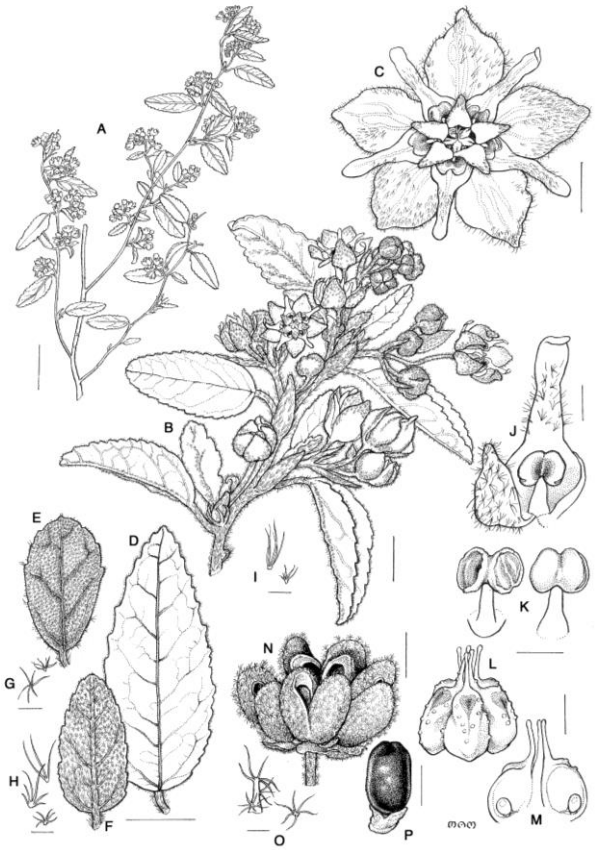
Department of Parks and Wildlife

Interim Recovery Plan No. **362**

Many-flowered Commersonia (*Commersonia apella*)

Interim Recovery Plan

2016–2021



Department of Parks and Wildlife, Western Australia

July 2016

List of Acronyms

The following acronyms are used in this plan:

ADTFCRT	Albany District Threatened Flora and Communities Recovery Team
ANBG	Australian National Botanic Gardens
BGPA	Botanic Gardens and Parks Authority
CALM	Department of Conservation and Land Management
CITES	Convention on International Trade in Endangered Species
CPC	Conservation and Parks Commission
CR	Critically Endangered
DEC	Department of Environment and Conservation
DAA	Department of Aboriginal Affairs
DPaW	Department of Parks and Wildlife
DRF	Declared Rare Flora (also known as Threatened Flora)
EDTFCRT	Esperance District Threatened Flora and Communities Recovery Team
EN	Endangered
EPBC	Environment Protection and Biodiversity Conservation
IBRA	Interim Biogeographic Regionalisation for Australia
IRP	Interim Recovery Plan
IUCN	International Union for Conservation of Nature
LGA	Local Government Authority
MRWA	Main Roads WA
NP	National Park
NRM	Natural Resource Management
PEC	Priority Ecological Community
PICA	Public Information and Corporate Affairs
SCB	Species and Communities Branch
SWALSC	South West Aboriginal Land and Sea Council
TEC	Threatened Ecological Community
TFSC	Threatened Flora Seed Centre
UNEP-WCMC	United Nations Environment Program World Conservation Monitoring Centre
VU	Vulnerable
WA	Western Australia
WRTFRT	Warren Region Threatened Flora Recovery Team

Foreword

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Parks and Wildlife Corporate Policy Statement No. 35 (DPaW 2015*a*) and Department of Parks and Wildlife Corporate Guideline No. 35 (DPaW 2015*b*). Plans outline the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened flora, fauna and ecological communities, and begin the recovery process.

Parks and Wildlife is committed to ensuring that threatened flora are conserved through the preparation and implementation of Recovery Plans (RPs) or IRPs, and by ensuring that conservation action commences as soon as possible and, in the case of Critically Endangered (CR) flora, always within one year of endorsement of that rank by the Minister.

This plan will operate from July 2016 to June 2021 but will remain in force until withdrawn or replaced. It is intended that, if *Commersonia apella* is still ranked CR in Western Australia following 5 years of implementation, this plan will be reviewed and the need for further recovery actions assessed.

This plan was given regional approval on 26 May 2016 and was approved by the Director of Science and Conservation on 1 July 2016. The provision of funds identified in this plan is dependent on budgetary and other constraints affecting Parks and Wildlife, as well as the need to address other priorities.

Information in this plan was accurate at July 2016.

Plan preparation: This plan was prepared by:

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Paul Carmen	Australian National Botanic Gardens
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Thanks also to the staff of the Western Australian Herbarium for providing access to Herbarium specimen information, and other departmental staff for assistance in developing this plan.

