Family: ***Haemodoraceae***

Taxon: ***Anigozanthos flavidus***

Synonym: *NA*

Common Name: Evergreen kangaroo paw
Tall kangaroo paw

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** H(HPWRA)

Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score 12**

101	**Is the species highly domesticated?**	**y=-3, n=0**	**n**
102	**Has the species become naturalized where grown?**	**y=1, n=-1**	
103	**Does the species have weedy races?**	**y=1, n=-1**	
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**Intermediate**
202	**Quality of climate match data**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**High**
203	**Broad climate suitability (environmental versatility)**	**y=1, n=0**	**n**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	**n**
205	**Does the species have a history of repeated introductions outside its natural range?**	**y=-2, ?=-1, n=0**	**y**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**y**
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**y**
303	**Agricultural/forestry/horticultural weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
304	**Environmental weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**y**
305	**Congeneric weed**	**n=0, y = 1*multiplier (see Appendix 2)**	
401	**Produces spines, thorns or burrs**	**y=1, n=0**	**n**
402	**Allelopathic**	**y=1, n=0**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	
405	**Toxic to animals**	**y=1, n=0**	**n**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	**n**
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**n**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**n**
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**y**
411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**

412	**Forms dense thickets**	**y=1, n=0**	**y**
501	**Aquatic**	**y=5, n=0**	**n**
502	**Grass**	**y=1, n=0**	**n**
503	**Nitrogen fixing woody plant**	**y=1, n=0**	**n**
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**y=1, n=0**	**y**
601	**Evidence of substantial reproductive failure in native habitat**	**y=1, n=0**	**n**
602	**Produces viable seed**	**y=1, n=-1**	**y**
603	**Hybridizes naturally**	**y=1, n=-1**	**y**
604	**Self-compatible or apomictic**	**y=1, n=-1**	**y**
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**y**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	**2**
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**y**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**y**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	**n**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	**n**
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y=1, n=-1**	
803	**Well controlled by herbicides**	**y=-1, n=1**	
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: H(HPWRA) **WRA Score** **12**

Supporting Data:

101	2008. Elliot, R.. Australian Plants: For Gardens in the Sun. Rosenberg Publishing, Kenthurst, Australia	[Is the species highly domesticated? No. However, there are many cultivars of A. flavidus that may be highly domesticated] "Kangaroo paws occur naturally only in south-west Western Australia. There are only 13 natural species but considerable work undertaken in selection and breeding has resulted in a range of cultivars, some incorporating the vigour of Anigozanthos flavidus with the brighter colours of other species."
102	2011. WRA Specialist. Personal Communication.	NA
103	2011. WRA Specialist. Personal Communication.	NA
201	1989. Halevy, A.H.. CRC handbook of flowering, Volume 6. CRC Press, Boca Raton, FL	[Species suited to tropical or subtropical climate(s)? 1 -intermediate] "Kangaroo paw species experience a warm temperate Mediterranean climate with summer drought and dominant winter rainfall with a range of 380 to 1200 mm according to species."
201	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Species suited to tropical or subtropical climate(s)? 1 -intermediate] "Widespread and common within the region; occurs from Dwellingup southwards, extends east to Two Peoples Bay" [Southwestern Australia, Mediterranean climate]
201	2011. Australian Native Plants Nursery. Anigozanthos flavidus. http://www.australianplants.com/plants.aspx?id=1138	[Species suited to tropical or subtropical climate(s)? 1 -intermediate] "Origin: Mediterranean Climate"
202	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Quality of climate match data? 2-high] "Widespread and common within the region; occurs from Dwellingup southwards, extends east to Two Peoples Bay" [Southwestern Australia, Mediterranean climate]
203	2003. Llamas, K.A.. Tropical Flowering Plants. Timber Press, Portland, OR	[Broad climate suitability (environmental versatility)? No] "Thrives in hot climates and coastal locations. May become dormant when cold or dry."
203	2009. Hoblyn, A./O'Hara, M.. Green Flowers: Unexpected Beauty for the Garden, Container Or Vase. Timber Press, Portland, OR	[Broad climate suitability (environmental versatility)? No] "Hardiness: USDA Zones 9-10"
204	2011. WRA Specialist. Personal Communication.	[Native or naturalized in regions with tropical or subtropical climates? No] Naturalized in regions with a Mediterranean climate [See 3.01]
205	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Does the species have a history of repeated introductions outside its natural range? Yes] "Kangaroo Paws are cultivated commercially in several countries around the world and at least 26 cultivars are registered with the Australian Cultivar Registration Authority (http://www.anbg.gov.au/acra/ acra-list-2009.html#a)."

