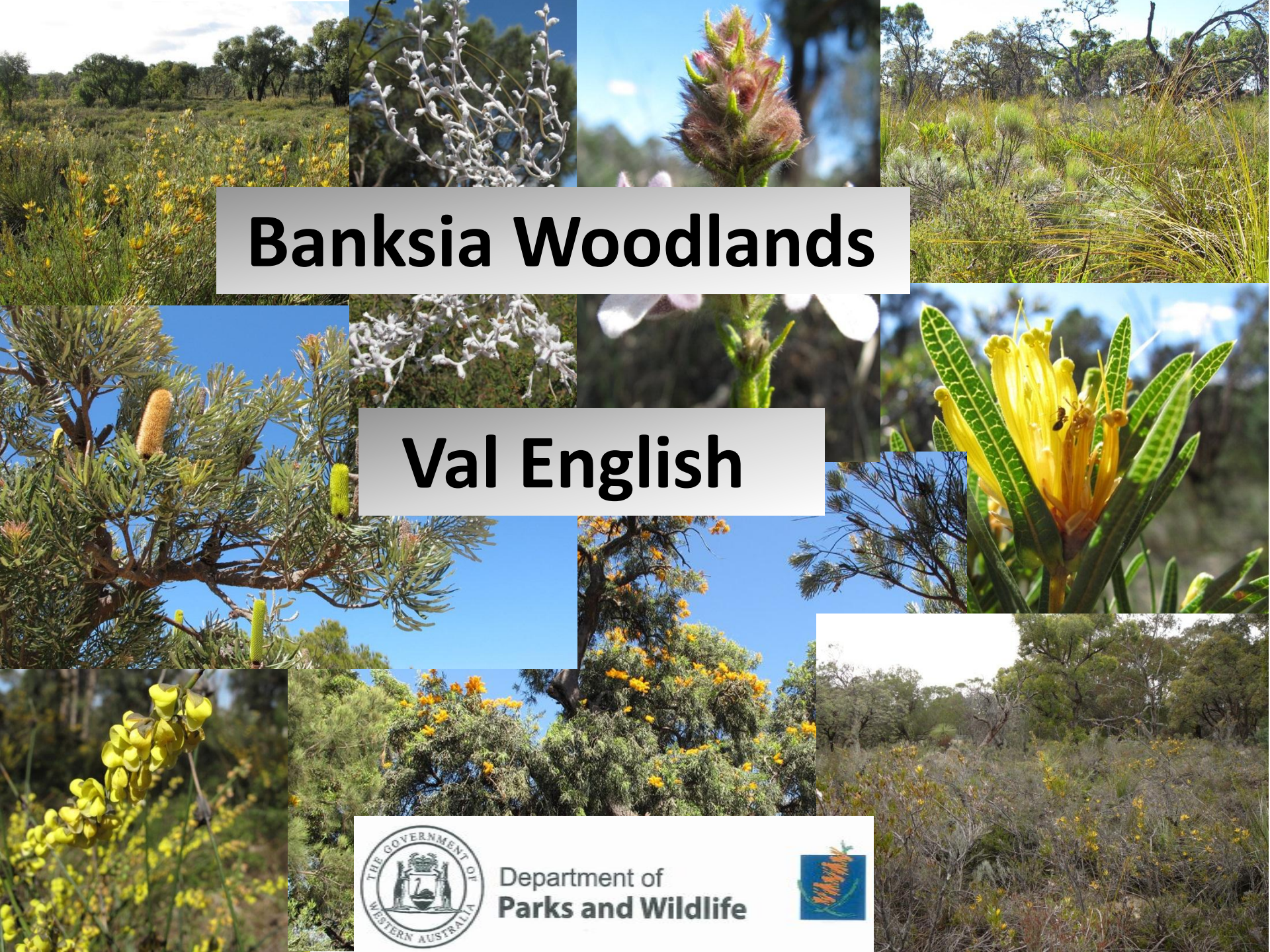


Banksia Woodlands

Val English

Department of
Parks and Wildlife

Summary

- WA PECs and TECs covered by Federal nomination
- Threats to an example Banksia woodland TEC
- Protection through state and federal TEC listings
- Likely Federal process

Banksia woodland sub-types

11 FCTs of Banksia Woodlands on the southern SCP in Gibson *et al.* (1994) and Keighery *et al.* (2008):

Community type 20a	*Banksia attenuata* woodlands over species rich dense shrublands (EN)
Community type 20b	Eastern *Banksia attenuata* and/or *Eucalyptus marginata* woodlands (EN)
Community type 20c	Eastern shrublands and woodlands (CR). ***EPBC LISTED (EN)***
Community type 21a	Central *Banksia attenuata - Eucalyptus marginata* woodlands
Community type 21b	Southern *Banksia attenuata* woodlands (P3)
Community type 21c	Low lying *Banksia attenuata* woodlands or shrublands (P3)
Community type 22	*Banksia ilicifolia* woodlands (P2)
Community type 23a	Central *Banksia attenuata - B. menziesii* woodlands
Community type 23b	Northern *Banksia attenuata - B. menziesii* woodlands
Community type 28	Spearwood *Banksia attenuata* or *Banksia attenuata - Eucalyptus* woodlands.
Whicher Community B2:	West Whicher Scarp *Banksia attenuata* woodland (P1)


