

Cover images: AC and AMcE

Top: L > R Billardiera ovalis (AC), Lichen, Hierochloe redolens, Asplenium decurrens, Echinopogon ovatus Bottom L > R Bedfordia salicina ('Lost World'), Xerochrysum papillosum, Pittosporum bicolor, Tasman Island lighthouse at dusk, Pelargonium australe

Flora Report Integrated Biological Survey of Tasman Island January 2023

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Flora Survey of Tasman Island, January 2023.

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Background

Tasman Island had a manned operational lighthouse between 1906 and 1976. It became fully automated in 1976 with the last resident lighthouse keeper leaving in 1977. After automation of the lighthouse, Tasman Island was subsumed into the Tasman National Park. The area around the lighthouse is leased by the Australian Maritime Safety Authority (AMSA) for the purposes of maintaining the lighthouse.

In 2005 the 'Friends of Tasman Island' (FoTI) under the auspices of Wildcare Tasmania was formed to work in partnership with TPWS. The volunteers' aim is to work towards the restoration of both the cultural and natural environment of the Island.

Since then, FoTI have held over 30 ten-day working bees on the island during which they help maintain the three lighthouse keepers brick houses known as Q1, Q2 and Q3 (see Figure 3). In addition, there used to be a fourth building located to the north of Q1, the 'Relief Keepers Cottage' (now a collapsed derelict building) which was also used to house any unexpected visitors to the island such as stranded sailors and was even used by the navy during WWII.

Since 2005 FoTI have had regular weeding working bees which aim to eliminate invasive weeds including Californian thistles which resulted from the days when the lighthouse keepers kept animal feed and maintained pasture for their livestock. In addition, when the keepers left in 1976-77 the gardens which surrounded the three lighthouse keepers' houses were growing garden plants such as Montbretia, Arum Lilies, Gladioli, Hebe, Narcissus and various introduced succulent species such as Aeoniums, Sedum and ornamental Crassula, as well as vegetables such as turnip and radish some of which still persist in the gardens or have subsequently spread into the neighbouring vegetation. These are all being gradually removed and are being targeted during the FoTI weed working bees.

From 26-31 January 2023 we were privileged to join the 'Integrated Biological Survey of Tasman Island' as botanists. This trip was organised by FoTI together with Wildcare Inc. and it was the first opportunity for us both to study the flora of the island in any detail. We joined five other scientists/field naturalists who were studying invertebrates, snails and birds. This was the first integrated field trip since 2005 when the more comprehensive 'The Hamish Saunders Memorial Island Survey and Report' (HSMSR 2005) was conducted.

In addition, when it was known we were going to Tasman Island we were alerted by Mark Wapstra that there was a species of *Carex* on Tasman Island that needed to be located. He referred us to Matthew Baker (Curator – Weed Taxonomy at the TMAG Tasmanian Herbarium (HO)) who asked us to look on the island for *Carex hirta*. This plant had already been *tentatively* identified by him from one herbarium specimen that HO held; this specimen was collected in 2007 by Penelope Tyson when it was mis-identified as *Carex gaudichaudiana*. Matthew Baker supplied us with photographs and a description of this plant before we left Hobart. (Appendix 1)

History of Tasman Island Vegetation

Early in the era of manned lighthouse operation the Island was covered in stunted scrub (The Mercury 1885) but it was subsequently cleared for firewood and to make way for grassland for grazing of sheep, cattle, goats and pigs and the draught horses which were used for turning the Whim and for transporting supplies from the top of the Haulage up to the lighthouse and its residences. (FoTI.) Since the lighthouse was de-manned areas of the introduced pasture grasses remain, particularly along both sides of the track from the Haulage to the lighthouse and around the buildings. Other previously identified Tasman Island vegetation communities include areas of heathy scrub, sheoak woodland (which includes the rare and threatened Cape Pillar sheoak *Allocasuarina crassa* and increasing amounts of sedgeland and regenerating scrub. (Figure 1) (HSMSR 2005 and NVA 2022.)



Figure 1

The average rainfall for Tasman Island is about 800mm, but in 2022 rainfall of over 1000mm was recorded at the Fortescue Bay weather station from May until December when the Tasman Island rain gauge was not working. (BOM 2023.) Despite a relatively dry summer into 2023 the deeper soils and sedgeland areas of the Island were still damp in late January 2023 from the 2022 winter/spring rains and plant growth was extensive and we found ourselves 'wading' through sedges and grasses growing up to 1.5 metres high and pruning back some of the dominant shrubs including *Banksia marginata, Pittosporum bicolor* just to be able to walk through previously known tracks. We realised then the extent of vegetation growth since both the 2005 and 2007 surveys and we therefore found many of the vegetation boundaries were 'blurred' and were not as clear cut as depicted in the TASVEG map. (Figure. 1.)