205	2011. Dave's Garden. PlantFiles: Kangaroo Paw, Cat's Paw - Anigozanthos flavidus. http://davesgarden.com/guides/pf/go/2032/	[Does the species have a history of repeated introductions outside its natural range? Yes] "This plant has been said to grow in the following regions: Gilbert, Arizona Phoenix, Arizona El Cerrito, California El Granada, California Granada Hills, California Manhattan Beach, California Martinez, California San Jacinto, California Stockton, California Thousand Oaks, California Deland, Florida Jacksonville, Florida Miami, Florida Orlando, Florida (2 reports) Montezuma, Georgia Noblesville, Indiana Brusly, Louisiana Central Point, Oregon Austin, Texas College Station, Texas Dallas, Texas Deer Park, Texas San Antonio, Texas"
301	2007. Henderson, L.. Invasive, naturalized and casual alien plants in southern Africa: a summary based on the Southern African Plant Invaders Atlas (SAPIA). Bothalia. 37(2): 215–248.	[Naturalized beyond native range? Yes. See Le Roux et al. 2010] "Appendix 4.—Summary of results for all naturalized and casual alien plants in the study area, Savanna Biome, Fynbos Biome, Forest habitats, Grassland Biome, Nama Karoo Biome, Succulent Karoo Biome and watercourse / wetland habitats … Anigozanthos flavidus #...#, casual alien plants: occurring outside cultivation; some species flourishing but less than 10 years of records in SAPIA precludes being categorized as 'naturalized' (Pyšek et al. 2004)."
301	2007. Hosking, J.R./Conn, B.J./Lepschi, B.J./Barker, C.H.. Plant species first recognised as naturalised for New South Wales in 2002 and 2003, with additional comments on species recognised as naturalised in 2000–2001. Cunninghamia. 10(1): 139-166.	[[Naturalized beyond native range? Yes] "Anigozanthos flavidus...Notes: This species is a problem weed in and around Booderee Botanic Gardens, with many thousands of plants within the Garden grounds and adjacent Booderee National Park. The source of the introduction was via cultivated plants in the Botanic Garden, over a period of years since the 1960s. Intentional cultivation of this species at Booderee Botanic Garden ceased in the early 1990s when plantings were removed."
301	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Naturalized beyond native range? Yes] "Abstract Most legislation pertaining to non native organisms is implicitly focused at the individual species level. However, in some cases interspecific hybrids can be more invasive than any of the parent species. This is problematic for policy makers, and for horticulturists developing or trading in new ornamental cultivars. We explore these issues in the context of the need to manage naturalized populations of Kangaroo Paws (Anigozanthos species) in South Africa. Self-sustaining, dense populations of naturalized Kangaroo Paws occur at several localities and are highly attractive to local nectar feeding birds. The populations show high levels of seed set with or without bird pollination. Given the known propensity of Kangaroo Paws to hybridise in their native range in Australia, and confusion about the species identity of naturalized populations in South Africa, it was essential to resolve some key taxonomic issues in the group. We constructed the first molecular phylogeny for all species of the Kangaroo Paw group (genera Anigozanthos and Macropidia; family Haemodoraceae). As previously determined by taxonomists working on herbarium specimens, naturalized populations were identified as A. flavidus. In addition, we also identified a second species, A. rufus. Relative genome size estimates for Anigozanthos species indicated that small inter specific differences in genome sizes are positively correlated to hybrid fitness. Anigozanthos flavidus and A. rufus have relatively 'compatible' genomes and may produce fertile hybrids under field conditions. However, for species whose genome size differ more than *30%, there is little inter-specific compatibility and consequently a very low risk of producing fertile hybrids. In conclusion, we recommend that trade in Kangaroo Paws in South Africa should be temporarily restricted and that particular cultivars should first be subjected to a careful risk assessment."