SCP20c Talbot Rd


SCP20a Pioneer Pk


SCP20b Bob Blackburn Res


SCP22 Ioppolo Rd

SCP Banksia Woodlands

SCP Banksia woodlands as described in EPBC nomination

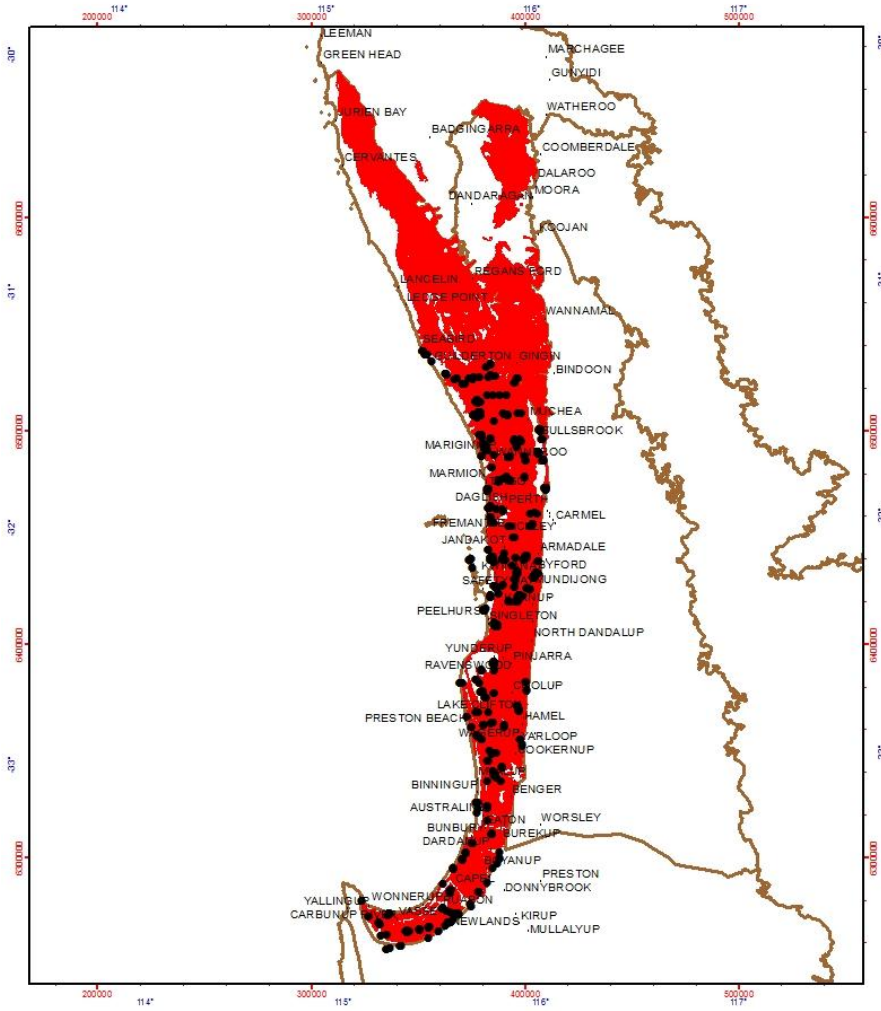
Ranked P3 in WA:

(iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Banksia woodland sub-types

Banksia Woodland types outside of Gibson *et al.* 1994 and Keighery *et al*. (2008) survey areas (eg Dandaragan Plateau):