Schahinger (2002a) had noted that a number of species known to grow on nearby Cape Pillar appeared to be absent from Tasman Island. (See Appendix 2.) One of these was *Bedfordia salicina*, but we were able to reconfirm 2008 Penny Tyson's observation that it has established on Tasman Island in the north-west corner of the island in the 'Lost World' area where we observed three established plants.

We also note that we did not observe any members of the Restionaceae family growing on Tasman Island and none have been collected to date.

A comparison of aerial and satellite photos taken between 1950s and 2022 (Plates 1-4 below,) clearly show changes in the Tasman Island vegetation especially when compared with Plate 5 taken from the top of the lighthouse in March 2023.



Plate 1. Tasman Island in the 1950s. Photograph Alan Hewer



Plate 2. Tasman Island 1973. Photograph Tasman Island FoTI Q3 collection.



Plate 3. Tasman Island 2017. Photograph FoTI Q3

Plate 4. Tasman Island 2022. Photograph AMSA collection. website.



Plate 5. Tasman Island March 2023. Taken from the top of the lighthouse. Note the mown areas in contrast to surrounding vegetation. Photographs Amanda Thomson.

Tasman Island Flora Collections Past, Present and Future

In three trips between 1977 and 1978 (Nigel) Brothers collected 100 plant species from Tasman Island which were identified by Mick Brown (Brothers 1979) and later discussed by Brown and Duncan (1989). On an archaeological trip in 1982 Stephen Harris expanded Brothers' preliminary plant list to 112 species (Harris 1984). In 2001 a team of DPIWE¹ staff visited the island for 3 hours to assess the population of threatened Allocasuarina crassa. This trip also enabled compilation of a draft vegetation map of the island (Schahinger 2002a, b.) (HSMSR 2005)



Figure 2. From Schahinger, R. (2002a). The vegetation of Tasman Island. Report to Threatened Species Section, Department of Primary Industries, Water and Environment (DPIWE), Hobart

¹ DPIWE – Department of Primary Industries, Water and Environment. Now called Department of Natural Resources and Environment Tasmania.

Records for The Hamish Saunders Memorial Survey (HSMSR 2005) did not appear to note location data and plant specimens were not submitted to the Tasmanian Herbarium (HO) for subsequent recording on the Natural Values Atlas (NVA.)

Two major collection trips occurred in 2007 and 2008 by Penelope and Robert Tyson under the auspices of FoTI. They expanded the number of collected species and submitted specimens to Tasmanian Herbarium (HO) and these therefore appear on the NVA. Since that period there have been several species added, with the last records added to the NVA in May 2018 by Mark Wapstra.

In 2021 Sally Bryant and Stephen Harris wrote in the 'Overview of Tasmania's offshore islands and their role in nature conservation.'

Since the 1970s, knowledge of Tasmania's offshore islands has expanded greatly due to an increase in systematic and regional surveys, the continuation of several long-term monitoring programs and the improved delivery of pest management and translocation programs. However, many islands remain data-poor especially for invertebrate fauna, and non-vascular flora, and information sources are dispersed across numerous platforms. While more than 90% of Tasmania's offshore islands are statutory reserves, many are impacted by a range of disturbances, particularly invasive species with no decision-making framework in place to prioritise their management. This paper synthesises the significant contribution offshore islands make to Tasmania's land-based natural assets and identifies gaps and deficiencies hampering their protection. A continuing focus on detailed gap-filling surveys aided by partnership restoration programs and collaborative national forums must be strengthened if we are to capitalise on the conservation benefits islands provide in the face of rapidly changing environmental conditions and pressure for future use. (Bryant and Harris 2021.)

In order for us to clearly identify the 'gaps and deficiencies' [in the Tasman Island flora] which Bryant and Harris discuss above, we recommend that it would be useful for future botanists on Tasman Island for ALL the TI plant species to be recorded on the Natural Values Atlas (NVA). There are two ways to do this, the **preferred** way is to collect herbarium specimens and submit them the Tasmanian Herbarium for formal identification and their subsequent addition to the NVA OR to take several **good** photographs of the relevant plants which are then submitted to the 'Friends of Tasman Island iNaturalist project' at <u>https://inaturalist.ala.org.au/projects/friends-of-tasman-island-foti</u>

Those that reach 'research grade' are recorded into the Australian Living Atlas (ALA) and from there they go into the NVA which has created a project which automatically collects up all the Tasmanian research grade observations.

