VICTORIAN NATIONAL PARKS ASSOCIATION
Be part of nature

A pair of Mount Donna Buang Wingless Stoneflies. *EDDIE TSYRLIN*

NOMINATION TO THE SCIENTIFIC ADVISORY COMMITTEE FOR CRITICAL HABITAT DETERMINATION

Mount Donna Buang Wingless Stonefly

Victorian National Parks Association
Level 3, 60 Leicester Street, Carlton VIC 3025 • 03 9341 6500 • vnpa@vnpa.org.au •vnpa.org.au
ABN 34 217 717 593

Nomination to the SAC for Critical Habitat Determination (CHD):

Mount Donna Buang Wingless Stonefly (MDBWS)

Fig. 1a Riekoperla darlingtoni (MDBWS) specimen - Male adult from Tsyrlin et al., 2021 [1]

8.1. Information about the conservation status listings of the MDBWS at the state, federal and international level.

The MDBWS is listed as critically endangered under statewide legislation, the Flora and Fauna Guarantee Amendment Act 2019 (FFGA)[2]. In the SAC's final recommendation, the SAC determined that the MDBWS is;

"• significantly prone to future threats which are likely to result in extinction, and

• very rare in terms of abundance or distribution." [3]

The MDBWS is also listed as critically endangered internationally, under the International Union for Conservation of Nature (IUCN) Red List of Threatened Species[4]. This determination was made under criterion B1ab(v) + 2ab(v), which relate to an extremely limited extent of occurrence and area of occupancy, and a continuing decline observed, estimated, inferred, or projected in the number of mature individuals for this species[5].

The MDBWS is currently not listed under federal legislation, the Environment Protection & Biodiversity Conservation Act 1999 (EPBC). The Threatened Species Scientific Committee (TSSC) judged the MDBWS as not eligible for listing under the EPBC act in 2002 and provided the Environment Minister with such advice. The TSSC stated that "*There is little quantitative data available on the population numbers of the Mt Donna*

[1] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[2] FFGA Threatened List (DELWP, 2022), pp10. <Flora and Fauna Guarantee Act 1988 - Threatened List (environment.vic.gov.au)>
[3] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp2. <Mt Donna Buang Wingless Stonefly Action Statement>
[4] IUCN Red List of Threatened Species (IUCN, 2022). <Riekoperla darlingtoni (Mount Donna Buang Wingless Stonefly) (iucnredlist.org)>
[5] IUCN Red List Categories and criteria (IUCN, 2012). <IUCN Red List Categories and Criteria>

Buang Wingless Stonefly…there do not appear to be any direct threats to the species' survival and there is active management addressing development and recreational pressures in the area." [6]

A scientific paper by New (2008) states that a contrast on formal rulings for threatened status between the FFGA and the EPBC Act, were made based on essentially the same information for the MDBWS but were due to the effects of different listing criteria[7]. The Australian Government[8] and the Victorian Government[9] have since committed to mitigating these inconsistencies by adopting the Common Assessment Method (CAM) for the assessment and listing of threatened species under the EPBC Act and the FFGA Act, using the criteria developed and utilised internationally by the IUCN. With the IUCN criteria determining the MDBWS as critically endangered internationally, and the Victorian Government also assessing and listing the species as critically endangered using the CAM, it's assumed that the species will be assessed and listed nationally as critically endangered under the EPBC Act once the formal process has been completed. We understand from personal communications that this formal process has been triggered and that the MDBWS is being re-assessed using the CAM by the Australian Government under the EPBC Act[10]. The Australian Alps (NSW/ACT/VIC), of which Mount Donna Buang is within, has been identified as one of the Federal Governments 20 Priority Places under the Threatened Species Action Plan 2022-32[11].

The delay in the federal listing for this species highlights the need for interim conservation measures under the amended FFGA, such as a Habitat Conservation Order (HCO). HCOs may be made by the Minister to conserve, protect or manage critical habitat, and can prohibit damage to critical habitat or require remediation of previous damage[12]. The need and urgency for interim conservation measures are further highlighted by the results of recent scientific long-term monitoring which has observed declines in MDBWS of up to 80% and observed localised extinctions from one of the previously occupied sites[13]. Determining critical habitat under the amended FFGA is the first in a step-wise process to protect threatened species habitat for the MDBWS[14].