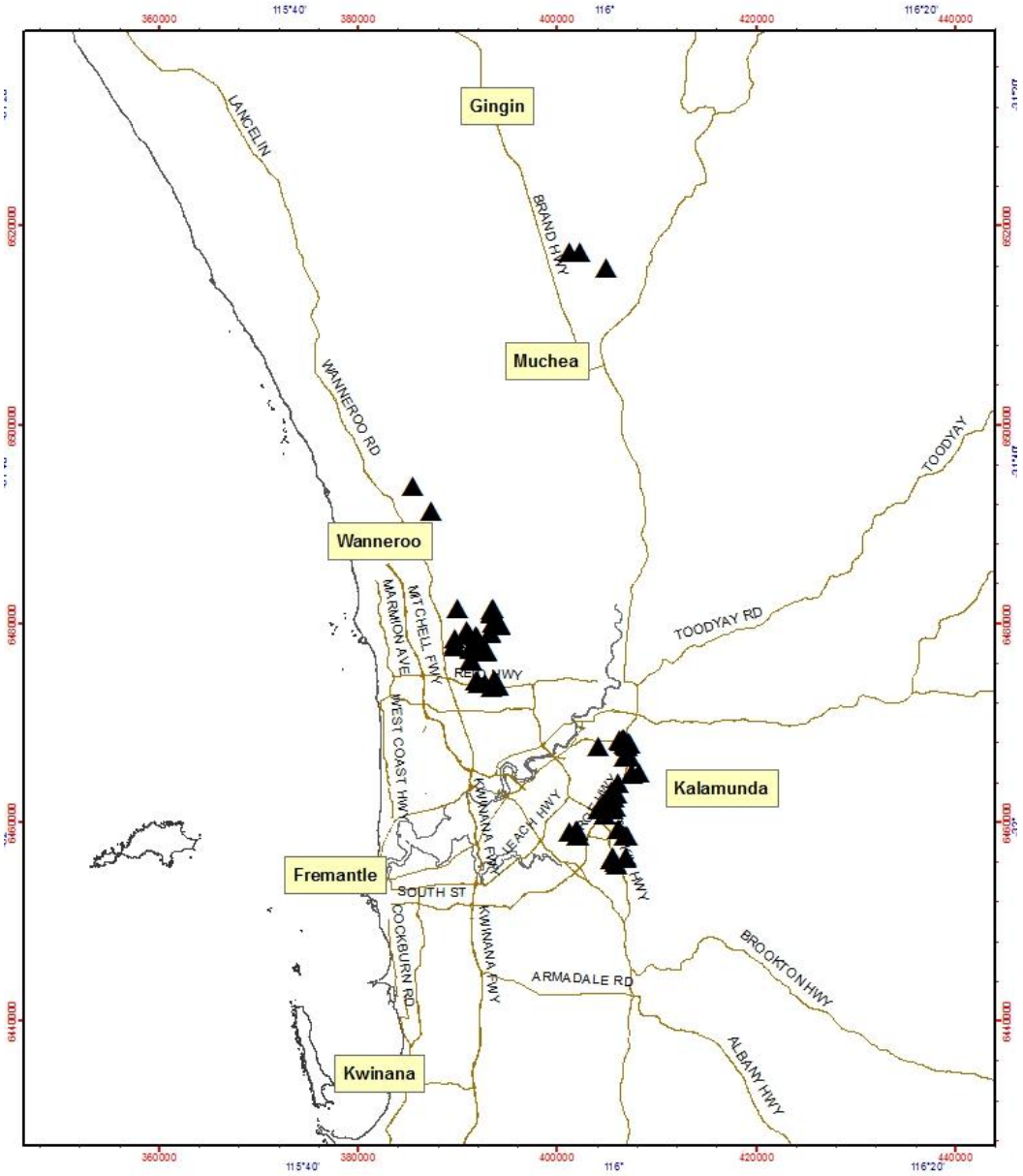
- not described in detail as yet.



EXAMPLE
Community type 20a: *Banksia attenuata* woodlands over species rich dense shrublands

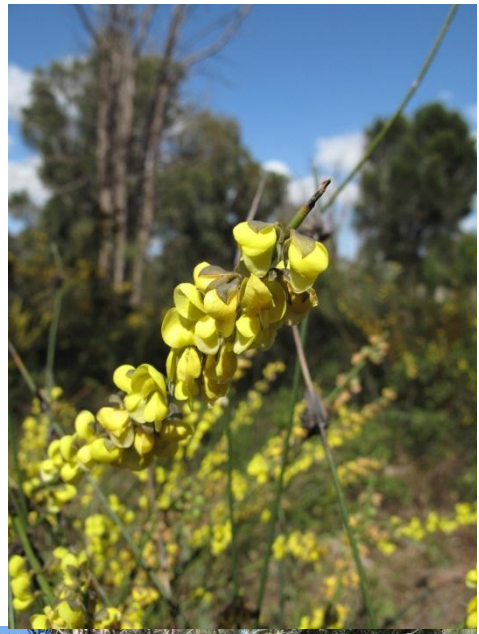
- Described in Gibson *et al.* (1994)
- Usually dominated by *Banksia attenuata* (occasionally with *Eucalyptus marginata*)
- *Bossiaea eriocarpa*, *Conostephalium pendulum*, *Hibbertia huegelii*, *H. hypericoides*, *Petrophile linearis*, *Scavolea repens*, *Stirlingia latifolia*, *Mesomelaena pseudostygia* and *Alexgeorgea nitens* common in understorey.
- Richest of any *Banksia* community on SCP.
- Ave 67 species/100m^2), up to 80 spp/100m2 recorded (Errina Rd)