Cover photograph by M. Fagg, Australian National Botanic Gardens (ANBG), drawing by M. Wilson reproduced with permission of the Australian Biological Resources Study.

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Summary

Scientific name:	*Commersonia apella*	**Shires:**	Denmark, Esperance
Family:	Malvaceae	**NRM region:**	South Coast NRM Inc.
Common name:	Many-flowered Commersonia	**IBRA regions:**	Jarrah Forest, Esperance Plains
Flowering period:	October–December	**IBRA subregions:**	Southern Jarrah Forest JAF02, Recherche ESP02
DPaW regions:	Warren, South Coast		
DPaW districts:	Frankland, Donnelly, Albany, Esperance	**Recovery teams:**	ADTFCRT, EDTFCRT, WRTFRT

Distribution and habitat: *Commersonia apella* is currently known from one extant population southeast of Esperance but in the past has been found over a much larger area between Esperance and Pemberton. The species is found near the banks of streams or rivers, growing in humic, greyish-brown, clayey-sand, in open jarrah-wandoo woodland, karri-marri forest and coastal *Eucalyptus angulosa*, *E. conferruminata* and *E. cornuta* mallee shrubland.

Habitat critical to the survival of the species, and important populations: It is considered that all known habitat for *Commersonia apella* is critical to its survival, and that the extant population is an important population. Habitat critical to the survival of *C. apella* includes the area of occupancy of the extant population and areas of similar habitat surrounding the extant population (these providing potential habitat for population expansion and for pollinators). It may also include the habitat of presumed extinct populations which may contain soil-stored seed, occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Conservation status: *Commersonia apella* was listed as specially protected under the Western Australian *Wildlife Conservation Act 1950* on 17 September 2013. It is ranked as Critically Endangered (CR) in Western Australia under International Union for Conservation of Nature (IUCN) 2001 criteria A4; B2ab(iv); C2a(ii); D due to a population size reduction of ≥80% over 10 years; its area of occupancy estimated to be less than 10km^2; it being known from a single location; there being a continuing decline in the number of mature plants; at least 90% of mature plants in one subpopulation; and its population size estimated to number fewer than 50 mature plants. The species is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Threats: The main threats to the species are fire, dieback disease, possible future recreational development, limited genetic diversity, road and firebreak maintenance, weeds and poor recruitment.

Existing recovery actions: The following recovery actions have been or are currently being implemented and have been considered in the preparation of this plan:

1. Twenty five cutting grown plants are housed in the living collection at the Australian National Botanic Gardens (ANBG). ANBG also have 174 seeds in storage.
2. Many surveys have been undertaken for the species.

Plan objective: The objective of this plan is to abate identified threats and maintain or enhance *in situ* populations to ensure the long-term conservation of the species in the wild.

Recovery criteria

Criteria for recovery success: The plan will be considered a success if one or more of the following take place over the term of the plan.

- No important populations have been lost and the number of mature plants within the extant population has remained within a 20% range or has increased by >20% from 31 to 37 or more or
- New populations have been found, increasing the number of known populations from one to two or more with no net loss of mature plants or
- The area of occupancy has increased by >20% with no net loss of mature plants.

Criteria for recovery failure: The plan will be considered a failure if one or more of the following take place over the term of the plan.

- Important populations have been lost or
- The number of mature plants has decreased by <20% from 31 to 25 or less or
- The area of occupancy has decreased by >20% with a loss of mature plants.

Recovery actions

1. Coordinate recovery actions
2. Monitor populations
3. Collect and store seed and/or tissue culture material
4. Undertake surveys
5. Undertake regeneration trials
6. Maintain hygiene measures
7. Develop and implement a fire management strategy
8. Undertake weed control
9. If required for the long term conservation of *Commersonia apella*, develop and implement a translocation proposal
10. Liaise with land managers and Aboriginal communities
11. Promote awareness
12. Obtain biological and ecological information
13. Map habitat critical to the survival of *Commersonia apella*
14. Review this plan and assess the need for further recovery actions

1. Background

History

Commersonia apella was first collected at Big Brook, Pemberton by Max Koch in 1919 and at that time was thought to be a form of *Rulingia corylifolia* (now *Commersonia corylifolia*). However, it was later placed in *Commersonia* and named as a new species (Wilkins and Whitlock 2011).

Commersonia apella has been recorded from sites near Pemberton, Walpole and Denmark with additional unverifiable sightings made near Albany (W.H. Nicholls 1946) and Denmark (A. Meebold 1928). Surveys for *C. apella* and the morphologically similar *C. corylifolia* by Carol Wilkins and the late Brenda Hammersley between 2003 and 2007 located just one plant of *C. apella* near Denmark (Population 1). No live plants have been recently seen there or in other historical sites near Pemberton and Walpole and all these populations are now thought to be extinct.