8.2. Evidence of the restricted geographical distribution of the MDBWS.

The MDBWS has an extremely limited geographical distribution, with recent studies from 2021 recording the current extent of occurrence at approximately just over 4km^2, for a total of eight localities in the Yarra Ranges

[6] TSSC Assessment of Mount Donna Buang Wingless Stonefly (TSSC, 2002). <Mt Donna Buang Wingless Stonefly (Riekoperla darlingtoni) - DCCEEW>
[7] Legislative inconsistencies and species conservation status: understanding or confusion? The case of *Riekoperla darlingtoni* (Plecoptera) in Australia (New, 2008). <Legislative inconsistencies and species conservation status: understanding or confusion? The case of Riekoperla darlingtoni (Plecoptera) in Australia | SpringerLink>
[8] Australian Government: Common Assessment Method (DCCEEW, 2015). <Common Assessment Method - DCCEEW>
[9] Victorian Government: Common Assessment Method (Victorian Government, 2020). <Review of the Flora and Fauna Guarantee Act 1988 | Engage Victoria>
[10] Personal Communications with the Australian Government: Protected Species and Communities Branch (Australian Government, 2022).
[11] Threatened Species Action Plan 2022-2032: Priority Places (Australian Government, 2022). <Priority Places - DCCEEW>
[12] FFGA Critical Habitat and Habitat Conservation Orders under the FFGA (DELWP, 2022). <Critical Habitat and Habitat Conservation Orders>
[13] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021). <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[14] Using law and policy to protect critical habitat of Victoria's threatened species (Environmental Justice Australia 2021), pp6. <1_Using-law-and-policy-to-protect-the-critical-habitat-of-Victoria.pdf (envirojustice.org.au)>

National Park around Mount Donna Buang, in Victoria[15,16]. These recent eDNA studies surveyed the western part of the species range, identified two of the eight localities for the MDBWS and noted that suitable habitat also likely occurs 4km north and south-east of Mount Donna Buang[17]. Additional eDNA surveys were then conducted in the suitable habitat south-east of Mount Donna Buang which identified three of the eight current localities occupied by the MDBWS[18]. One previously occupied site north-east of Mount Donna Buang has had no recordings of the species since 1999 despite multiple survey attempts, and thus has not been included in the total 8 localities mentioned above, however the area is still considered to have suitable habitat.[19] More historically, Surveys aiming to investigate the range of the MDBWS were undertaken by the Forest Commission in 1984 up to 2km east of the known sites[20], and by Melbourne Water in 2005 and 2006 up to 5km north-west of the known sites[21], with only one of the eight localities identified from such surveys[22]. As noted in the MDBWS Action Statement, "*past surveys have been undertaken by entomologists in areas of similar habitat elsewhere in Victoria and in New South Wales, but have failed to locate any other populations of the stonefly*"[23]. The following maps from Tsyrlin et al., 2021 and Tsyrlin 2021 detail the restricted geographical distribution of the MDBWS and the currently known extent of occurrence;[24,25]

[15] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp1. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[16] Survey of Riekoperla darlingtonia (Illies 1968) east of the Mt Donna Buang for the Warburton Mountain Bike Destination project (Tsyrlin 2021), pp4-6. <unpublished report>
[17] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp8. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[18] Survey of Riekoperla darlingtonia (Illies 1968) east of the Mt Donna Buang for the Warburton Mountain Bike Destination project (Tsyrlin 2021), pp4-6. <unpublished report>
[19] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2-3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[20] A study of the rare wingless stonefy Riekoperla darlingtoni (Illies), near Mt. Donna Buang. Forests Commission Victoria Research Branch (Neumann F, Morey J, 1984).
[21] Unpublished Report (DELWP), see Tsyrlin et al., 2021 (Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)).
[22] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[23] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp4. <Mt Donna Buang Wingless Stonefly Action Statement>
[24] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[25] Survey of Riekoperla darlingtonia (Illies 1968) east of the Mt Donna Buang for the Warburton Mountain Bike Destination project (Tsyrlin 2021), pp4. <unpublished report>

Note: These maps have been blurred to ensure the security and integrity of threatened species records.