This however will take time to achieve. As an interim measure we have combined all the known Tasman Island plant records from the previous collecting trips into one spreadsheet. This combined list of Tasman Island species and their locations as at Jan 2023 can be found in **Appendix 3**.

This spreadsheet records collectors, dates of collection, species and GPS readings where available. Where (HO) is noted alongside the species name it indicates that a voucher specimen is held by the Tasmanian Herbarium (HO).

The names of plant families, genera and species names have been updated to follow those used in the "A Census of the Vascular Plants of Tasmania, including Macquarie Island" (de Salas and Baker 2022.)

The sources used for Appendix 3 are listed below:

Table 1 below is extracted from the NVA records. It lists the known Tasman Island collectors and their dates of collection but also includes the January 2023 records of the authors (AC and AMcE) which are highlighted on this table and in Appendix 3 in pale green.

TABLE 1:			
CODE	NAME	OBSERVER ID	DATE OF COLLECTION
1	J. Thwaites	JT	26-September-1965
2	RA Burns	RB	27-29 November 1987
3	R. Burns	RB	01-April-1990
4	R. Tyson	RT	9-10 Nov 2004
5	Penelope Tyson	PAT	06-March-2005
6	Carol Markby	СМ	30-March-2006
7	Sandy Leighton	SL	30-June-2006
8	Penelope Tyson	PAT	22-29 September 2007
9	R. Tyson	RT	23 -29 September 2007
10	Penelope Tyson	PAT	23-November-2007
11	R. Tyson	RT	26-December-2007
12	Penelope Tyson	PAT	9-17 February 2008
13	R. Tyson	RT	14-17 February 2008
14	Penelope Tyson	PAT	06-March-2008
15	D. Reynolds	DR	25-March-2008
16	R. Tyson	RT	10 -15 November 2008
17	Penelope Tyson	PAT	07-March-2009
18	R. Tyson	RT	27-November-2012
19	Bob Graham	BG	08-February-2014
20	Helen Hilliard	НН	08-February-2014
21	Mark Wapstra	MW	16-18 May 2018
22	Annabel Carle & Anna McEldowney	AC & AMcE	26 -31 January 2023

Table 2 below. Lists the three botanical surveys used by 2005 Hamish Saunders Memorial Survey. The survey results are listed in pale orange here and on Appendix 3.

TABLE 2:					
HSMSR 1 = Stephen Harris (June 1982) and Nigel Brothers (January 1982.)					
HSMSR 2 = Threatened Species Section (June 2001.)					
HSMSR 3 = This survey (November 2005.)					
The status of a species in this table is as follows: i = introduced and naturalised in					
Tasmania, e = endemic in Tasmar	nia, no symbol				
indicates that the species is native to Tasmania and the Australian mainland. One species is listed as rare					
on the schedules of the Tasmanian Threatened Species					
Protection Act 1995: Allocasuarina crassa	2023 Collection Methods				

Chris Creese, a long standing FoTI member who is very familiar with Tasman Island led us on five daily morning walks around the island. The routes these walks took are shown in Figure 3.

Day 1 - 26th January 2023

Day 2 - 27th January 2023 Day 3 - 28th January 2023 Day 4 - 29th January 2023 Day 5 - 30th January 2023



Figure 3. 'Mud Map' showing routes of daily walks.

In the time available we were unable to conduct any formal surveys similar to those conducted by HSMSR (2005). Instead, using the HSMSR flora list and the Natural Values Atlas flora list extracted in January 2023 we were able to note the presence or absence of species along these tracks. We aimed to only collect new native or introduced species that were NOT on the NVA list as at Jan 2023 and therefore did not have a GPS location. This was found to be a successful way to record species on the areas of the island we visited, limited as we were by time and vegetation re-growth which made walking difficult.

The collected introduced and native specimens were identified where possible, photographed and pressed each day for subsequent submission to the Herbarium.

Photographs were also taken of as many species as possible for subsequent entry into FoTI's iNaturalist project.

We were able to add **twelve** previously unrecorded species to the Tasman Island plant list, ten of which were supported by an herbarium specimen and identified by Matthew Baker. The other two (marked with a '+') were photographed and submitted to iNaturalist.