Banksia community 20a

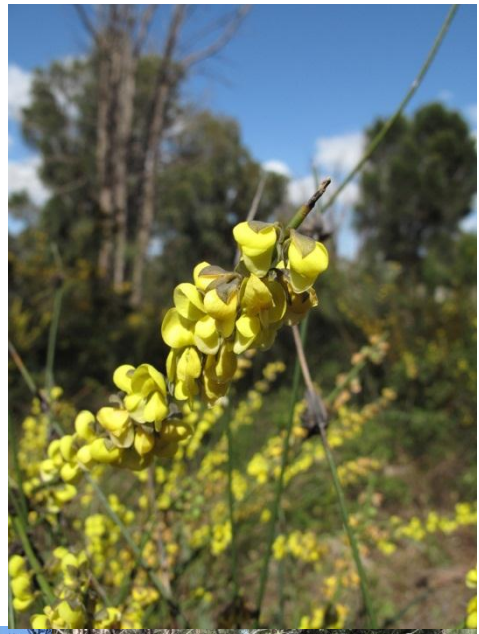


Banksia community type 20a

- Very restricted in distribution
- Known from small to medium-sized yellow sand ridges between Gingin and Orange Grove (~60km)
- Total about 500ha
- Highly fragmented
- <200ha (40%) in conservation reserves
- Mostly in good condition



Threats: Community 20a



- **Clearing:** for development declined recently and minimal since TEC listing

- **Hydrological change**: watertable decline, drying climate:
  - *Banksia* woodlands = groundwater dependent ecosystems
  - Three sites of 20a over Gnangara Mound (Wanneroo) – potential pumping impacts
    - (Gnangara Mound underneath about 15% of area of **all** Banksia woodlands as per mapping area in EPBC nomn)
  - BOM: by 2050 – 7% decline annual rainfall; 14 % decline in surface water runoff compared to 1960-1991

Hydrology - community 20a

- Deep-rooted shrub and tree species (phreatophytes – use some water from watertable) most affected by watertable drawdown

- Groundwater dependence varies between species:
  - *Banksia ilicifolia* higher dependence
  - *Then B. attenuata*
  - *Then B. menziesii*
- *Banksia menziesii*, *B. attenuata* occur at Jurien: Annual average rainfall ~550mm (*B. attenuata* can occur where watertable -30m!)

- With reduced rainfall, increased depth to groundwater, increased temperatures:
  - slow progressive change of species in Banksia woodlands?
- *Mainly From:* Long term monitoring of resilience - Summer and Froend 2011; Froend *et al.* 2004 EWR study




Fire frequency Community 20a

- Very hot fires can cause Banksia death
- Obligate seeders need enough time between fires to produce seed (eg *Petrophile macrostachya* – 5 yrs to flower, *B. attenuata* - 4 years if survives fire)
- CSIRO: most likely summer temp increase across Banksia woodlands = +1-3^0 C
- Likely increase in wildfires frequency and intensity with increased temperatures, reduced rainfall in SW WA.
- Stress expected to increase in community 20a from reduced rainfall, groundwater, plus increased temperatures and wildfires
- Impacts likely to be site-specific in community 20a Banksia woodlands




Weed invasion Community 20a

- Current weed levels in community 20a in most occurrences still quite low
  - except some localized patches (grasses, Gladiolus)