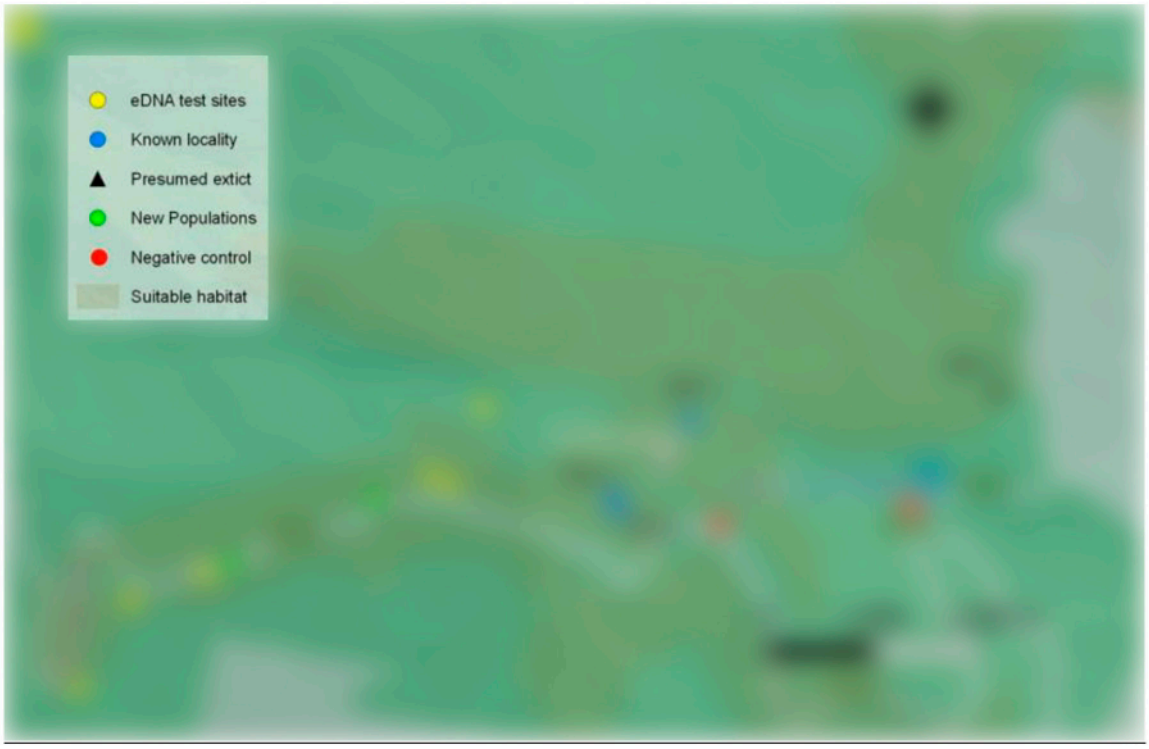


Figure 2. Sampling sites and locations. R. darlingtoni eDNA sampling locations. Sites that were examined but did not contain water are omitted for clarity, from Tsyrlin et al., 2021;[26]

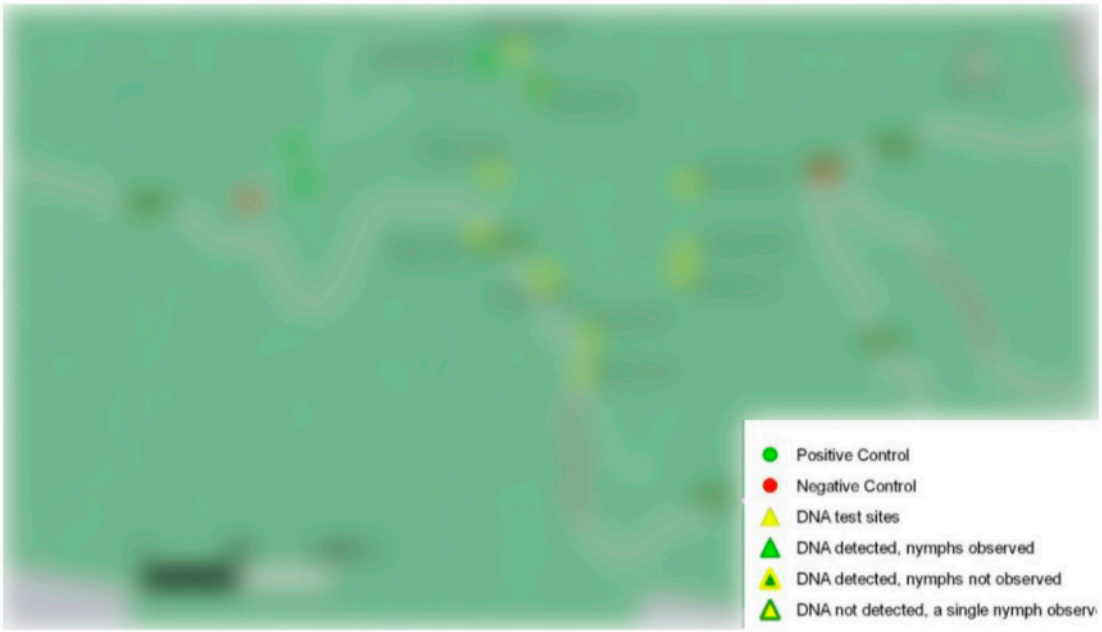


Figure 3. The map of the survey sites and findings, from Tsyrlin 2021;[27]

[26] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[27] Survey of Riekoperla darlingtonia (Illies 1968) east of the Mt Donna Buang for the Warburton Mountain Bike Destination project (Tsyrlin 2021), pp4. <unpublished report>

Tsyrlin et al., 2021 defines suitable habitat for the MDBWS as *"likely limited to very small, ephemeral headwater springs, with dense understorey vegetation and often without a defined channel. The springs at all four known sites (Fig. 2A) are at an altitude of above 900 m, with a catchment of less than 0.3 km2 and a relatively gentle slope".*[28] Tsyrlin (2021) adds that "*the species occupies and extremely narrow ephemeral habitat from the point of the spring origin to approximately 300 meters downstream where the flow volume usually increases, and the spring becomes more permanent.*" [29].