302	2007. Hosking, J.R./Conn, B.J./Lepschi, B.J./Barker, C.H.. Plant species first recognised as naturalised for New South Wales in 2002 and 2003, with additional comments on species recognised as naturalised in 2000–2001. Cunninghamia. 10(1): 139-166.	[Garden/amenity/disturbance weed? Yes] "Notes: This species is a problem weed in and around Booderee Botanic Gardens, with many thousands of plants within the Garden grounds and adjacent Booderee National Park. The source of the introduction was via cultivated plants in the Botanic Garden, over a period of years since the 1960s. Intentional cultivation of this species at Booderee Botanic Garden ceased in the early 1990s when plantings were removed. It is spread via seed and rhizomes (through slashing and grounds maintenance). A control program for this species has been in place since 1997 with limited success. Not known to be naturalised elsewhere."
303	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Agricultural/forestry/horticultural weed? No] No evidence
303	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Agricultural/forestry/horticultural weed? No] No evidence
304	2009. Australian Native Plant Society. The Kangaroo Paw Family - Cultivation. http://anpsa.org.au/paws3.html	[Environmental weed? Yes] "Like any plants grown out of their natural habitat, members of the Haemodoraceae have the potential to become weedy in favourable environments. However, the only known problem with the Australian species is a report of Anigozanthos flavidus invading natural areas in the northern suburbs of Sydney (specifically, Ku-ring-gai Wildflower Garden at St Ives). This suggests that this species should be closely monitored in near bushland areas in temperate climates, particularly in moist locations. As noted previously, most hybrids are sterile and do not produce seed so it may be best to grow hybrids (see table above) rather than A. flavidus itself in such areas."
304	2009. Plant Protection Research Institute. Weeds Research. Plant Protection News. 82: 9-13.	[Environmental weed? Yes] "During October 2009, Lesley Henderson and Hildegard Klein undertook roadside surveys for the Southern African Plant Invaders Atlas (SAPIA) project in the south-western Cape. The main focus of the survey was on new, emerging invasive species, particularly ornamentals that have spread from gardens in the Overstrand District and Cape Peninsula...Kangaroo paws (Anigozanthos flavidus) (photo 6) have been cleared from the wetland, but cultivated plants in a nearby holiday resort are a source of seed for further invasion."
304	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Environmental weed? Yes] "In its native country, populations of A. flavidus have naturalized and are spreading in New South Wales and South Australia (Australian Native Plants Society 2009; Martin O'Leary, personal communication 2009) and are considered serious environmental weeds (Hoskins et al. 2007)...These records identified naturalized populations as A. flavidus and, potentially, A. manglesii. These populations presumably are derived from plants introduced to a local flower farm (Honingklip) somewhere between 1960 and 1969. The record for this population in the South African Plant Invaders Atlas gives the taxon as A. flavidus (Henderson 2007), although Stephen Hopper (personal communication), the world authority on the group, has suggested that these populations represent ''A. flavidus and hybrids''. The current invasion occurs within 10 km of one of South Africa's most pristine and important biodiversity-hotspot conservation areas, the Kogelberg Biosphere Reserve (Fig. 2)...Although the naturalized populations have not yet spread widely, plants can clearly spread and form mono-specific stands. The Early Detection and Rapid Response (EDRR) program in South Africa was established in part to deal with species before they become widespread. Anigozanthos populations are still containable at a relatively low cost, and it is prudent to act while control costs are small. Anigozanthos species also show the potential to change pollination webs. The floral morphology of invasive Anigozanthos species present in South Africa (Armstrong 1979) closely matches that of many native plants in the Cape Floristic Region. Kangaroo Paws provide Sunbirds and Sugarbirds with a rich source of nectar at a time of nectar scarcity (late summer), in return being rewarded by increased reproductive output due to increased outcrossing. Kangaroo Paws could therefore ultimately alter Sunbird and Sugarbird abundance in South Africa (Geerts and Pauw 2009b)."
305	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Congeneric weed? Possibly, but impacts unknown] "Hopper (1993) noted that A. flavidus is extremely competitive and indeed the most invasive and robust species of Kangaroo Paw. Despite this, A. manglesii is the only taxon listed in Randall's (2007) ''The introduced flora of Australia and its weed status''.