Family	Tasman Island species not recorded on either HSMSR or the NVA prior to January 2023.				
INTRODUCED PLANTS					
Monocotyledons					
Cyperaceae	Carex hirta				
Iridaceae	Gladiolus x colvillei?				
Poaceae	Aira praecox				
Dicotyledons					
Asteraceae	+ Senecio minimus				
Asteraceae	Senecio vulgaris				
Fabaceae	Trifolium ornithopodioides				
Onagraceae	Epilobium billardiereanum ssp. cinereum				
Primulaceae	+ Anagallis arvensis (now Lysimachia arvenis)				
NATIVE PLANTS					
Monocotyledons					
Cyperaceae	Isolepis platycarpa				
Juncaceae	Juncus bufonius				
Poaceae	Anthosachne (Elymus) scabra				
Poaceae	Echinopogon ovatus				

Discussion

Confirmation of Carex hirta growing on Tasman Island

We were able to locate *Carex hirta* on the first day of our trip, growing in the same area that Penelope Tyson collected her plant specimen in 2007. This was south of the derelict Relief Keepers Cottage and north of Q1 and the west side of the track between the Haulage and Q1 but we also found it growing on **both** sides of that track. We noted that it was widespread across a 50 x 50 sqm area. We suspect it is a larger area than that. On our return, as requested by Matthew Baker, we submitted a collection of *Carex hirta* fresh material to the Herbarium after which its identity was confirmed. *Carex hirta* is a native of Europe although it has been found in New Zealand. It has never been recorded growing anywhere else in Australia before. This observation was also posted on the FoTI iNaturalist project see: photos in Plate 6, <u>https://inaturalist.ala.org.au/observations/149227447</u> and <u>https://inaturalist.ala.org.au/observations/149036035</u>

Els Wakefield, an ornithologist, who was also on the island as part of this integrated survey reported she had observed that the *Carex hirta* had become habitat for the shy Lewin's Rail which hides amongst sedge and reed beds. However, she reported that there is currently plenty of alternative habitat on Tasman Island if the decision is made to remove this introduced plant and did not think that it would be an issue for this bird. Matthew Baker at the TMAG Tasmanian Herbarium has reported the finding of this introduced plant on Tasman Island to the Ranger in Charge at Tasman National Park, Tasmania and also to Biosecurity at NRE Tasmania. It is expected that these organisations will make a decision about the future management (or not) of this species in Tasman Island, we assume in consultation with FoTI/Wildcare.

We are recommending that, before a decision is made to remove it or not, a formal survey should be undertaken on the full extent of this introduced plant.

As previously discussed in the section 'History of Tasman Island vegetation' The Tasman Island vegetation has changed significantly since the automation of the lighthouse in 1976. Anecdotal reports and photographs indicate that formerly accessible areas have become more overgrown and the effect of this was observed on tracks to the west of the island where introduced grasses and sedges have grown tall and shrub vegetation is in the process of closing in on previously open areas.

This is crowding out many of the smaller native herbs which we observed appeared to be struggling for survival and may eventually be lost due to the competition and lack of light. The high rainfall over recent years has resulted in the lower-lying areas, particularly to the north of Q2 and surrounding Q1, growth of dense grass/sedge vegetation which could now be susceptible to fire and threaten the heritage listed buildings. This vegetation also makes it difficult to find and control weeds such as the widespread Californian Thistle and the recently confirmed infestation of *Carex hirta*.

We confirm the observations made in HSMSR (2005) regarding weed species:

Weed species were most abundant in Sedgeland and Grassland mainly in the form of grasses. The most intact Grassland occurred at the cliff edges (away from the Sedgeland). Vicia sp. [both Vicia hirsuta and Vicia sativa nigra] was present in both, however, in the Grassland the species was densest close to the Sedgeland ecotone. There were many weed species, most of which were not flowering, thus making identification to species level difficult. Eradication of these species would be extremely difficult without causing considerable damage to the surrounding vegetation. They are likely to have been introduced as pasture improving species or accidentally with feed and livestock. Eradication is possible and perhaps worthwhile for the exotic garden plants located in front of the old homestead. Hebe sp. [Veronica elliptica] appears to be slowly spreading into the surrounding vegetation (<20m from the origin).

Eradication of the majority of exotic garden plants appears to have been achieved by January 2023, except for the Scarlet Gladiolus (*Gladiolus x colvillei* ?) and Montbretia (*Crocosmia x crocosmiiflora*) which were found in January 2023, but both these species need checking/weeding out again during the November 2023 spring and subsequent working bees. A Gladiolus specimen **in flower** with bulb is required to be submitted to the Tasmanian Herbarium for confirmation of its species. We saw no evidence of *Hebe* (*Veronica elliptica*) and it was last recorded in 2008.