Fig. 2b. A photo of the habitat at Site 1 showing the spring flowing through a weakly defined channel, from Tsyrlin et al., 2021.[30]

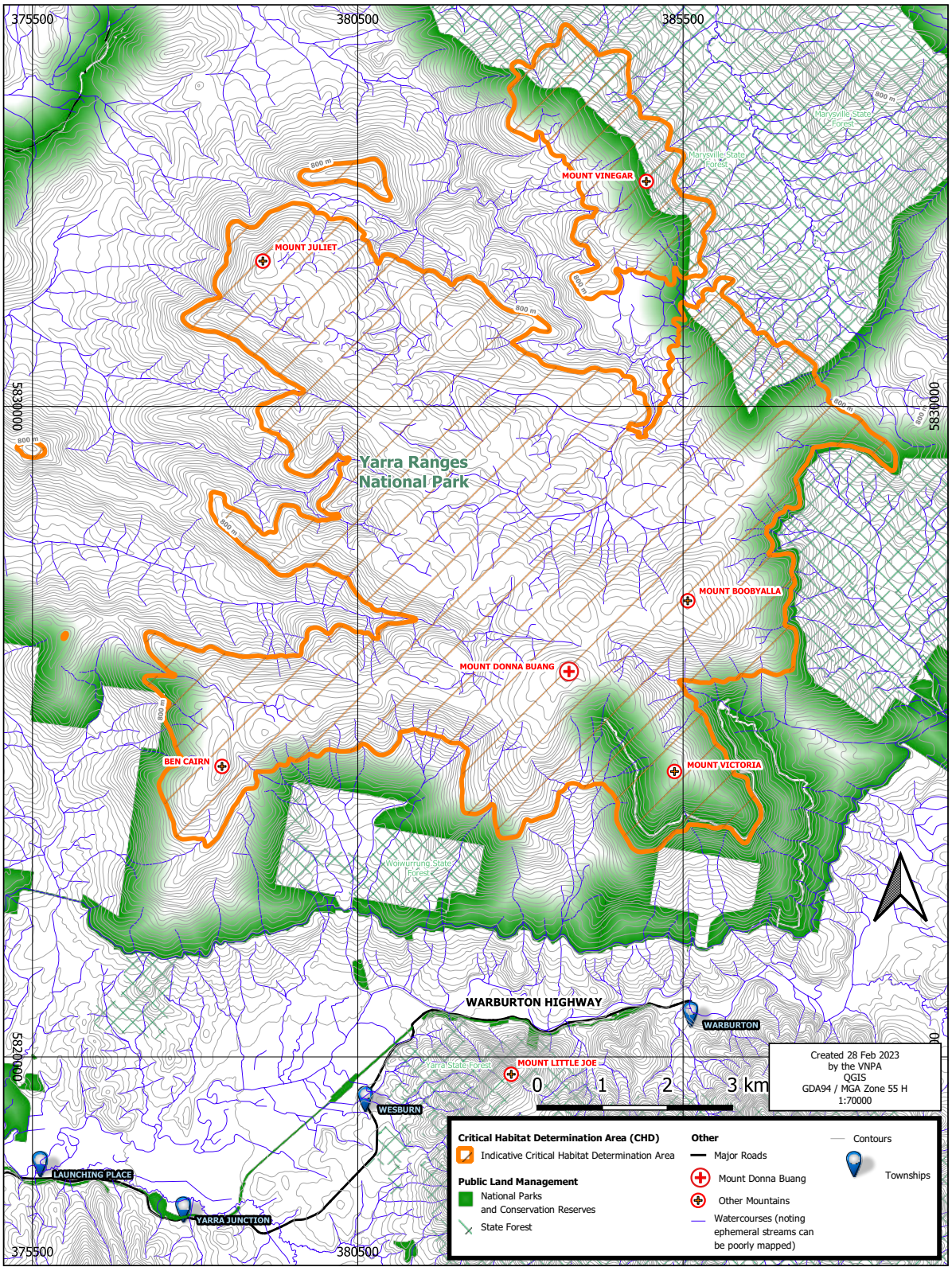
Tsyrlin et al., 2021 then states that the combination of narrow habitat requirements, exceedingly limited distribution and dispersal ability makes the MDBWS vulnerable to many environmental stresses such as climate change, which is expected to be a substantial threat into the future. The paper also states that whilst most freshwater invertebrates can migrate up- or downstream to avoid environmental stressors, the MDBWS are restricted to headwater habitats at the top of the mountain and have few prospects for adapting to the rapidly changing conditions[31].

For the purposes of CHD for the MDBWS, the area mapped below in section 8.3 represents an indicative area for which a CHD would be suitable and would significantly contribute to the conservation of the MDWBS.

[28] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[29] Survey of Riekoperla darlingtonia (Illies 1968) east of the Mt Donna Buang for the Warburton Mountain Bike Destination project (Tsyrlin 2021), pp6. <unpublished report>
[30] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[31] Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Tsyrlin et al., 2021), pp3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>

8.3 Indicative Critical Habitat Determination (CHD) Mapping

Indicative Critical Habitat Determination (CHD) Area: Mount Donna Buang Wingless Stonefly



Map 1. Indicative Critical Habitat Determination (CHD) Area for the MDBWS

In Map 1 above, the hashed orange represents an indicative area for CHD. The area being considered extends up to around 10km from Mount Donna Buang and includes Mount Juliet, which is believed to have suitable habitat[32]. The defined parameters for this area require elevations above 800m. Although the majority of the sites that are currently occupied by the species are found at elevations greater than 900m[33] (Map 1), it's important to note that elevations below this threshold do not necessarily indicate unsuitable conditions[34]. Applying the precautionary principle, setting the elevation parameters for CHD at 800m+ is a more appropriate approach[35].