A new population (Population 2) of *Commersonia apella* was discovered during a survey of New Island Bay, Cape Le Grand National Park by Adrienne Markey in 2011 (Markey 2012). The population is disjunct from where the species has been seen previously and is the only one currently known to contain living plants. It was listed as threatened flora on 17 September 2013.

Description

Commersonia apella is an erect to spreading shrub 1.5 to 2m high by 1 to 2.5m wide. Its distinguishing features include the scarcely gibbous petal base beneath the petal ligule (a tongue-like petal extension), the scattered, white, stellate hairs on the inside of the ligule and the outer surface of the petal base and the ovate or elliptic leaves with serrulate margins and densely hairy adaxial surfaces (Wilkins and Whitlock 2011).

Commersonia apella is named from the Greek *a* (without) *pella* (cup or bowl), referring to the absence of the deep, gibbous pouch present at the base of the petal in *C. corylifolia* (Wilkins and Whitlock 2011).

Illustrations and/or further information

Western Australian Herbarium (1998–) *FloraBase– the Western Australian Flora*. Department of Parks and Wildlife. http://florabase.dpaw.wa.gov.au/; Wilkins, C.F. and Whitlock, B.A. (2011) A revision of *Commersonia* including *Rulingia* (Malvaceae *s.l.* or Byttneriaceae). *Australian Systematic Botany* 24(5): 226–283.

Distribution and habitat

Commersonia apella has been historically recorded from sites between Pemberton and Esperance, growing in humic, greyish-brown, clayey sand, in open jarrah-wandoo woodland, karri-marri forest and coastal *Eucalyptus angulosa*, *E. conferruminata* and *E. cornuta* mallee-heath. It is often associated with the banks of streams or rivers.

Table 1. Summary of population land vesting, purpose and manager

Population number & location	DPaW district	Shire	Vesting	Purpose	Manager
Recent collections					
*1. NE of Denmark	Frankland	Denmark	MRWA	Road reserve	MRWA
2. Cape Le Grand	Esperance	Esperance	CPC	NP	DPaW
Historic collections					
*Albany	Albany	Albany	Unknown	Unknown	Unknown
*W of Albany	Albany	Albany	Unknown	Unknown	Unknown
*Denmark	Frankland	Denmark	Unknown	Unknown	Unknown
*W of Denmark	Frankland	Denmark	Unknown	Unknown	Unknown
*N of Pemberton	Donnelly	Manjimup	Unknown	Unknown	Unknown
*Walpole	Frankland	Manjimup	Unknown	Unknown	Unknown

*no longer extant

Biology and ecology

DNA-sequence phylogeny (Whitlock *et al*. 2011) shows that *Commersonia apella* is closely related to *C. corylifolia* and shares a similar ovate leaf shape and velvety indumentum. However, *Commersonia apella* has smaller, more abundant flowers and lacks the prominently gibbous pouch at the base of the petal which is present in *C. corylifolia* (Wilkins and Whitlock 2011).

Little is known about the ecology of *Commersonia apella*. Its closest relatives are known to regenerate following seed germination post fire (Wilkins *pers. comm*. 2013). However, two years after a hot summer fire burnt the habitat of Population 2, only a handful of mature plants (1 to 2m tall) were observed with no seedlings noted. The single mature plant seen at Population 1 in 2003 had died by 2007 with no seedlings observed since that time.

Commersonia apella flowers between October and December, with fruits seen in January.

Conservation status

Commersonia apella was listed as specially protected under the Western Australian *Wildlife Conservation Act 1950* on 17 September 2013. It is ranked as Critically Endangered (CR) in Western Australia under International Union for Conservation of Nature (IUCN) 2001 criteria A4; B2ab(iv); C2a(ii); D due to a population size reduction of ≥80% over 10 years; its area of occupancy estimated to be less than 10km^2; it being known from a single location; there being a continuing decline in the number of mature plants; at least 90% of mature plants in one subpopulation; and its

population size estimated to number fewer than 50 mature plants. The species is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Threats

- **Altered fire regimes.** Although fire may be required to germinate soil-stored seed, frequent fire may deplete the soil seed store and may also facilitate weed invasion. Conversely, a lack of fire is likely to result in little or no recruitment.
- **Limited genetic diversity.** There are <50 adult plants in the known population, representing a limited gene pool.
- **Road and firebreak maintenance.** Threats to Population 1 and its habitat include grading, chemical spraying, construction and maintenance of drainage channels and mowing roadside vegetation.
- **Weeds.** Weeds are a minor threat to the habitat of both populations as they suppress early plant growth by competing for soil moisture, nutrients and light and increase the fire hazard due to easy ignition of high fuel loads.
- **Lack of natural recruitment.** Little natural recruitment has been observed in the extant population.
- **Disease.** Disease such as *Phytophthora cinnamomi* may directly threaten *Commersonia apella* and also degrade the habitat of the species.