401	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Produces spines, thorns or burrs? No] "Perennial herb to 3 m. Leaves linear, 350-1000 mm long and 5-25 mm wide, flattened, glossy, lacking hairs. Inflorescence wide-spreading and greatly branche3d with several flower clusters."
402	2011. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Parasitic? No] "Perennial herb to 3 m. Leaves linear, 350-1000 mm long and 5-25 mm wide, flattened, glossy, lacking hairs." [Haemodoraceae]
404	2011. Pacific Horticulture. Deer-Resistant and Drought-Tolerant Plants in The Demonstration Gardens at Falkirk. http://www.pacifichorticulture.org/web-extras/71/4/deer-resistant-and-drought-tolerant-plants-in-the-demonstration-gardens-at-falkirk/	[Unpalatable to grazing animals? Possibly] Listed as deer resistant
405	1989. Halevy, A.H.. CRC handbook of flowering, Volume 6. CRC Press, Boca Raton, FL	[Toxic to animals? No] No evidence
405	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Toxic to animals? No] No evidence
406	2006. Oliver, K.. Australian Native Plant Society - Kangaroo Paws: Pests and Diseases. http://anpsa.org.au/paws1.html	[Host for recognized pests and pathogens? No] "The species Anigozanthos flavidus is an exception in that it is not short lived. It can live for at least 30 years in cultivation, possibly for much longer and it is an exceptionally vigorous, hardy and disease free species that has been widely used in breeding the hybrid kangaroo paws that are now widely grown, both within Australia and in other countries1. Careful selection from the hybrid progeny of A. flavidus yields plants that have good disease resistance and which are little eaten by snails. They are also hardy and vigorous and live much longer than most species of kangaroo paws."
406	2011. Australian Native Plants Nursery. Anigozanthos flavidus. http://www.australianplants.com/plants.aspx?id=1138	[Host for recognized pests and pathogens? No] "Sometimes attacked by fungus known as ink disease which is an inky-black spotting on the leaves. A. flavidus is most tolerant of this fungus."
407	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Causes allergies or is otherwise toxic to humans? No] No evidence
407	2009. Scott, N.. Drought-Busting Australian Native Plants. http://www.australian-native-plants.com/order/DBANP-AllRightsReserved.pdf	[Causes allergies or is otherwise toxic to humans? No] "Disadvantages: The flowers are covered with velvety hairs and may be irritating when in contact with skin and eyes." [Otherwise, no evidence of toxicity or allergenic properties]
408	1996. Gill, A.M./Moore, P.H.R.. Ignitibility of Leaves of Australian Plants.. CSIRO Plant Industry, Canberra, Australia	[Creates a fire hazard in natural ecosystems? Possibly] "Four species - including two Myoporum collections and Anigozanthos - were slow to ignite when fresh but quick when oven dry (Group D)."
408	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Creates a fire hazard in natural ecosystems? Possibly] "Another important consideration is that invasive populations of Kangaroo Paws in South Africa occur in fynbos, an evergreen hard-leafed shrubland that occurs along the southwestern coastal belt (100– 200 km wide) of South Africa. Fire is a crucial ecological factor in the functioning of fynbos ecosystems. As an adaptive response to wild fires in Australia, flowering, branching, seed production, seed viability and seedling establishment of Kangaroo Paws are stimulated by smoke and heat (Lamont and Runciman 1993; Tieu et al. 2001). The frequent occurrence of fires in the currently invaded areas is likely to act as a stimulus for increased reproductive output, spread, and invasiveness. Fire is used as an integral part of management for well established woody invasive species in fynbos, to kill seedlings and stimulate seed germination following mechanical clearing (van Wilgen et al. 1994). We cannot see any practical role of utilizing fire in an integrated management plan for Kangaroo Paws in fynbos. Even though these two species (or hybrids) currently occupy a relative small area, our studies indicate they have considerable invasive potential and should be immediately controlled."
409	1985. Harper, P./McGourty, F.. Perennials: how to select, grow & enjoy. HPBooks, Los Angeles, CA	[Is a shade tolerant plant at some stage of its life cycle? No] "…needs well-drained soil and a sunny site."