The survey sites and findings from Tsyrlin et al., 2021 and Tsyrlin 2021 (Figures 2 and 3 in this nomination) have been georeferenced and overlayed on Map 1, showing amongst other things, the previously known sites and new populations for MDWBS. We note that the area mapped as suitable habitat in Figure 2 was conservative, and that one new population shown in Figure 3 falls outside of this area mapped as suitable habitat, highlighting the need for a conservative approach when determining CHD area for the MDBWS. Watercourses are displayed in Map 1, but due to the difficulties involved in mapping ephemeral mountain streams, and the inconsistencies in the mapping (eg the stream with the main population of MDWBS is not mapped)[36], they have not been used as a key parameter for the indicative CHD area.

The indicative CHD area in Map 1 is consistent with the Action Statement for the MDBWS, which states that "*Based upon current knowledge, it seems likely that the resort area and surrounds at Mount Donna Buang will constitute a key part of the 'critical habitat' of the taxon, as defined under the Flora and Fauna Guarantee Act 1988"* [37]. This critical habitat area is critical to all life stages of the MDBWS, across all times of the year, as the species has poor dispersal capabilities and is entirely reliant on this habitat for its long-term persistence, including during breeding and reproduction[38]. The indicative CHD area in Map 1 above falls almost entirely within the Yarra Ranges National Park, but includes small sections of the Marysville State Forest near Mount Vinegar, which has been subject to intensive clearfell logging operations in the last decade[39], further highlighting the need for additional protections under the FFGA.

We note that under the amended FFGA, s27(2) allows for interim conservation orders (HCOs) to apply outside of areas covered by a CHD, meaning that areas subject to HCOs can be broader than areas subject to a CHD, provided that those areas outside the critical habitat are likely to adversely affect it[40].

8.4 Evidence and scientific information about the significance of the burrowing behavior exhibited by the MBWS

[32] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3-4. <Mt Donna Buang Wingless Stonefly Action Statement>
[33] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[34] Personal Communications with Eddie Tsyrlin (Tsyrlin, 2023).
[35] Personal Communications with Eddie Tsyrlin (Tsyrlin, 2023).
[36] Personal Communications with Eddie Tsyrlin (Tsyrlin, 2023).
[37] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[38] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp2-3. <Mt Donna Buang Wingless Stonefly Action Statement>
[39] Forest Information Portal: Disturbance – Last Logging hIstory (DELWP, 2023). < Forest Information Portal (ffm.vic.gov.au)>
[40] Flora and Fauna Guarantee Amendment Act 2019 (Chief Parliamentary Counsel 2019), p43-45. <Flora and Fauna Guarantee Amendment Act 2019 (legislation.vic.gov.au)>

The MDBWS relies upon its critical habitat as refugia during times of environmental stress. In the summer, when the streams usually dry up, the nymphs burrow into the damp grit of their substrate in order to escape desiccation[41]. The eggs also appear able to survive this seasonal drying[42]. These abilities of the MDBWS are truly unique and really separate this species from other Stonefly species in Australia[43]. Due to the suitable habitat for MDBWS coinciding with wet forest types and patches of cool temperate rainforest[44], it's likely that this critical habitat also acts as refugia during bushfires due to the cool, wet microclimate of cool temperate rainforests and the relative absence of fire in these rainforests[45]. The MDBWS is extremely reliant upon this critical habitat in the wild as captive breeding for the species has been unsuccessful[46] and it has been suggested that the species may require special conditions for egg deposition[47].

Climatic data from 1995 to 2020 show a decrease in rainfall and snow cover, and an increase in mean annual minimum temperatures from the nearest relevant weather stations to Mount Donna Buang and the MDBWS[48]. These climatic changes will lead to times of environmental stress and the integrity of the species critical habitat will be crucial to all life stages of the MDBWS, particularly in relation to reduced stream flows and a reduction in the substratum moisture levels required by the MDBWS for burrowing during the summer months[49]. Tsyrlin et al., 2021 has recommended some short-term and long-term actions to improve the refuge qualities of the MDBWS critical habitat during times of environmental stress, which mostly focus around mitigating the projected reductions in rainfall and stream flow and maintaining substratum moisture levels during the drier months[50].