The intent of this plan is to provide actions that will mitigate immediate threats to *Commersonia apella*. Although climate change and drought may have a long-term effect on the species, direct actions to prevent the impact of climate change and drought are beyond the scope of this plan.

Table 2. Summary of population information and threats

Population no & location	**Land status**	**Year / no. of plants**		**Current condition**		**Threats**
				Population	**Habitat**	
Recent collections						
***1. NE of Denmark**	MRWA road reserve	1995 2003 2007 2008 2013 2015	occasional 1 0 0 0 0	Presumed extinct	Good	Road maintenance, weeds, disease, fire
2. Cape Le Grand	NP	2011 2014	several 31	Good	Good	Weeds, disease, fire
Historic collections						
Albany	Unknown	1946	Unknown	Unknown	Unknown	Unknown
W of Albany	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Denmark		1928	Unknown	Unknown	Unknown	Unknown
W of Denmark	Unknown	1978	Unknown	Unknown	Unknown	Unknown
N of Pemberton	Unknown	1921	Unknown	Unknown	Unknown	Unknown
Walpole	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Note: Populations in **bold text** are considered to be important populations; *no longer extant but habitat is intact

Guide for decision-makers

Section 1 provides details of current and possible future threats. Actions for development and/or land clearing in the immediate vicinity of *Commersonia apella* may require assessment. Actions that could result in any of the following may potentially result in a significant impact on the species:

- Damage or destruction of occupied or potential habitat.
- Alteration of the local surface hydrology or drainage.
- Reduction in population size.
- Spread of *Phytophthora* dieback.

Habitat critical to the survival of *Commersonia apella* and important populations

It is considered that all known habitat for *Commersonia apella* is critical to its survival, and that the extant population is an important population. Habitat critical to the survival of *C. apella* includes the area of occupancy of the extant population, areas of similar habitat surrounding the extant population (these providing potential habitat for population expansion and for pollinators), and the habitat of the presumed extinct population which may contain soil-stored seed. It may also include occurrences of similar habitat that may contain undiscovered populations of the species or be suitable for future translocations, and the local catchment for the surface and/or groundwater that maintains the habitat of the species.

Benefits to other species or ecological communities

Recovery actions implemented to improve the quality or security of the habitat of *Commersonia apella* will also improve the status of the Declared Rare Flora (DRF) and Priority flora species listed in the table below:

Table 3. Conservation-listed flora species occurring within 500m of *Commersonia apella*

Species name	Conservation status (WA)	Conservation status (EPBC Act)
Lambertia echinata subsp. *echinata*	DRF (CR)	Endangered
Goodenia quadrilocularis	Priority 2	-
Lasiopetalum maxwellii	Priority 2	-
Spyridium riparium	Priority 2	-
Thysanotus volubilis	Priority 2	-
Andersonia sp. Mitchell River (B.G. Hammersley 925)	Priority 3	-
Persoonia scabra	Priority 3	-
Laxmannia jamesii	Priority 4	-

For a description of conservation codes for Western Australian flora see http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Conservation_code_definitions_18092013.pdf

Commersonia apella is not known to occur in any Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs).

Two rare fauna species, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) ranked as Endangered (EN) and Western Mud Minnow (*Galaxiella munda*) ranked as Vulnerable (VU), will benefit from the management of *Commersonia apella* and its habitat.

International obligations

This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that Convention. *Commersonia apella* is not listed under Appendix II in the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC) Convention on International Trade in Endangered Species (CITES), and this plan does not affect Australia's obligations under any other international agreements.

Aboriginal consultation

A search of the Department of Aboriginal Affairs (DAA) Aboriginal Heritage Sites Register revealed one site (#4555, Mitchell River) of Aboriginal significance adjacent to Population 1 of *Commersonia apella*. Input and involvement has been sought through the South West Aboriginal Land and Sea Council and DAA to determine if there are any issues or interests with respect to management for this species in the vicinity of these sites. Indigenous opportunity for future involvement in the implementation of the plan is included as an action in the plan. Aboriginal involvement in management of land covered by an agreement under the *Conservation and Land Management Act 1984* is also provided for under the joint management arrangements in that Act, and will apply if an agreement is established over any reserved lands on which this species occurs.