409	1989. Halevy, A.H.. CRC handbook of flowering, Volume 6. CRC Press, Boca Raton, FL	[Is a shade tolerant plant at some stage of its life cycle? No] "They grow in full sun among the shrubs and herbs common in open heath and woodland areas, where the soils are highly leached and mineral deficient, and in deep sands of the coastal plain."
409	2003. Llamas, K.A.. Tropical Flowering Plants. Timber Press, Portland, OR	[Is a shade tolerant plant at some stage of its life cycle? No] "Full sun"
409	2006. Australian National Botanic Gardens. Growing Native Plants - Anigozanthos flavidus. http://www.anbg.gov.au/gnp/interns-2006/anigozanthos-flavidus.html	[Is a shade tolerant plant at some stage of its life cycle? Light shade] "All kangaroo paws are native to Western Australia, and only occur in the wild in this state. Anigozanthos flavidus occurs in the extreme south west of Western Australia, growing from Augusta east to Two Peoples Bay and north to Waroona. It can be found on roadsides, river banks, swamps, shallow water and in eucalypt forests, tolerating light shade. "
409	2009. Hoblyn, A./O'Hara, M.. Green Flowers: Unexpected Beauty for the Garden, Container Or Vase. Timber Press, Portland, OR	[Is a shade tolerant plant at some stage of its life cycle? No] "Position: Sun"
410	2006. Australian National Botanic Gardens. Growing Native Plants - Anigozanthos flavidus. http://www.anbg.gov.au/gnp/interns-2006/anigozanthos-flavidus.html	[Tolerates a wide range of soil conditions? Yes] "Anigozanthos flavidus is adaptable to most soil types, from sandy to clay, and will even grow partly immersed, tolerating wet feet."
411	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Climbing or smothering growth habit? No] "Perennial herb to 3 m. Leaves linear, 350-1000 mm long and 5-25 mm wide, flattened, glossy, lacking hairs."
412	2010. Phillips, R.D./Hopper, S.D./Dixon, K.W.. Pollination ecology and the possible impacts of environmental change in the Southwest Australian Biodiversity Hotspot. Philosophical Transactions of the Royal Society B. 365: 517–528.	[Forms dense thickets? Yes] "One large population (ca. 180,000 individual sprouts) was found on Honingklip farm (enlarged in b) and contained areas infested by monotypic stands of Anigozanthos...Although the naturalized populations have not yet spread widely, plants can clearly spread and form mono-specific stands. Current infestations are within 10 km of one of South Africa's most pristine and important biodiversity-hotspot conservation areas, the Kogelberg Biosphere Reserve, and so management is regarded as a priority."
501	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Aquatic? No] "Perennial herb to 3 m. Leaves linear, 350-1000 mm long and 5-25 mm wide, flattened, glossy, lacking hairs." [Terrestrial]
502	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Grass? No] Haemodoraceae
503	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Nitrogen fixing woody plant? No] Haemodoraceae
504	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? Yes] "Perennial herbs with a rhizome and leaves perennial or annually renewed." [Functionally a geophyte]
601	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Evidence of substantial reproductive failure in native habitat? No] No evidence
602	2006. Sweedman, L./Merritt, D.. Australian seeds: a guide to their collection, identification and biology. Csiro Publishing, Collingwood, Australia	[Produces viable seed? Yes. Image of seeds of Anigozanthos flavidus. Length approx. 2 mm]
602	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Produces viable seed? Yes] "Interestingly, compared to other conspecifics, both A. flavidus and A. rufus have relatively higher levels of self-compatibility and display relatively high levels of seed set when selfed (Hopper 1980)."
603	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Hybridizes naturally? Yes] "Hybrids between Anigozanthos flavidus and Anigozanthos viridis have been recorded near the Scott River."