A number of species seen on Tasman Island during previous surveys were not seen. e.g., the introduced *Achillea millefolium* (Yarrow) and the native *Bulbine semibarbata*. This was for several reasons. We were on Tasman Island for the last four days of January and we were too late for the spring flowering plants including any previously seen orchid species with only *Microtis* sp. and *Thelymitra* sp. being observed in fruit. The introduced *Achillea millefolium* and the weedy garden species such as Narcissus, Arum Lily and Grape Hyacinths were not observed on this survey, the reason for this is they may have been removed by weeding groups over the years. Return surveys in spring/early summer are needed to confirm their presence/absence. We recommend that herbarium specimens of all the introduced species (including the weedy garden species) on the Island which are not already recorded on the NVA should be collected and submitted to the Tasmanian Herbarium and for their subsequent inclusion on the NVA.

Appendix 3 lists three Leptecophylla species. These are L. abietina?, L. juniperina and L. oxycedrus.

L. juniperina was recorded by Harris & Brothers (1982) (HSMSR 2005), but this was prior to the major nomenclature changes made to the *Leptecophylla* genus by Jarman & Kantvilas (2017.) *L. juniperina* is now considered to be a New Zealand species. In late January 2023, although the *Leptecophylla* plants were no longer in flower, we were able to measure as many leaves as we could on a number of different plants. In all cases they were greater than 7mm long and we therefore believe that the observations of *L. juniperina* is most likely to be of *Leptecophylla oxycedrus*. This opinion is assisted by 'The Flora of Tasmania Online' Ericaceae distribution description by Crowden and Duretto (2019) which says '*restricted to the exposed rocky coasts of southern and western Tasmanian at or near sea level'*. But as no herbarium specimen or location data was collected this cannot be confirmed. We have therefore expressed this observation in Appendix 3 as *Leptecophylla juniperina* (*L. oxycedrus?*) see also: https://inaturalist.ala.org.au/observations/149118468

It is possible that *Leptecophylla abietina* is also on Tasman Island, it too has leaves greater than 7mm long, but the insides of its flowers are densely hairy compared to those of *L. oxycedrus* which are glabrous or with just a few hairs. We were unable to check as it was not in flower in January. Appendix 3 lists *Leptecophylla abietina*? which was observed by Harris & Brothers (1982) (HSMSR 2005), but again this entry appears to be lacking an herbarium specimen or a GPS location. The distribution description for *L. abietina* is as follows 'Restricted to the exposed rocky coast of the south-east, south and west...at or near sea level ...also recorded at South Arm and '(Crowden and Duretto 2019.) and on the Norfolk Bay coast near Koonya (NVA 2023) so it is not impossible that *L abietina* is also on Tasman Island, although most of the records on the NVA for this species are from the south west and west coast.

Plants of *L. abietina* are described as 1-2m tall with pale to dark pink fruit and those of *L. oxycedrus* as 3-5m tall with red or pink fruit. However on Tasman Island plant heights may not be reliable identification feature partly due to the extreme coastal environment which can cause shrubs to be wind-pruned. (Crowden and Duretto 2019.)

Appendix 3 also lists *Rubus gunnianus* (recorded by Threatened Plant Species Section in June 2001) (HSMSR 2005), but as this is a sub-alpine/alpine species found growing above 900m, we believe this was a misidentification and it is likely to have been the juvenile leaves of *Apium prostratum* var.

filiforme. We have marked it accordingly. Other species appear to have been mis-identified and these have been noted/corrected in Appendix 3 with information obtained from Mark Wapstra in April 2023.

Correa reflexa var. *nummulariifolia* was identified as growing on Tasman Island by Harris & Brothers (1982) (HSMSR 2005), but we were without a location or entry on the NVA. We did not observe it growing on the Island in January. The only Correa which we frequently found was *C. alba* var.

rotundifolia. Future botanists on the island should try to confirm the presence of *Correa reflexa* and its subspecies by collection of herbarium specimen and location records.

Hydrocotyle hirta was locally common on the island often with leaves in excess of 90mm diameter and could be observed scrambling above the ground vegetation unlike its more usual habit of small leaves c.6-25mm diameter scrambling under the other ground vegetation. See: photo in plate 6 and

<u>https://inaturalist.ala.org.au/observations/149117986</u> We note the 'Vic Flora 2023' states 'A variable species in need of detailed study to determine if any of the leaf forms require formal recognition.'

We were unable to confirm Penelope Tyson's three 2007 Tasman Island NVA records of the hybrid *Pittosporum bicolor x undulatum.* We saw an abundance of *Pittosporum bicolor* in full fruit. Refer:

<u>https://inaturalist.ala.org.au/observations/149123750</u> and a number of what we thought were juvenile hybrid plants, but we found no evidence of adult plants of the weedy *Pittosporum undulatum*. We would normally expect to find both parent plants present. (M. Baker pers. comm.) We recommend that future botanists on Tasman Island should confirm if a) the two *Pittosporum bicolor x undulatum* plants recorded on the NVA are still present and b) if adult plants of *P. undulatum* can be located.