Social and economic impacts

For the protection of habitat containing the presumed extinct population (Population 1) which is on land under the management of Main Roads Western Australia (MRWA), some social and economic impacts may occur through the implementation of recovery actions (e.g. controlling weeds) and restrictions imposed on the management of the land, including maintenance of road infrastructure.

Affected interests

The implementation of this plan has implications for MRWA.

Evaluation of the plan's performance

Parks and Wildlife, with assistance from the Albany District Threatened Flora and Communities Recovery Team (ADTFCRT), Esperance District Threatened Flora and Communities Recovery Team (EDTFCRT) and Warren Region Threatened Flora Recovery Team (WRTFRT), will evaluate the performance of this plan. In addition to annual reporting on progress and evaluation against the criteria for success and failure, the plan will be reviewed following five years of implementation.

2. Recovery objective and criteria

Plan objective

The objective of this plan is to abate identified threats and maintain or enhance *in situ* populations to ensure the long-term conservation of the species in the wild.

Recovery criteria

Criteria for recovery success: The plan will be considered a success if one or more of the following take place over the term of the plan.

- No important populations have been lost and the number of mature plants within the extant population has remained within a 20% range or has increased by >20% from 31 to 37 or more or
- New populations have been found, increasing the number of known populations from one to two or more with no net loss of mature plants or
- The area of occupancy has increased by >20% with no net loss of mature plants.

Criteria for recovery failure: The plan will be considered a failure if one or more of the following take place over the term of the plan.

- Important populations have been lost or
- The number of mature plants has decreased by <20% from 31 to 25 or less or
- The area of occupancy has decreased by >20% with a loss of mature plants.

3. Recovery actions

Existing recovery actions

In 1968, cuttings taken from Torbay headland near Albany were grown and placed in the living collection at the Australian National Botanic Gardens (ANBG). Although none of the original plants are alive, cuttings taken from them and subsequent cutting grown plants over five generations have resulted in 25 plants currently being held in the ANBG living collection. ANBG also have 174 seeds from propagated plants in storage.

Surveys undertaken for the species include:

- Between 2003 and 2008, Carol Wilkins and the late Brenda Hammersley undertook surveys for *Commersonia apella* and the closely related and morphologically similar *C. corylifolia* around Pemberton, Denmark and Walpole.
- *Commersonia apella* was not located in the Albany and Torbay Inlet areas during the Albany Regional Vegetation Survey (Sandiford and Barrett, 2010).
- The Albany Wildflower Society did not locate the species during a targeted survey of recently burnt vegetation east of Torbay Inlet.
- Surveys by Sarah Barrett since 2011 in potential habitat did not locate the species.

- Adrienne Markey located a new population (Population 2) at New Island Bay, Cape Le Grand National Park during a survey in 2011 (Markey 2012).

Future recovery actions

The following recovery actions are roughly in order of descending priority, influenced by their timing over the term of the plan. However this should not constrain addressing any recovery action if funding is available and other opportunities arise. Where recovery actions are implemented on lands other than those managed by Parks and Wildlife, permission will be sought from the appropriate land managers prior to actions being undertaken.

1. Coordinate recovery actions

Parks and Wildlife, with the assistance of the ADTFCRT, EDTFCRT and WRTFRT will oversee the implementation of recovery actions for *Commersonia apella* and will include information on progress in annual reports.

Action:	Coordinate recovery actions
Responsibility:	Parks and Wildlife (Albany, Donnelly, Esperance and Frankland Districts), with assistance from the ADTFCRT, EDTFCRT and WRTFRT
Cost:	$8,000 per year

2. Monitor populations

Monitoring of the extant population and its habitat should be undertaken to identify trends or potential management requirements. Population monitoring should record the health and expansion or decline in the population, and other observations such as pollinator activity or seed production. Site monitoring should include observations of grazing, habitat degradation including weed invasion, and hydrological status (inundation and drought). Specific monitoring relating to research into the biology and ecology of *Commersonia apella* are included in other recovery actions detailed below.

Action:	Monitor populations
Responsibility:	Parks and Wildlife (Esperance District), with assistance from the EDTFCRT
Cost:	$10,000 per year

3. Collect and store seed and/or tissue culture material

To guard against the possible extinction of the single known natural population it is recommended that seed and/or tissue culture material be collected. Collections should aim to sample and preserve the maximum range of genetic diversity possible by collecting from the widest range of reproductive plants. A protocol for collection has been developed for *Commersonia* species by Nikabadi *et al.* (2010). The Australian National Botanic Gardens have 174 seeds in storage obtained from cultivated plants.

