

"Management can also impact on habitat quality," Dr Smith said. "Grazing and fire management will affect characteristics such as soil cover and plant regeneration."

Diversity is the second key area in which the planted vegetation lags behind natural bush.

"This diversity affects not only the structure but also the additional plant conservation values it can contribute (more species planted equals more species conserved)," Dr Smith explained. "It also provides a greater resource diversity for other wildlife, such as dense foliage versus open foliage, smooth bark versus rough bark; winter versus summer flowering and so on."

Greater diversity and abundance of native plant species recruits occurs in mixed revegetation compared with oil mallees. This may be partly be due to oil mallee plantations often being grazed where revegetation is usually not grazed, but also because greater species diversity in the

mixed revegetation leads directly to greater species diversity in the recruits.

Such diversity in planted vegetation is primarily restricted by the species choice.

"Mixed revegetation sites in our study had less diversity than even the most degraded natural bush," Dr Smith said. "However, boosting the diversity of mixed revegetation is feasible, and considered current best practice for habitat creation."

Boosting the diversity of oil mallee plantations is less likely, although some farmers have planted diverse species mixes on inside rows of belts, with mallees planted on the outside belts where they can potentially be harvested.

Even though the results favoured natural bush over other types of vegetation, Dr Smith pointed out that any habitat value offered by oil mallees was beneficial, especially given the key focus for the plantations was usually for other reasons.

"In terms of getting the best overall biodiversity benefits from oil mallees it seems that blocks are better than belts and plantations adjacent to bush are better than isolated plantations," Dr Smith said. "Birds don't really care if planted vegetation is next to natural bush or not – they can fly over large distances, but mammals and reptiles were found only in natural bush or planted vegetation next to natural bush."

"The researchers also noted that bird activity was substantial throughout the year." 🌿

➡ More information

Dr Patrick Smith, CSIRO

T: (08) 9333 6467

E: patrick.smith@csiro.au

Plenty of appeal for tiny visitor

It's not only farmers and researchers that are attracted to oil mallees. For her Environmental Management Honours project, Edith Cowan University student Marie Short focused her thesis on the western pygmy possum (*Cercartetus concinnus*).

Throughout the broader biodiversity studies undertaken by CSIRO and FFI CRC researchers, western pygmy possums were regularly observed and Marie was keen to delve further into the potential habitat values widespread farm plantings of oil mallee stands were providing these tiny native animals.

"The use of farm tree plantations by the western pygmy possum was an unexpected discovery and so my research attempted to determine their habitat utilisation patterns in the WA southern wheatbelt region, where farmers have undertaken widespread oil mallee plantings," Marie said.

"Through my research I also aimed to understand the characteristics of farm tree plantations that provide a suitable habitat for the western pygmy possums."

Using pitfall traps already established by CSIRO, Marie monitored the numbers of western pygmy possums in the various types of vegetation and then used radio transmitters to track their movements.

"I found that oil mallees provided a rich source of feed for the pygmy possums during flowering, and pygmy possum numbers and the time they spent in the oil mallees were much higher during this period than those in other vegetation sources, such as remnant vegetation and mixed revegetation plantings (see Figure 1).

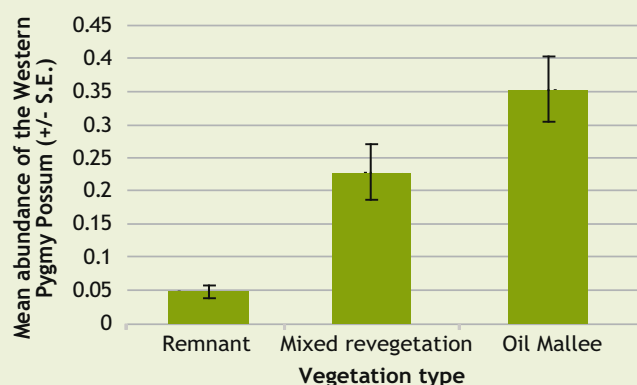
"However, it is thought that without other habitat options, the oil mallees would not sustain the population of pygmy possums out of flowering season."

Marie discovered that the pygmy possums were able to travel over several hundred metres to exploit other habitats and believes the most beneficial oil mallee plantings will be those located near remnant vegetation that can provide additional food sources and nesting sites.



ABOVE: Oil mallees provide a rich source of feed for Western pygmy possums. (Photo: Marie Short)

FIGURE 1. The average western pygmy possum abundance at sites of remnant vegetation, mixed revegetation and oil mallee plantations within the southern wheatbelt region of Western Australia



"Results from my study indicated western pygmy possums in the southern wheatbelt region that inhabit oil mallee plantations rely on the hollows of paddock trees as nesting sites. Paddock trees are important for the conservation of species such as the western

pygmy possum; too often paddock trees are cleared because nobody knows of their biodiversity benefits.

"Revegetation, particularly oil mallee plantations, has the potential to enhance conservation of wildlife, such as the western pygmy possum, in rural environments." 🌿

➡ More information

Marie Short, DEC

T: (08) 9881 9200

E: marie.short@dec.wa.gov.au