Is the Kimberley coast still a pristine wilderness?

KIMBERLEY MARINE RESEARCH PROGRAMME

WAMSI 2.1.1 – PROF LYNNATH BECKLEY (MURDOCH)
Kimberley coast: background

- Traditional owners & native title
- Small population (<40,000)
- Few coastal towns (Broome, Derby, Wyndham)
- Little road access to coast
- Commercial activities
  - Fishing & aquaculture
  - Agriculture & pastoralism
  - Ports & shipping
  - Mining
  - Oil & gas
  - Aviation
  - Tourism
Kimberley human use study

WAMSI study (2012-2015) has drawn into focus the spatial footprint of human use along the Kimberley coast

1. Aerial surveys along coast for mapping distribution, numbers & activities of people & boats
   • Port Hedland – Broome (1 survey per month)
   • Broome – Derby (2 surveys per month)
   • Derby - Kuri Bay (exploratory X 4)
   • Kuri Bay – Wyndham (exploratory X1)

2. Broome boat launches (Entrance Point)*

3. Cruise vessel itineraries*

4. Literature review of impacts of use
Highly seasonal, nodal & linked to proximity of tourist infrastructure
46% engaged in shore-based fishing, high numbers of associated 4WD vehicles
Cable Beach winter dry season
People: Dampier Peninsula

Change since surveys:
- Start to sealing of Cape Leveque Road
- Will lead to unprecedented access to Dampier Peninsula & Buccaneer Archipelago

Maximum density 93 people / 0.1km²
Recreational boat launching

- 6000+ boat launches per year at Entrance Point, Broome
- Weekend peaks
- July/August maximum
- No wet/dry difference in mean launches/hour
Boats: Eastern Kimberley

- Pearl aquaculture
- Private yachts
- Cruise vessel
Kimberley cruise vessel itineraries

- Desktop study to quantify cumulative visitation by cruise vessels along the Kimberley coast
- 18 vessels (12-103 m) operating in 2013
- 60% have <20 passengers
- Analysis of detailed daily itineraries
- Calculated potential numbers of visitors per year for 114 sites from itineraries
Total cruise vessel visits: 2013
Total potential visitors by site: 2013

(only sites with >3000 passengers)
Evolving cruise industry

Changes since 2013:
• Bigger ships
• More passengers

*L’ Austral* 142 m; ~264 passengers (2016 & 2017 - 10 sites across Kimberley)

*Pacific Eden* 219 m; ~1250 passengers (Broome & Kuri Bay - June 2017)
Summary – use of Kimberley coast

• Evidence of growing use of Kimberley coast

• Commercial activities such as mining, aquaculture & fishing across the region

• Tourism & recreation are widespread
  • West of Derby - generally facilitated by 4WDs
  • East of Derby - facilitated by private vessels, light aircraft, float planes & helicopters
  • Cruise industry along whole Kimberley coast with about 10 focal areas; increase in larger vessels

• However, despite the use, most of the Kimberley coast still remains physically unaltered from its natural state

• It is incumbent upon the managers of the Kimberley coast to carefully monitor & manage usage so that deleterious impacts can be mitigated or avoided
Some management considerations

- Annual monitoring of cruise industry (# vessels, vessel sizes, # passengers, itineraries, activities, changes in vessel capacity)
  - Can follow itinerary protocol used in this study (2013 & 2015 MSc)

- Impact of sealing of road from Broome to Cape Leveque & One Arm Point
  - Collect information on Peninsula tourists & day trippers (vehicle counters?)
  - Monitor campers (e.g., Middle Lagoon, Goombaragin, Kooljaman etc)
  - Accommodation (e.g., Kooljaman, Cygnet Bay, Mercedes Cove etc)
  - Potential impacts: Disrespect, sewage, rubbish, trampling, more fishing etc

- Impact of increased boat launching from One Arm Point & other sites
  - Major change in recreational fishing pressure (Buccaneer Archipelago)
  - Undertake daily trailer counts at important sites like One Arm Point
  - TOs work with Division of Fisheries to establish robust monitoring protocol (e.g., boat launches, trailer counts, creel surveys, compliance etc)
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Claire Smallwood, Emily Fisher & Broome Air Services pilots
Joanna Tonge, Cameron Desfosses, Shane Richards, Halina Kobryn & Sue Moore†
Traditional owners of the Kimberley coast
A global map of human impact on marine ecosystems
Spatial and temporal changes in cumulative human impacts on the world’s ocean

Absolute difference between 2013 & 2008 per-pixel cumulative impact scores based on 12 anthropogenic stressors that could be compared across time (max cumulative impact score = 11). Positive scores represent an increase in cumulative impact.