Photographs of a species of the introduced *Cerastium* (Mouse-ear chickweed) thought to be that of *C. vulgare* were taken from adjacent to the old oil store near the Lighthouse and posted on the iNat FoTI project <u>https://inaturalist.ala.org.au/observations/148962851</u> There is already one record for Tasman Island of *Cerastium vulgare* observed by Harris and Brothers in 1982 (HSMSR 2005.) Questions have been raised if this plant is perennial or not. We are therefore recommending that an herbarium specimen of this plant needs to be collected for submission to Matthew Baker at the Tasmanian Herbarium for further identification.

Fungi, Lichens and Bryophytes on Tasman Island

As at January 26 2023 no lichens, bryophytes or fungi had been recorded from Tasman Island according to the Natural Values Atlas, Tasmania (accessed 26 Jan 2023.)

During 26 – 31 January 2023, two fungal species were observed, *viz.*, an old *Bovista brunnea* - True Puffball (26. 01. 2023) and an old *Omphalotus nidiformis* (Ghost fungus) (31.01.2023) growing on *Allocasuarina*. This is not surprising given we were there in summer and the windswept environment of Tasman Island further adds to the dry conditions which are not conducive to the growth of fungi.

The absence of *Eucalyptus* species, one of the main ectomycorrhizal host plant genera, on the Island also limits the number of ectomycorrhizal fungi, but there are species of *Allocasuarina, Acacia, Leptospermum, Calytrix and Melaleuca* on the island which are all known to have ectomycorrhizal associations (Brundrett 2008) and there are sure to be wood-decomposing species (saprotrophs) to be found when conditions are more favourable for production of fungal fruitbodies.

We observed and posted onto iNaturalist 'Friends of Tasman Island (FoTI) project, a number of lichens and mosses (see appendix 3) but they have not been identified with any certainty, except for one moss, *Weissia controversa* which was collected and subsequently identified by the Tasmanian Herbarium (HO). More work is required on the lichens and bryophytes of Tasman Island. See: <u>https://inaturalist.ala.org.au/observations/152234300</u>

OUR SUGGESTIONS/RECOMMENDATIONS

- 1. We recommend that the **preferred** option is for herbarium specimens of **ALL** the native and introduced species (including the weedy garden species) on the Island which are not already recorded on the NVA to be collected and submitted to the Tasmanian Herbarium and for their subsequent inclusion on the NVA. Alternatively, they may be photographed and placed on the FoTI's iNaturalist Project and **providing** these observations reach research grade they will be included in the NVA project set up to harvest the Tasmanian Research grade observations from the ALA.
- 2. In the short term it would also be useful for FoTI to organise for the Appendix 3 spreadsheet, which currently lists all the known Tasman Island plant species as at January 2023, to be maintained and updated.
- 3. Determine in spring:
 - if *Leptecophylla oxycedrus* and *Leptecophylla abietina* are both growing on Tasman Island. By checking the insides of the flowers: if they are densely hairy it will *be L. abietina;* if glabrous or with just a few hairs it will be *L oxycedrus*. Herbarium specimens and GPS locations should be collected particularly for *L. abietina*.
 - *Correa reflexa*. Need to collect herbarium specimens and record locations to assist in determining the subspecies status for this plant on the Island.
 - what other new, as well as previously known, small native and introduced plant species are growing/flowering, particularly on the dry and rocky cliff tops towards the east, south east and south west. Collect specimens as required &/or photograph for the FoTI iNaturalist project. It was too late in the season for us in late January to observe/look for these plants.
 - a gladiolus specimen **in flower**, plus bulb, growing in the north-east corner of the pond is required to be submitted to the Tasmanian Herbarium for confirmation of its species which is thought to be *Gladiolus x colvillei*.

- 4. Conduct an orchid survey in late spring/early summer whilst they are in flower to confirm presence or absence of previously identified species and for any new species. It was impossible in late January to ID any of the orchids to species level but *Thelymitra* and *Microtis* were observed in fruit. There was no sign of *Pterostylis* which is on the NVA list for Tasman Island.
- 5. Determine if there are any members of the Restionaceae family growing on Tasman Island, none have been collected to date.
- 6. Apart for the two fungi species we observed and posted on iNaturalist, we were unable to find any other records of fungi from Tasman Island. One of our recommendations is for a fungal survey to be conducted on the island in 'fungal season', during the months of April –July.
- 7. There is the opportunity for much more work to be done on the lichens and bryophytes of Tasman Island. This would address the identified need for more work to be done on the non-vascular flora (Bryant and Harris 2021.)
- 8. Verify if the *Pittosporum bicolor x undulatum* hybrid is still present on the Island (refer to Appendix 3 for locations) and if parent plant(s) of *Pittosporum undulatum* can be located.
- 9. The photographs taken from adjacent to the old oil store of the introduced *Cerastium* sp. (?) Mouse-ear chickweed and posted on the iNat FoTI project.