- Most occurrences close to urban development that act as weed sources



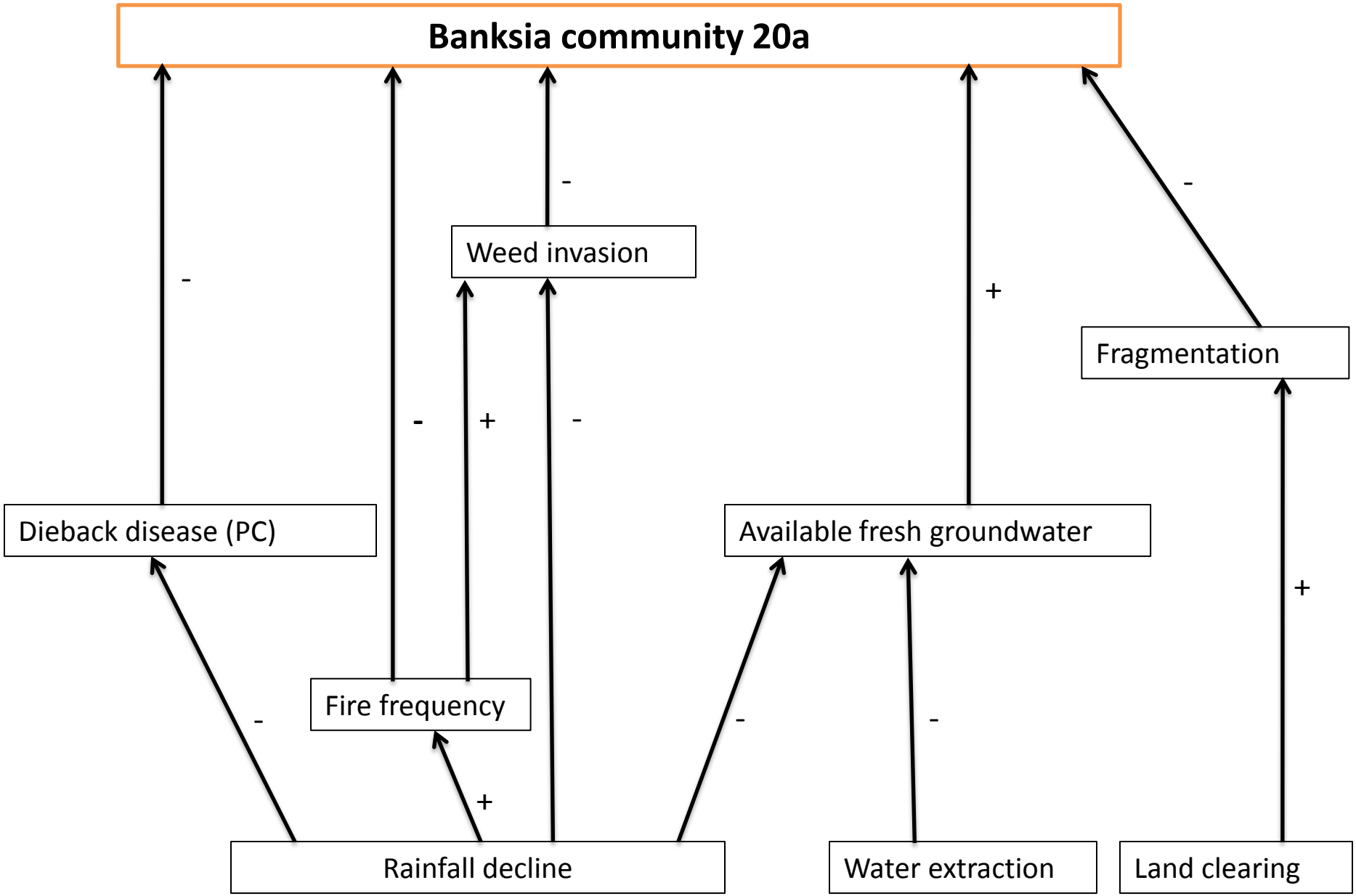

Dieback disease community 20a

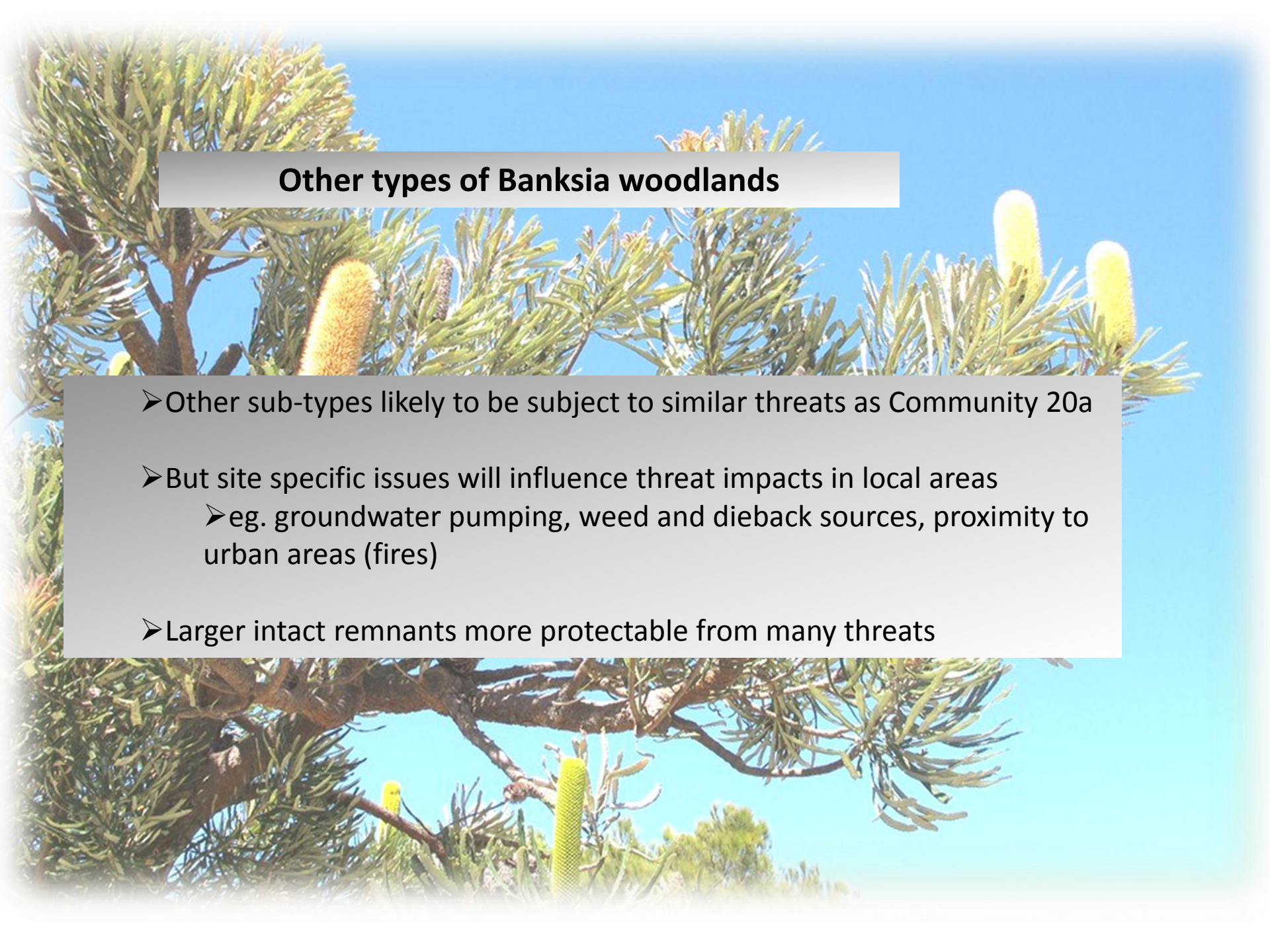
- Habitat of dry sand ridges not conducive to dieback
- Disease may not spread rapidly in community 20a despite the number of highly susceptible species
- Dieback usually spreads much more slowly on the yellow and orange sands than in Bassendean sands.
- Major disease impacts not noted in Community 20a (~ 3% of **all** Banksia woodlands as per EPBC nomn mapped as infested)
- Small, slow-moving infestations can be exacerbated by soil movement
  - may be significant in small remnants
- Drying climate may decrease risk, but timing of rainfall timing important