Action:	Collect and store seed and/or tissue culture material
Responsibility:	Parks and Wildlife (Esperance District, TFSC), BGPA
Cost:	$5,000 per year

4. Undertake surveys

It is recommended that locations at Pemberton, Walpole and Albany where the species has been found in the past, along with other areas of potentially suitable habitat, be surveyed for the presence of *Commersonia apella*. All surveyed areas will be recorded and the presence or absence of the species documented to increase future survey efficiency and prevent duplication of effort.

Action:	Undertake surveys
Responsibility:	Parks and Wildlife (Albany, Donnelly, Esperance and Frankland Districts), with assistance from the ADTFCRT, EDTFCRT and WRTFRT
Cost:	$10,000 per year

5. Undertake regeneration trials

As observational evidence suggests that natural disturbance events (physical or fire) may be the most effective means of germinating *Commersonia apella* in the wild, disturbance trials should be undertaken to stimulate germination.

Action:	Undertake regeneration trials
Responsibility:	Parks and Wildlife (Science and Conservation Division, Esperance and Frankland Districts)
Cost:	$10,000 per year, as required

6. Maintain hygiene measures

As disease may result in the degradation of the habitat of *Commersonia apella*, hygiene measures (outlined in CALM 2003) should be followed during installation and maintenance of firebreaks and when walking into populations in wet soil conditions.

Action:	Maintain hygiene measures
Responsibility:	Parks and Wildlife (Esperance and Frankland Districts)
Cost:	$4,000 per year

7. Develop and implement a fire management strategy

A fire management strategy, including recommendations on fire frequency, intensity and seasonality, precautions to prevent bushfire and strategies for reacting to bushfire, and the need, method of construction, and maintenance of firebreaks, wil be developed and implemented. Fire, where possible, will be prevented from occurring in the habitat of populations, except where it is being used as a recovery tool. Permanent quadrats will be established to monitor post fire response. All data relating to fire response of the species will be entered into the Threatened and Priority Flora (TPFL) data base.

Action:	Develop and implement a fire management strategy
Responsibility:	Parks and Wildlife (Esperance and Frankland Districts)
Cost:	$10,000 in year 1, and $6,000 in years 2–5

8. Undertake weed control

As weeds are a recognised threat, the following actions will be implemented:

1. Determine which weeds are present.
2. Control weeds by mowing, hand removal and/or spot spraying.
3. Revegetate habitat with site-specific species to maintain low weed levels.
4. Monitor the success of treatment on weed death, and the tolerance of *Commersonia apella* and associated native plant species to weed control.
5. Report on the method and success of the treatment.

Action:	Undertake weed control
Responsibility:	Parks and Wildlife (Esperance and Frankland Districts), MRWA and Shire of Denmark
Cost:	$10,000 per year, as required

9. If required for the long term conservation of *Commersonia apella*, develop and implement a translocation proposal

Translocation may be deemed desirable for the conservation of this species, with the first priority being augmentation of the population.

If required, a translocation proposal will be developed and suitable translocation sites selected. Information on the translocation of threatened plants and animals in the wild is provided in Parks and Wildlife Corporate Policy Statement No. 35 (DPaW 2015*a*), Parks and Wildlife Corporate Guideline No. 36 (DPaW 2015*c*) and the Australian Network for Plant Conservation translocation guidelines (Vallee *et al*. 2004). The 2004 guidelines state that a translocation may be needed when a species is represented by few populations and the creation of additional self-sustaining, secure populations may decrease its susceptibility to catastrophic events and environmental stochasticity. For small populations which may be declining in size or subject to high levels of inbreeding, successful population enhancement may increase population stability and hence long-term viability. Translocation is not an alternative to *in situ* conservation and is not a suitable ameliorative, compensatory, or mitigating measure for development and should be considered as a last resort when all other options are deemed inappropriate or have failed (Vallee *et al*. 2004).

Depending on the characteristics of the species, Vallee *et al*. (2004) suggest a minimum viable population size estimated between 50 and 2,500 individuals will be required. Suitable translocation sites may include where the taxon occurs, where it was known to have occurred historically and other areas that have similar habitat (soil, associated vegetation type and structure, aspect etc.), within the known range of the taxon (Vallee *et al*. 2004).

All translocation proposals require endorsement by the Parks and Wildlife Director of Science and Conservation. Monitoring of translocations is essential and will be included in the timetable developed for the Translocation Proposal.