8.5 Evidence and scientific information about the acute sensitivity of the habitat area and the taxon to disturbance

Despite the MDBWS occurring exclusively within the Yarra Ranges National Park, a protected area, the species and its habitat is acutely sensitive to disturbance events which have occurred in the past and which are likely to occur in the future. The highly specialized adaptations of the MDBWS and its low dispersal capabilities accentuate any threat to its habitat[51]. The species is also uniquely sensitive to disturbance in that, unlike most freshwater invertebrates, the MDBWS cannot migrate up- or downstream to avoid environmental stressors, the MDBWS are restricted to headwater habitats at the top of the mountain and have few prospects for adapting to

[41] The life histories of many of the stoneflies (Plecoptera) of south-eastern mainland Australia (H. B. N. & Hynes, M. E, 1975), Australian Journal of Marine & Freshwater Research Hynes, 26, pp. 113–153.
[42] The life histories of many of the stoneflies (Plecoptera) of south-eastern mainland Australia (H. B. N. & Hynes, M. E, 1975), Australian Journal of Marine & Freshwater Research Hynes, 26, pp. 113–153.
[43] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp2-3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[44] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp2. <Mt Donna Buang Wingless Stonefly Action Statement>
[45] Rainforests Action Statement (DSE, 2009), pp8. < Rainforests Action Statement>
[46] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[47] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[48] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp4-7. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[49] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp7. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[50] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp8. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[51] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>

the rapidly changing conditions[52]. These insects are more vulnerable to changes in their physical habitat than their lowland counterparts because small headwater streams have less buffering capacity to changes in rainfall, snow cover, air temperature or disturbance such as pollution[53].

The Action Statement for MDBWS lists many threats to the species and its habitat. The species is sensitive to reductions in water quality, even if only minor or short-term, which may eventuate due to run-off from car parks & visitor facilities (open areas etc), emissions or spillages of fuel or oil from motor vehicles, the inappropriate application of herbicides, the construction or maintenance of roads and tracks or degraded walking tracks[54]. A single fuel spillage in a car park could wipe out a substantial proportion of the known MDBWS population, and environmental vigilance may be essential to the long-term survival of the species[55]. Other potential disturbances may include alteration to stream patterns and surface soil structure (such as from earthworks or landscaping), and loss of or damage to vegetation along stream courses due to trampling, clearing or even fire[56]. In 1993, direct mechanical disturbance from a tractor was observed along at least one stream known to be MDBWS habitat, and such disturbances are likely to cause at least short-term population decreases[57].

Fungal disease, in particular Myrtle Wilt cause by the pathogen *Chalara australis*, has been observed in Myrtle Beech (*Nothofagus cunninghamii)* trees around Mount Donna Buang and is a significant threat to the habitat of the MDBWS[58]. Myrtle Wilt develops initially in a stand of Myrtle Beech trees by the infection of stem or root wounds via air or water-borne inoculum, and the infection spreads to additional Myrtle Beech trees of which those with stem or branch wounds are believed to be particularly susceptible[59]. The infection is fatal and ultimately leads to the death of Myrtle Beech trees, which has the potential to significantly limit the abundance and distribution of species which are reliant on Cool Temperate Rainforests and their dominant canopy species, Myrtle Beech[60]. Because the fungal spores are wind dispersed, human activity is likely to elevate disease incidence rates to levels higher than natural background levels and compared to that experienced in undisturbed forests[61]. Human activity resulting in artificially elevated or epidemic levels of Myrtle Wilt within *Nothafagus*-dominated Cool Temperate Rainforest has been identified and listed as a potential threatening process under the FFGA[62]. The MDBWS is typically found along stream courses with a dense understory of Myrtle Beech trees[63]. Myrtle Wilt threatens the integrity of the Myrtle Beech canopy within MDBWS habitat, and the loss of Myrtle Beech trees through Myrtle Wilt would open up MDBWS habitat and leave it susceptible to increased levels of sunlight, drying out streams and the substratum moisture level required by the MDBWS during times of environmental stress[64].

---

[52] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp3. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[53] Biological diversity in headwater streams (Richardson, JS, 2019). Water 11:366. https://doi.org/10.3390/w11020366
[54] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[55] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[56] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[57] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp3. <Mt Donna Buang Wingless Stonefly Action Statement>
[58] Rainforests and Myrtle Wilt Action Statement (DSE, 2009), pp7. <Rainforests and Myrtle Wilt Action Statement>
[59] Rainforests and Myrtle Wilt Action Statement (DSE, 2009), pp7-8. <Rainforests and Myrtle Wilt Action Statement>
[60] Rainforests and Myrtle Wilt Action Statement (DSE, 2009), pp7-8. <Rainforests and Myrtle Wilt Action Statement>
[61] Rainforests and Myrtle Wilt Action Statement (DSE, 2009), pp7-8. <Rainforests and Myrtle Wilt Action Statement>
[62] FFGA Potentially Threatening Process List (DELWP, 2022), pp3. <FFGA-Processes-List-July-2022>
[63] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp2. <Mt Donna Buang Wingless Stonefly Action Statement>
[64] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp7. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>

The extremely limited distribution of the MDBWS, its fragmented populations, limited means of dispersal, affinity to a specific altitude, and the specific flow regime requirement for the nymphs makes the MDBWS likely to be amongst the most vulnerable species to climate change in Victoria[65]. Projected reductions in rainfall and snow coverage on Mount Donna Buang threaten the persistence of the MDBWS as the species requires consistent stream flow from June to November and a minimal level of ground moisture to survive over the summer months[66]. Projected increases in air temperature also threaten the species as the nymphs are acutely sensitive to changes in the air temperature[67].

