mal-affected areas with respect to Emissions, also Carbon and Biodiversity, from wildfire.

Higher resolution fire mapping and ancillary datasets will be created for the specified project areas. Ecological risk will then be mapped to provide assessment tools for ARPNet and others to characterise the community perception of risk, and how communities might want to be engaged in mitigation.

## ADDITIONAL BENEFICIARIES

Income from pastoral activities is marginal on many pastoral leases in the north. Therefore, PES also offers opportunities for non-indigenous land owners to diversify their income stream. This will have the benefit of not only reducing Australia's emissions and sequestering bio-Carbon, it will also increase biodiversity, and will provide the potential to develop collaborative land management relationships with expanding indigenous ranger groups across the north.

## REFERENCES

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