Action:	If required for the long term conservation of *Commersonia apella*, develop and implement a translocation proposal
Responsibility:	Parks and Wildlife (Science and Conservation Division, Esperance District), BGPA
Cost:	$42,000 in years 1 and 2; and $26,500 in years 3–5

10. Liaise with land managers and Aboriginal communities

Staff from Parks and Wildlife's Albany, Esperance and Frankland Districts will liaise with relevent land managers to ensure the extant population of *Commersonia apella* and habitat where it has been found in the past are not accidentaly damaged or destroyed, and the habitat is maintained in a suitable condition for the conservation of the species. Consultation with the Aboriginal community will take place to determine if there are any issues or interests in areas that are habitat for the species and opportunities will be provided for Aboriginal people to be involved in implimenting this plan.

Action:	Liaise with land managers and Aboriginal communities
Responsibility:	Parks and Wildlife (Esperance and Frankland Districts)
Cost:	$4,000 per year

11. Promote awareness

The importance of biodiversity conservation and the protection of *Commersonia apella* will be promoted through the local print and electronic media and by setting up poster displays. An information sheet that includes a description of the plant, its habitat type, threats and management actions will be produced. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action:	Promote awareness
Responsibility:	Parks and Wildlife (Albany, Esperance and Frankland Districts, Species and Communities Branch (SCB) and Public Information and Corporate Affairs (PICA)), with assistance from the ADTFCRT, EDTFCRT and WRTFRT
Cost:	$7,000 in years 1 and 2; $5,000 in years 3–5

12. Obtain biological and ecological information

Research on the biology and ecology of *Commersonia apella* should include:

1. Identification of pollinators and their habitat requirements.
2. Soil seed bank dynamics.
3. Seed viability.
4. Conditions necessary for natural germination.
5. Response to disturbance, competition, drought, inundation and grazing.
6. Longevity of plants, time taken to reach maturity, and minimum viable population size.
7. The level of susceptibility of *Commersonia apella* to *Phytophthora cinnamomi* (dieback disease).

Action:	Obtain biological and ecological information
Responsibility:	Parks and Wildlife (Science and Conservation Division, Esperance District)
Cost:	$50,000 in years 1–3

13. Map habitat critical to the survival of *Commersonia apella*

Although spatial data relating to habitat critical to the survival of *Commersonia apella* is alluded to in Section 1, it has not yet been mapped. If additional populations are located, habitat critical to their survival will also be determined and mapped.

Action:	Map habitat critical to the survival of *Commersonia apella*
Responsibility:	Parks and Wildlife (SCB, Esperance and Frankland Districts)
Cost:	$6,000 in year 2

14. Review this plan and assess the need for further recovery actions

If *Commersonia apella* is still ranked as CR at the end of the five-year term of this plan, the need for further recovery actions or a review of this plan will be assessed and a revised plan prepared if necessary.

Action:	Review this plan and assess the need for further recovery actions
Responsibility:	Parks and Wildlife (SCB, Albany, Esperance and Frankland Districts)
Cost:	$6,000 in year 5

Table 4. Summary of recovery actions

Recovery action	Priority	Responsibility	Completion date
Coordinate recovery actions	High	Parks and Wildlife (Albany, Donnelly, Esperance and Frankland Districts), with assistance from the ADTFCRT, EDTFCRT and WRTFRT	Ongoing
Monitor population	High	Parks and Wildlife (Esperance District), with assistance from the EDTFCRT	Ongoing
Collect and store seed and/or tissue culture material	High	Parks and Wildlife (Esperance District, TFSC), BGPA	Ongoing
Undertake surveys	High	Parks and Wildlife (Albany, Donnelly, Esperance and Frankland Districts), with assistance from the ADTFCRT, EDTFCRT and WRTFRT	2020
Undertake regeneration trials	High	Parks and Wildlife (Science and Conservation Division, Esperance and Frankland Districts)	2020
Maintain hygiene measures	High	Parks and Wildlife (Esperance and Frankland Districts)	Ongoing
Develop and implement a fire management strategy	High	Parks and Wildlife (Esperance and Frankland Districts)	Developed by 2016 with implementation ongoing
Undertake weed control	High	Parks and Wildlife (Esperance and Frankland Districts), MRWA and Shire of Denmark	Ongoing
If required for the long term conservation of *Commersonia apella*, develop and implement a translocation proposal	Medium	Parks and Wildlife (Science and Conservation Division, Esperance District), BGPA	2020
Liaise with land managers and Aboriginal communities	Medium	Parks and Wildlife (Esperance and Frankland Districts)	Ongoing
Promote awareness	Medium	Parks and Wildlife (Albany, Donnelly, Esperance and Frankland Districts, SCB and PICA), with assistance from the ADTFCRT, WRTFRT and EDTFCRT	Ongoing
Obtain biological and ecological information	Medium	Parks and Wildlife (Science and Conservation Division, Esperance District)	2018
Map habitat critical to the survival of *Commersonia apella*	Medium	Parks and Wildlife (SCB, Esperance and Frankland Districts)	2017
Review this plan and assess the need for further recovery actions	Medium	Parks and Wildlife (SCB, Albany, Donnelly, Esperance and Frankland Districts)	2020

4. Term of plan

This plan will operate from July 2016 to June 2021 but will remain in force until withdrawn or replaced. If the species is still ranked CR after five years, the need for further recovery actions will be determined.