Despite the Action Statement listing that any further developments of visitor facilities or landscape modifications should be avoided around Mount Donna Buang[68], there have been recent proposals by the Yarra Ranges Council to develop world-class mountain biking trails around Warburton, including trails around Mount Donna Buang which overlap with MDBWS habitat[69]. The Minister's decision on this proposal was published in 2022, which was largely informed by the report and findings of the Inquiry and Advisory Committee (IAC)[70], and concluded that four of the trails through the Yarra Ranges National Park presented unacceptable risk of significant effects, particularly on Cool Temperate Rainforest, Cool Temperate Mixed Rainforest and the MDBWS, which are of high conservation value[71]. The Minister concluded that there is uncertainty as to whether the mitigation measures within the proposal would appropriately mitigate significant impacts to environmental values, such as the MDBWS[72]. The Minister also agreed that significant changes to the mitigation measures must be implemented before other proposed trails throughout the National Park are considered to have a manageable and acceptable risk for the MDBWS, including the implementation of no-go zones within areas of known populations of the MDBWS and suitable habitat for the species[73]. The IACs assessment of several smaller tracks (2-8) in the Yarra Ranges National Park determined them to be adequate (subject to mitigation measures), due to occurring within less pristine parts of the Park, and the Minister accepted these findings by the IAC[74]. The Ministers final assessment recommended that additional mapping of Stonefly No-Go Zones be required for the upper sections of three of these remaining trails in the National Park, being trails 5, 6 and 8[75], highlighting there may be overlap between the remaining trails in the Park and MDBWS habitat[76]. The potential for MDBWS habitat degradation though Myrtle Wilt was found to be a significant threat associated with the

[65] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp8. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[66] Climate warming threatens critically endangered wingless stonefy Riekoperla darlingtoni (Tsyrlin et al., 2021), pp7. <Climate warming threatens critically endangered wingless stonefly Riekoperla darlingtoni (Illies, 1968) (Plecoptera: Gripopterygidae) (researchgate.net)>
[67] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp4. <Mt Donna Buang Wingless Stonefly Action Statement>
[68] Mount Donna Buang Wingless Stonefly Action Statement (DSE, 2001), pp4. <Mt Donna Buang Wingless Stonefly Action Statement>
[69] Warburton Mountain Biking Destination Environmental Effects Statement (EES), EES Main Report, Chapter 8 (Yarra Ranges Council, 2022), pp37. <EES – Ride Yarra Ranges>
[70] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp4. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[71] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp3. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[72] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp28. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[73] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp29. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[74] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp12. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[75] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp29, 33, 75. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[76]Yarra Ranges National Park Mountain Bike Tracks Rejected (VNPA, 2022). <Breaking news: Yarra Ranges National Park mountain bike tracks rejected - Victorian National Parks AssociationVictorian National Parks Association (vnpa.org.au)>

Mountain Biking proposal, with experts stating that the likelihood of Myrtle Wilt infection is "*almost certain*"[77] if the proposal goes ahead. The proposal also threatened to exacerbate the impacts of Myrtle Wilt (*Chalara australis*) within MDBWS habitat, with spores from another soil-born pathogen, *Phytophthora cinnamomic* (Phytophora), which would potentially be introduced into the MDBWS habitat through bike wheels of riders[78]. Phytophora can infect and kill a number a large number of native plants[79] and the spread of Phytophora from infected sites into Parks and Reserves is listed as a potential threatening process under the FFGA[80]. The findings of the IAC in relation to the need for Stonefly no-go-zones[81] highlights the need for increased protections of the MDBWS under the FFGA, through a CHD and interim protections such as HCOs.

The threats to the MDBWS do not exist in isolation and together act as compounding threats for this species. For example, damage to the habitat of the MDBWS through Myrtle Wilt and the loss of Myrtle Beech canopy will in turn exacerbate the threat of reduced stream flows and the loss of substratum moisture levels required during the summer months, with an increase in exposure for the stream and streambed to sunlight and heat. As another example, the removal or mechanical disturbance to Myrtle Beech trees within MDBWS habitat, such as that proposed in the Warburton Mountain Biking Destination project, would exacerbate the threat of Myrtle Wilt within MDBWS habitat. Despite this species occurring exclusively within a National Park, the MDBWS is still subject to ongoing threats such as climate change and future developments and is extremely sensitive to disturbances. The MDBWS's critical habitat requires protection from ongoing threats under the amended FFGA through a CHD and HCO.

8.6 Legal opinion about the role and authority of the SAC to make CHD recommendations.

Under s20A of the amended FFGA, the Scientific Advisory Committee (SAC) holds legislative powers to make a recommendation to the Secretary to make a CHD, and the Secretary must consider any recommendation made by the SAC and determine whether or not to propose to make a CHD. The Secretary must give reasons to the SAC for a decision to propose, or not propose to make a CHD[82]. A report by Environmental Justice Australia confirms the powers of the SAC under the amended FFGA to make a CHD recommendation to the secretary[83], and also makes reference to the eligibility, importance and conservation benefits of a CHD for the MDBWS[84].