<u>https://inaturalist.ala.org.au/observations/148962851</u> raised some interest and it was questioned if this plant was perennial or not. Specimens of this plant need to be collected for Matthew Baker at the TMAG Tasmanian Herbarium for further identification.

- 10. *Carex hirta*. Matthew Baker at the TMAG Tasmanian Herbarium has reported the finding of this introduced plant on Tasman Island to the Ranger in Charge at Tasman National Park, Tasmania and also to Biosecurity at NRE Tasmania. It has been recommended before a decision is made to remove it or not, that a formal survey should be undertaken on the full extent of this introduced plant. It is expected that these organisations will then make a decision about the future management (or not) of this species in Tasman Island, we assume in consultation with FoTI/Wildcare.
- 11. The Island has potential wildfire issues especially with the regrowth of the island vegetation since the light house was de-manned. Despite the logistical problems the Island vegetation may benefit from slashing/controlled cool burns or clearing of selected areas to study regrowth of native species. It could benefit from a permanent caretaker (in the same way as Maatsuyker and Deal Islands do) to maintain cleared vegetation and pathways. These are currently jobs which need to be done in limited time windows during FoTI working bees. A caretaker could also perform general maintenance and act as a deterrent to theft or vandalism of heritage listed buildings.

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'Friends of Tasman Island' for inviting us to participate in this survey, especially to Amanda Thomson and Carol Jackson and to FoTI for permission to use their images of Tasman Island used in Plates 2 and 3.

Matthew Baker (Curator – Weed Taxonomy at the TMAG Tasmanian Herbarium (HO)) for his assistance and advice with the submission and identification of Tasman Island herbarium specimens including advice on *Carex hirta*.

Dr Genevieve Gates reviewed and edited the paragraph we had written on the fungi of Tasman Island.

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The Mercury 1885: *The Mercury* on 8 August 1885 writes about the first visit by members of the Hobart Marine Board to look for a site for the lighthouse. They describe: "*After attaining the summit of the basaltic cliffs which almost overhang the island on all sides we found ourselves on a table land covered with a stunted scrub ... slightly varied by patches of bull oak and honeysuckle (Banksia marginata); of the latter thousands of trees were found in a dead or decaying state, the surface of the ground being almost entirely covered with them, and the whole was overgrown with grass and staghorn fern https://trove.nla.gov.au/newspaper/article/9108839?browse=ndp%3Abrowse%2Ftitle%2Ftitle%2Ftitle%2F10 %2F1885%2F08%2F08%2F08%2Fpage%2F816160%2Farticle%2F9108839*

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APPENDIX 1

Carex hirta L. (email from Matthew Baker re: Carex hirta)

A specimen from Tasman Island incorrectly identified as the native species *Carex gaudichaudiana* was examined and determined to be the introduced species *Carex hirta*. This is the first and only record for this species in Tasmania and Australia.

The specimen was collected by Penny Tyson on 7 March 2009 from Tasman Island.

It was noted as growing in with Poa.

Lat./Lon. (decimal degrees) -43.236111, 148.002500 +- 50 m

What does it look like:

Tufts 40–60 cm high from an often far-extending rhizome. Stems 3-angled, smooth, erect. Leaves 2– 4–(9) mm wide, < stems, flat or \pm channelled, both surfaces with \pm scattered fine white hairs; upper sheaths densely pubescent near junction with lamina, \pm glabrous below, lower sheaths dark red- brown. Inflorescence with long wide leaf-like bracts below; lower spikes distant. Male spikes 2–3, 1.5–2 cm × \pm 3 mm, sessile, fusiform; glumes obovate, \pm mucronate, hairy, red-brown. Female spikes 2–3, 2–4.5 cm × 3–6 mm, on long, erect, usually half-ensheathed peduncles; glumes < utricles, ovate, hyaline, tapering to a long green scabrid awn. Utricles \pm 6 × 2 mm, ovoid, greenish-brown, distinctly nerved, hairy; beak \pm 2 mm long, deeply bifid, scabrid; stipe 0. Stigmas 3. Nut obovoid, trigonous, stipitate.

[From: Healy and Edgar (1980) Flora of New Zealand. Volume 3.]

It is a European species that has become naturalised in North America and New Zealand.