Other issues Community 20a

- **Loss of pollinators:**
  - especially birds and mammals through loss of their habitat and food
  - Possible that other smaller pollinators eg invertebrates may be able to replace function of larger fauna


Banksia community 20a
-
-
Weed invasion
-
+
-
+
Fragmentation
Dieback disease (PC)
Available fresh groundwater
-
Fire frequency
-
-
+
+
Rainfall decline
Water extraction
Land clearing



Other types of Banksia woodlands

- Other sub-types likely to be subject to similar threats as Community 20a
- But site specific issues will influence threat impacts in local areas
  - eg. groundwater pumping, weed and dieback sources, proximity to urban areas (fires)
- Larger intact remnants more protectable from many threats

Listings

- WA listed TECs = ESAs under EP Act clearing regulations

- Any clearing in ESAs requires a clearing permit

Clearing principles under Regulations:

Native vegetation should not be cleared if:

(d) it comprises the whole or a part of, or is necessary for the maintenance of, a TEC.

- PECs may be considered under clearing principle a): higher level of biological diversity, or through other means eg environmental assessment under EP Act.

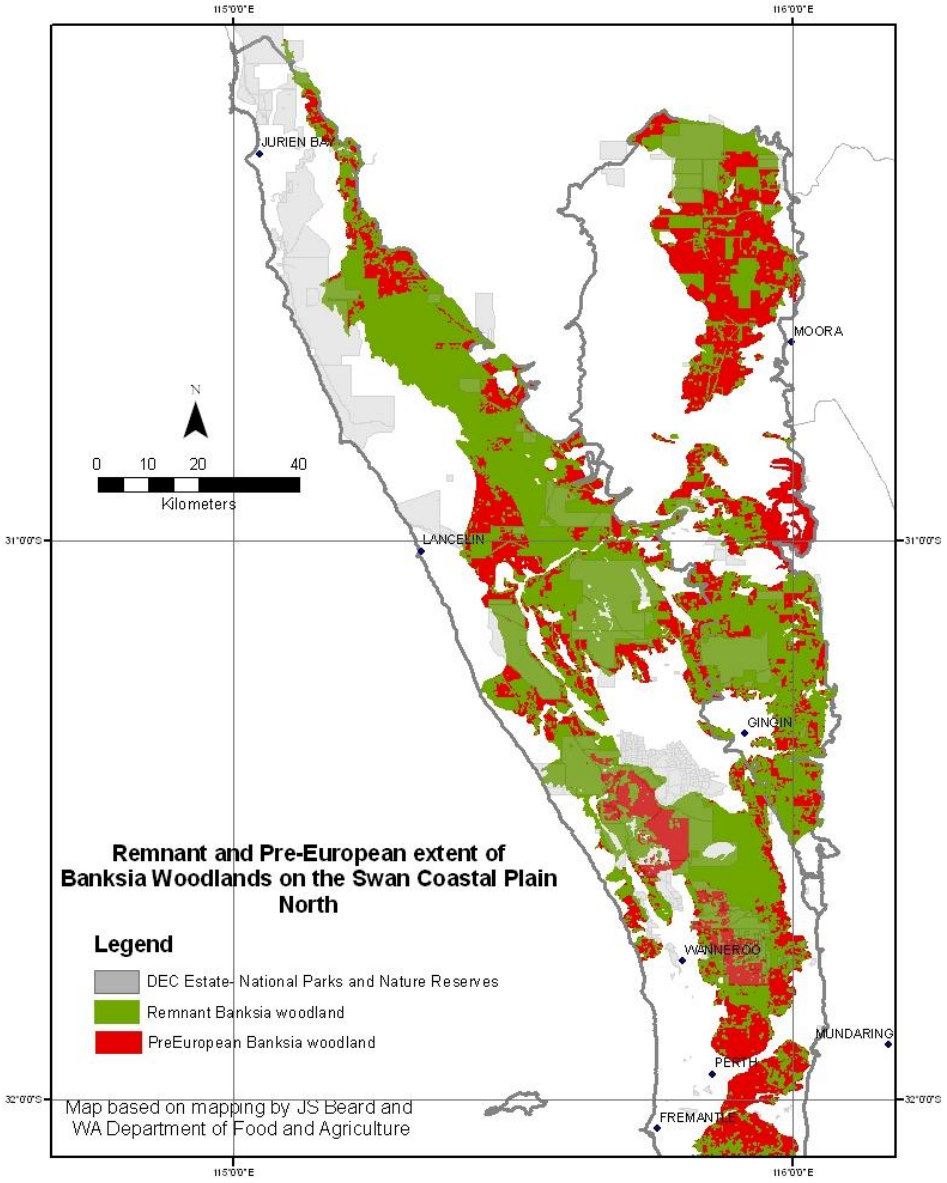
EPBC process – previous listings

Workshop of experts:

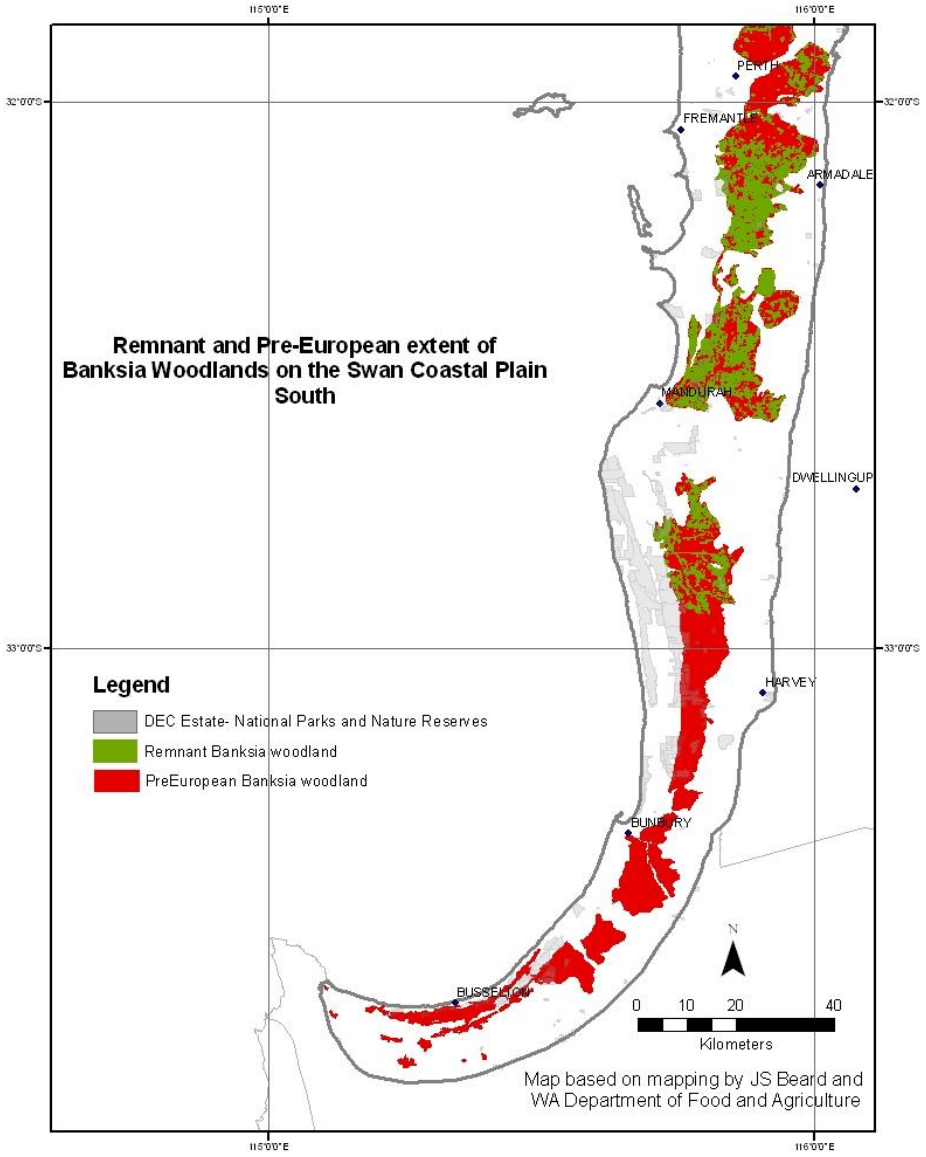
- How best to define the community
- Clarify boundaries of proposed TEC
- Discuss condition thresholds to define when it is too degraded for consideration in EIA
- Discuss information about threats and priority conservation actions
- Field trip to look at issues.