In the context of this nomination, the SAC would be rightfully exercising its powers under the amended FFGA to make a recommendation to the Secretary for CHD of the MDBWS. The Secretary is then ultimately

[77] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp23. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[78] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp23. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[79] Minister's Assessment of the Warburton Mountain Biking Destination Proposal (Victorian Government, 2022), pp23. <Warburton Mountain Bike Destination Project (planning.vic.gov.au)>
[80] FFGA Potentially Threatening Process List (DELWP, 2022), pp4. <FFGA-Processes-List-July-2022>
[81] Warburton Mountain Bike Destination | Inquiry and Advisory Committee Report No. 1 (Victorian Government, 2022), pp73-74. <Warburton-MTB-Destination-IAC-Report.pdf (planningpanels.vic.gov.au)>
[82] Flora and Fauna Guarantee Amendment Act 2019 (Chief Parliamentary Counsel 2019), p35-37. <Flora and Fauna Guarantee Amendment Act 2019 (legislation.vic.gov.au)>
[83] Using law and policy to protect critical habitat of Victoria's threatened species (Environmental Justice Australia 2021), pp6. <1_Using-law-and-policy-to-protect-the-critical-habitat-of-Victoria.pdf (envirojustice.org.au)>
[84] Using law and policy to protect critical habitat of Victoria's threatened species (Environmental Justice Australia 2021), pp23-25. <1_Using-law-and-policy-to-protect-the-critical-habitat-of-Victoria.pdf (envirojustice.org.au)>

responsible for the determination of whether or not to make a CHD in relation to the MDBWS[85]. We note that under s20E of the amended FFGA, the Secretary may make guidelines in relation to areas that would be eligible for CHD, but must first consult with the SAC before making any such guidelines, and which are then required to be published on the internet in the event that any such guidelines are finalised[86]. We have been informed that guidelines are yet to be published and moving slowly. After nearly three years since the amendments to the FFGA came into effect, we are frustrated that these important tools in the FFG Act are not being used. Legal opinions obtained by the VNPA suggest that the provisions of the Act in relation to CHD are in force and apply whether guidelines exist or not. This legal advice from Environmental Justice Australia has been attached to this nomination. This nomination is based on the key provision from the legislation.

The MDBWS is eligible for CHD under the following criteria of the amended FFGA (s20), for the reasons outlined in this nomination above:

Criteria for Critical Habitat Determination under the amended FFGA (eligible criteria in bold):

"20 Critical habitats

(1) The Secretary may determine any area of Victoria to be a critical habitat.

(2) A determination under subsection (1) must not be made unless the Secretary considers that—

> ***(a) the area significantly contributes to the conservation in Victoria of a listed taxon or community of flora or fauna; or***
>
> *(b) the area significantly contributes to the conservation in Victoria of a taxon or community of flora or fauna that is not listed, but in respect of which—*
>
> > *(i) a recommendation has been made by the Committee under section 16D; and*
> >
> > *(ii) the Minister has not made a decision under section 16G or has made a decision under that section to make a recommendation; or Part 2—Amendment of Flora and Fauna Guarantee Act 1988 Flora and Fauna Guarantee Amendment Act 2019 No. 28 of 2019 36 Authorised by the Chief Parliamentary Counsel*
>
> ***(c) the area supports ecological processes or ecological integrity that significantly contributes to the conservation of a taxon or community that is listed.***

(3) Without limiting subsection (2), a determination of a critical habitat may be made if—

> ***(a) the area is critical to the persistence of a taxon or community of flora or fauna; or***
>
> ***(b) flora or fauna aggregate in the area for reproduction or other important life stages; or***
>
> ***(c) the area is used by flora or fauna to move between populations, migrate or disperse, or as refugia during environmental stress; or***
>
> ***(d) the taxon or community of flora or fauna is occasionally present in the area; or***
>
> ***(e) the taxon or community of flora or fauna is not present in the area but was previously present in the area and there is potential to reintroduce it; or***

[85] Flora and Fauna Guarantee Amendment Act 2019 (Chief Parliamentary Counsel 2019), p35-40. <Flora and Fauna Guarantee Amendment Act 2019 (legislation.vic.gov.au)>
[86] Flora and Fauna Guarantee Amendment Act 2019 (Chief Parliamentary Counsel 2019), p39. <Flora and Fauna Guarantee Amendment Act 2019 (legislation.vic.gov.au)>

(f) the area is likely to be needed by a taxon or community of flora or fauna in the future.

Nomination authored by the Victorian National Parks Association,

2 March 2023

Level 3, 60 Leicester Street, Carlton Vic 3053

Contacts: Nature Conservation Campaigner - Blake Nisbet (blake@vnpa.org.au, 0431 253 773)

Director – Matt Ruchel (mattruchel@vnpa.org.au, 0418 357 813)