It has characteristic hairy leaves and inflorescences. Only one species of Tasmanian *Carex* has flowering parts (utricles) and that is *Carex breviculmis*. *Carex breviculmis* is typically a much small species that has its inflorescences hidden low amongst the leaves.



Carex hirta – general location on Tasman Island.



Carex hirta – female spike with hairy utricles (Aleksey Baushev, no rights reserved (CC0))



Carex hirta – hairy leaves and culms (Robert H. Wardell, no rights reserved (CC0))



Carex hirta – flowering stem showing multiple spikes, the males above and the females below. (Aleksey Baushev, no rights reserved (CC0))

Appendix 2

From Schahinger 2002a 'The vegetation of Tasman Island. Report to Threatened Species Section, Department of Primary Industries, Water, Environment, Hobart.'

"Even if the pappused seeds of the wind dispersed species (O. viscosa, B. salicina) reach Tasman Island, they appear unable to germinate or establish. The absence of species with seeds or fruits known to attract birds (R. dracophylla, L. concavum) is also unexpected as these species occur on Tasman Peninsula. Establishment may be limited more by lack of suitable growing conditions rather than seed dispersal"

In HSMSR (2005) these plants were still noted to be absent from Tasman Island despite being known to occur on the nearby Tasmanian Mainland.

Plants known to occur nearby at Cape Pillar	Comments	
Bedfordia salicina	In Feb 2008: Penelope Tyson sighted two plants in Lost World (NW corner, TI.) In Jan 2023: Anna McEldowney sighted/photographed three established plants also growing in the Lost World area.	
Pomaderris apetala		
Olearia viscosa		
Richea dracophylla		
Epacris marginata	NVA entry x 4 specimens. Deposited by RA Burns Nov 1987 GPS: 148 -43.2333	
Epacris myrtifolia		
Hakea megadenia		
Hibbertia riparia		
Lepidosperma concavum		
Lomatia tinctoria		
Pentachondra involucrata		
Pimelea nivea		
Sprengelia incarnata		
Plants known to occur further north at Corruption Gully		
Spyridium obovatum		
Hakea lissosperma		
Anopterus glandulosus		
Telopea truncata		





Carex hirta has hairy leaves



Photo: A. McEldowney Carex hirta inflorescences male at top & female below



Hydrocotyle hirta on Tasman Island

APPENDIX 3: Combined spreadsheet of plant species recorded for Tasman Island 1965-2023. ***

(with associated keys and explanatory notes)

HSMSR - Flora	a species recorded on Tasman Island as at November 2005
The species hig	hlighted in orange are based on the following surveys :
HSMSR 1 = Ste	ohen Harris (June 1982) and Nigel Brothers (January 1982)
HSMSR 2 = Thr	eatened Species Section (June 2001)
HSMSR 3 = Thi	s survey (November 2005)
The status of a	species is as follows:
i = introduced	and naturalised in Tasmania, e = endemic in Tasmania, no symbol
indicates that t	he species is native to Tasmania and the Australian mainland. One
species is listed	I as rare on the schedules of the Tasmanian Threatened Species
Protection Act	1995: <i>Allocasuarina crassa</i> .

*** **Appendix 3** records collectors, dates of collection, species and GPS readings where available. Where (HO) is noted alongside the species name it indicates that a voucher specimen is held by the Tasmanian Herbarium (HO).

		OBSERVER ID	
CODE	NAME		DATE OF COLLECTION
1	J.Thwaites	ΤL	26-September-1965
2	RA Burns	RB	27-29 November 1987
3	R. Burns	RB	01-April-1990
4	R. Tyson	RT	9-10 Nov 2004
5	Penelope Tyson	PAT	06-March-2005
6	Carol Markby	СМ	30-March-2006
7	Sandy Leighton	SL	30-June-2006
8	Penelope Tyson	PAT	22-29 September 2007
9	R.Tyson	RT	23 -29 September 2007
10	Penelope Tyson	PAT	23-November-2007
11	R.Tyson	RT	26-December-2007
12	Penelope Tyson	PAT	9-17 February 2008
13	R.Tyson	RT	14-17 February 2008
14	Penelope Tyson	PAT	06-March-2008
15	D. Reynolds	DR	25-March-2008
16	R.Tyson	RT	10 -15 November 2008
17	Penelope Tyson	PAT	07-March-2009
18	R.Tyson	RT	27-November-2012
19	Bob Graham	BG	08-February-2014
20	Helen Hilliard	НН	08-February-2014
21	Mark Wapstra	MW	16-18 May 2018
22	Annabel Carle & Anna McEldowney	AC & AMcE	16 -31 January 2023