603	2009. Hoblyn, A./O'Hara, M.. Green Flowers: Unexpected Beauty for the Garden, Container Or Vase. Timber Press, Portland, OR	[Hybridizes naturally? Yes] "It hybridizes freely, both in the wild and in cultivation."
603	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Hybridizes naturally? Yes] "Hybridisation often results in increased invasiveness for plants (Ellstrand and Schierenbeck 2000; Prentis et al. 2008). Previous taxonomic work putatively identified A. flavidus and A. manglesii as naturalized in South Africa. In addition to confirming the identity of A. flavidus, our phylogenetic approach also identified the second species as A. rufus."
604	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Self-compatible or apomictic? Yes] "Bagging flowers did not affect the proportion of flowers that set capsules...Bagged flowers, however, tended to have fewer seeds per capsule (Fig. 3)...This is similar to the findings of Hopper (1980) who showed a 40% reduction in selfed vs outcrossed populations of A. flavidus...We also showed that Anigozanthos flavidus can set seed in South Africa in the absence of pollinators, and so might produce self-sustaining outlying foci after long distance dispersal...Interestingly, compared to other conspecifics, both A. flavidus and A. rufus have relatively higher levels of self compatibility and display relatively high levels of seed set when selfed (Hopper 1980)."
605	1978. Hopper, S.D./Burbidge, A.H .. Assortative Pollination by Red Wattlebirds in a Hybrid Population of Anigozanthos Labill. (Haemodoraceae). Australian Journal of Botany. 26(3): 335 - 350.	[Requires specialist pollinators? No. See Le Roux et al. 2010] "It is proposed that honeyeaters have generated strong selective pressures influencing the stature, floral structure and phenology of these kangaroo paws." [Describes pollination in a hybrid population of Anigozanthos manglesii with similar floral structure to A. flavidus]
605	1990. Simpson, M.G.. Phylogeny and Classification of the Haemodoraceae. Annals of the Missouri Botanical Garden. 77(4): 722-784.	[Requires specialist pollinators? No. See Le Roux et al. 2010] "Zygomorphy in Anigozanthos and Macropidia probably evolved due to strong selective pressure for specialized bird pollination (Hopper & Campbell, 1977; Hopper & Burbidge, 1978)."
605	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Requires specialist pollinators? No] "Bagged flowers, however, tended to have fewer seeds per capsule (Fig. 3). When capsules were treated as replicates, capsules that resulted from bird pollination contained significantly more seeds…" [Although bird pollination results in higher seed set, bird pollination is not required to produce viable seed]
605	2010. Phillips, R.D./Hopper, S.D./Dixon, K.W.. Pollination ecology and the possible impacts of environmental change in the Southwest Australian Biodiversity Hotspot. Philosophical Transactions of the Royal Society B. 365: 517–528.	[Requires specialist pollinators? No. See Le Roux et al. 2010] "Within bird-pollinated plants, one of the most pronounced evolutionary developments in the SWAFR is divergence of congeners from taller growth forms requiring perch feeding to those that are prostrate or low-growing, enabling access to nectar by birds standing on the ground. Such divergence is evident across a range of families, including Haemodoraceae (Anigozanthos)…"
606	1989. Halevy, A.H.. CRC handbook of flowering, Volume 6. CRC Press, Boca Raton, FL	[Reproduction by vegetative fragmentation? Yes] "Kangaroo paws can be propagated from seed, division of the rhizome, or by in vitro tissue culture.' [rhizome division suggests ability for vegetative fragments to spread]
606	2007. Hosking, J.R./Conn, B.J./Lepschi, B.J./Barker, C.H.. Plant species first recognised as naturalised for New South Wales in 2002 and 2003, with additional comments on species recognised as naturalised in 2000–2001. Cunninghamia. 10(1): 139-166.	[Reproduction by vegetative fragmentation? Yes] "It is spread via seed and rhizomes (through slashing and grounds maintenance)."
607	2009. Australian Native Plant Society. The Kangaroo Paw Family - Cultivation. http://anpsa.org.au/paws3.html	[Minimum generative time (years)? Probably between 1-2 years for A. flavidus] "Species such as the magnificent red and green kangaroo paw (A. manglesii) and the green kangaroo paw (A. viridis) usually germinate readily from seed and will flower in their first season - these could be treated as annuals or biennials in humid climates. In less humid districts, a much wider range of species and cultivars can be expected to succeed."
701	2007. Hosking, J.R./Conn, B.J./Lepschi, B.J./Barker, C.H.. Plant species first recognised as naturalised for New South Wales in 2002 and 2003, with additional comments on species recognised as naturalised in 2000–2001. Cunninghamia. 10(1): 139-166.	[Propagules likely to be dispersed unintentionally ? Yes] "It is spread via seed and rhizomes (through slashing and grounds maintenance)."
702	2009. Hoblyn, A./O'Hara, M.. Green Flowers: Unexpected Beauty for the Garden, Container Or Vase. Timber Press, Portland, OR	[Propagules dispersed intentionally by people? Yes] Ornamental
703	2011. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? Unknown] No evidence, but possible if plants are cultivated with other ornamental flowers.