Then….

- Recommendation and assessment by Federal TSSC
- TSSC recommendation for listing, or otherwise
- Requires final sign-off by Federal Environment Minister



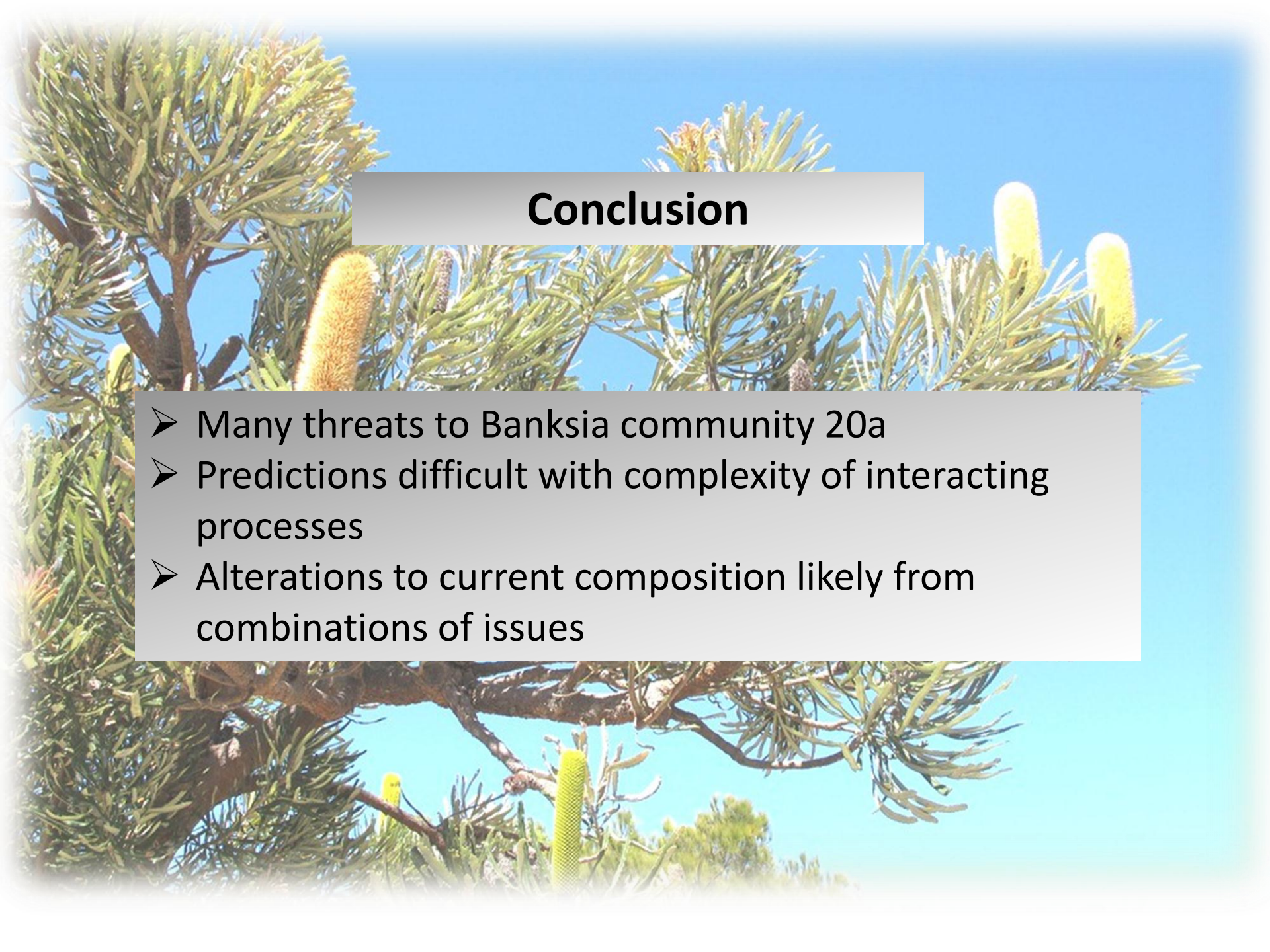
Map taken from UBC nomination



Map taken from UBC nomination

EPBC Act Listing

- TEC listing = becomes matter of national environmental significance (MNES) under the EPBC Act.
- Anyone who proposes an action that is likely to have a significant impact on a MNES must seek approval from federal Environment Minister
- Recovery plan may be recommended to outline major threats, management issues and actions required
- Federal funding more likely for management/rehab works on areas that contain TECs



Conclusion

- Many threats to Banksia community 20a
- Predictions difficult with complexity of interacting processes
- Alterations to current composition likely from combinations of issues