5. References

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6. Taxonomic description

Wilkins, C.F. and Whitlock, B.A. (2011) A revision of *Commersonia* including *Rulingia* (Malvaceae *s.l.* or Byttneriaceae). Australian Systematic Botany 24(5): 226−283.

Shrub erect, spreading, 1.5–2 x 1–2.5m, rhizomatous growth not recorded. *Young stems* with medium-density, sessile or short-stalked, golden, stellate hairs with 4–9 arms up to 1.1mm long, above dense, smaller, white, stellate hairs, glandular trichomes absent; red exudate absent. *Stipules* narrowly ovate, 2.3–5.1 x 0.7–1.7mm, apex entire. *Mature leaf* petiole 2.8–4mm long; blade base scarcely oblique, obtuse; scarcely discolorous, greyish-green above paler greyish-green, ovate, 8–30 x 4–14 mm; abaxial surface densely hairy to tomentose, with sessile, white, stellate hairs with 4–6 erect arms up to 0.5mm long, above dense, smaller, stellate hairs, glandular trichomes absent; adaxial surface scarcely rugose, velvety, with scattered, sessile, white, stellate hairs with 4–6 erect arms up to 0.3mm long above a tomentum of smaller, white, stellate hairs, glandular trichomes absent; margin irregularly serrulate, with lobes scarcely recurved; apex acute or obtuse. *Juvenile leaves* not seen. *Inflorescence* leaf-opposed along flowering branch, 7.5–23.5mm long, flowers 3–15. *Peduncle* 1.5–12mm long. *Pedicel* 2.5–6.8mm long. Peduncle and pedicel with dense, sessile, white or golden, stellate hairs with ~6 erect or appressed arms, up to 0.8mm long above smaller, white, stellate hairs, glandular trichomes absent. *Bract* narrowly ovate or narrowly elliptic, 1.5–4 x 0.3–1.0mm. *Bud* base obtuse; apex rounded, strongly ribbed. *Calyx* green towards base, lobes white; total length 3.3–4.5mm; tube 0.6–1.2mm long, without deep pockets; lobes ovate, 2.6–3.8 x 1.9–2.2mm, 70–84% of total length, apex acute; abaxial surface with dense, sessile, or short-stalked, white, stellate hairs with 4–6 erect arms up to 0.9mm long, above dense, smaller, white, stellate hairs, glandular trichomes absent; adaxial surface towards base glabrous, centre of lobes with medium-density, simple or stellate hairs, with 1–3 appressed arms up to 0.3mm long; towards margins with dense, erect, hairs up to 0.15mm long. *Petals* creamy-yellow throughout, 2.2–2.7 x 1.1–1.6mm; base scarcely gibbous above point of attachment, elliptic when lateral lobes flattened; apical ligule narrowly oblong to narrowly spathulate, 1.4–1.8 x 0.4–0.45mm, with scattered, white, stellate hairs on inner surface of ligule and outer surface of base, apex not recurved and just longer than calyx tube. *Staminal tube* 0.15–0.35mm long. *Staminodes* 1 between each stamen, white, ovate to narrowly ovate, 1.3–1.4 x 0.55–0.6mm; abaxial surface densely stellate hairy. *Filaments* 0.4–0.5 x 0.15–0.25mm, glabrous. *Anthers* yellowish-cream and dark red towards centre, 0.3–0.5 x 0.4–0.5mm; pollen yellow. *Ovary* 5-loculate, globose, 0.5–0.6 x 0.6–0.7mm, outer surface with pre-setae outgrowths, fused laterally with slight indentation. *Ovules* 2 per locule. *Styles* 0.5–0.8mm long. *Fruit* ellipsoid, ~2.3_4.5 mm, wings on dehiscence lines ~0.4mm long, woody style extensions present, wall ~0.3mm wide throughout; outer surface with dense, soft, white stellate hairs beneath setae up to 0.4mm long, on the wing and towards apex of fruit; shaft with scattered, golden, stellate hairs with 2–6 erect arms up to 0.4mm long throughout length; apical hair golden with 2–6 erect arms up to 0.4mmlong. *Seed* ellipsoid, 1.5 x 0.8–0.9 mm; exotesta black, smooth, glossy. *Aril* a white, translucent lobe ~0.5 x 0.7mm.