704	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Propagules adapted to wind dispersal? Possibly] "Fruit and seed dispersal are virtually unknown. The small, dry seeds suggest dispersal by wind and water." [Probably for short distances, or gravity dispersed]
704	2006. Sweedman, L./Merritt, D.. Australian seeds: a guide to their collection, identification and biology. Csiro Publishing, Collingwood, Australia	[Propagules adapted to wind dispersal? Possibly short distances. Image of seeds of Anigozanthos flavidus. Length approx. 2 mm]
705	2002. Wheeler, J.R./Marchant, N.G./Lewington, M.. Flora of the South West: Introduction, keys, ferns to monocotyledons. UWA Publishing, Crawley, Western Australia	[Propagules water dispersed? Possibly] "Jarrah or karri forest, woodland or shubland, often in damp soil bordering watercourses, swamps and drains."
706	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Propagules bird dispersed? No] "Fruit and seed dispersal are virtually unknown. The small, dry seeds suggest dispersal by wind and water." [Not fleshy-fruited]
707	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Propagules dispersed by other animals (externally)? No] "Fruit and seed dispersal are virtually unknown. The small, dry seeds suggest dispersal by wind and water." [No evidence]
707	2006. Sweedman, L./Merritt, D.. Australian seeds: a guide to their collection, identification and biology. Csiro Publishing, Collingwood, Australia	[Propagules dispersed by other animals (externally)? No. Seeds with no means of external attachment]
708	2011. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown] Seeds unlikely to be ingested
801	2010. Le Roux, J.J./Geerts, S./Ivey, P./Krauss, S./Richardson, D./Suda, J./Wilson, J.. Molecular systematics & ecology of invasive Kangaroo Paws in South Africa: management implications for a horticulturally important genus. Biol Invas. 12: 3989–4002.	[Prolific seed production (>1000/m2)? Unlikely to produce high seed densities without sufficient suite of bird pollinators] "We also showed that Anigozanthos flavidus can set seed in South Africa in the absence of pollinators, and so might produce self-sustaining outlying foci after long-distance dispersal. Kangaroo Paws are a predominantly outcrossing group and selfing, on average, results in a 90% decrease in seed set (Hopper 1980)."
802	2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] "Storage Behaviour: Orthodox?"
803	2011. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown. No description of chemical control or herbicide efficacy found]
804	2002. Burrows, N.D./Ward, B./Cranfield, R.. Short-term impacts of logging on understorey vegetation in a jarrah forest. Australian Forestry. 65(1): 47–58.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Appendix 1 … Anigozanthos flavidus … Post-fire regeneration method … FBO = resprouts from fleshy below ground organ (roots, bulb, corm, rhizome, tuber)"
804	2006. Australian National Botanic Gardens. Growing Native Plants - Anigozanthos flavidus. http://www.anbg.gov.au/gnp/interns-2006/anigozanthos-flavidus.html	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Anigozanthos flavidus is a perennial herb, with evergreen leaves growing up to one metre long and two centimetres wide, forming clumps up to two metres across. It forms a rhizome, or modified stem underground, which grows to five centimetres in diameter. This rhizome makes the plant resistant to fire and drought, as it is able to re-sprout once conditions improve. "
805	2011. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]