Before the Expert Panel appointed under the Fast-track Approvals Act 2024

Under	the Fast-track Approvals Act 2024 (**Act**)
And	
In the Matter of	an application for approvals by Matakanui Gold Limited to establish, operate, rehabilitate and ultimately close an open pit and underground gold mining operation known as the Bendigo-Ophir Gold Project

Statement of Evidence of **Keith Stephen Barber** on behalf of **Matakanui Gold Limited** in response to Section 53 Feedback

Terrestrial Ecology

Dated: 17 April 2026

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INTRODUCTION

1. My name is Keith Stephen Barber.

2. I hold an MSc (Hons.) in Wildlife Management and Ecology and a BSc in Ecology, both from Lincoln University. I have 27 years of experience in wildlife management and general ecology throughout New Zealand, including over 25 years in invertebrate ecology and 20 years in native bat ecology. I am the Director and Principal Ecologist of Habitat NZ Limited. My experience spans programme design and implementation, wildlife salvage, wildlife monitoring, and peer review across conservation, local government, construction, and infrastructure sectors.

3. I am recognised as a Competent Bat Ecologist by the Department of Conservation Bat Recovery Group, holding competencies 2.21, 1.22, 1.23, 1.31, 1.32, 1.33, 2.11, 2.1.2, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.4.5, 3.1, 3.2 and 3.3.

4. I hold certifications as a National Pest Control Agencies (**NPCA**) Designer, NPCA Field Operative, and certified handler of vertebrate toxic agents.

5. I have completed the Ministry for the Environment Making Good Decisions course and am certified as an independent hearing commissioner.

6. I am a member of the New Zealand Ecological Society of New Zealand, Australasian Wildlife Management Society, Australasian Bat Society and New Zealand Biosecurity Institute.

7. This statement is given as part of Matakanui Gold Limited's (**MGL**) response to comments on the Bendigo-Ophir Gold Project (**BOGP**) made under Section 53 of the FTA. This statement responds to specific comments raised by:

    (a) Edward Ellison (OKaumatua) (Statement of evidence of Edward Ellison (Kaumatua)) on behalf of Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Moeraki, Te Rūnaka o Ōtākou, and Hokonui Rūnanga (Kā Rūnaka). [Ellison 2026]

    (b) Jade Watkin on behalf of Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Moeraki, Te Rūnaka o Ōtākou, and Hokonui Rūnanga (Kā Rūnaka). [Watkin 2026]

    (c) Matt Dale on behalf of Kāti Huirapa Rūnaka ki Puketeraki, Te Rūnanga o Moeraki, Te Rūnaka o Ōtākou, and Hokonui Rūnanga (Kā Rūnaka). [Dale 2026]

(d) Chelsea McGaw on behalf of the Royal Forest & Bird Protection Society of New Zealand Incorporated, conveying technical comments by Mr Brian Patrick (Non-Expert Evidence of Chelsea McGaw, Forest & Bird, 2026). Mr Patrick is the Otago Conservation Board's technical witness on Lepidoptera and Central Otago invertebrates. [McGaw, Patrick 2026]

(e) Dr Justyna Giejstowt, Santana Bendigo-Ophir Gold Mine Compensation and Offsetting Assessment. [Giejstowt 2026]

(f) Max Crowe, on behalf of the Department of Conservation (DOC) relating to vegetation. [Crowe 2026]

(g) Mike Harding on behalf of Central Otago District Council (Statement of Evidence of Mike Harding, CODC, 2026). [Harding 2026]

(h) Hon Nicola Grigg, Minister for the Environment. [Grigg 2026]

(i) Rebecca Teele on behalf of E3 Scientific (E3 Technical Review, 2026). Mrs Teale reviewed terrestrial invertebrate and pest survey methodology. [Teele 2026]

(j) Warren Chinn (Statement of Evidence of Warren Chinn, 2026). Mr Chinn is an independent invertebrate ecologist providing expert evidence on behalf of the Department of Conservation. [Chinn 2026]

(k) Dr Rick McGovern-Wilson on behalf of the New Zealand Conservation Authority [McGovern-Wilson 2026]

8. My original findings are provided in full in:

(a) B.09 Habitat NZ Mammalian Pest Survey.

(b) B.10 Habitat NZ Native Bat Survey.

(c) B.11A Habitat NZ Terrestrial Invertebrate Survey.

(d) G.06 Terrestrial Invertebrate Management Plan.

(e) G.09 Matakanui Sanctuary Management Plan.

(f) G.10 Mammalian Pest Management Plan.

(g) G.11 Biosecurity and Plant pest Management Plan.

(h) G.07A Landscape and Ecological Rehabilitation Management Plan Appendices.

(i) G.07B Landscape and Ecological Rehabilitation Management Plan Appendices.

(j) G.12 Biodiversity Outcome Monitoring Plan (Invertebrates only).

(k) D.11 Wildlife Act Authority and Conditions.

9. The reports referred to in paragraph 8 should be read in conjunction with the following:

   (a) B.08 Alliance Ecology Consulting – Assessment of Ecological Effects invertebrates only. I contributed to into the effects assessment for invertebrates and reviewed the invertebrate section of the final report.

   (b) B.17 Water Ways Consulting Assessment of Effects on Aquatic Ecology (Waterways 2025)

   (c) D.09 Concession and Conditions for Willow Management.

   (d) G.02 Ecological Management Plan Framework.

   (e) G.04 Avifauna Management Plan.

   (f) G.05A Lizard Management Plan

   (g) G.08 Ardgour Restoration Area Management Plan,

   (h) Statements of evidence of Dr. Norton, Dr. Graham Ussher, Dr. Matt Baber and Dr Simcock dated 17 April 2026.

10. I have prepared this statement in the limited time available for MGL to respond to comments under the Act. If the Panel requires elaboration on any of the matters raised in this statement, I am available to provide further information on request.

11. Although this is not an Environment Court proceeding my confirmation of compliance with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 is included in Substantive Application Document A0.2B.

SPECIFIC RESPONSE TO COMMENTS

12. This statement consolidates my responses to technical reviewer comments on the terrestrial ecology components of the BOGP Substantive Application relating to areas of my involvement with the Project. It is prepared in response to Section 53 feedback and is intended to assist the Panel to clearly identify, at a high level, where I agree with reviewers (paragraph 16), where I disagree and why (paragraph 32), and where reviewer evidence contains internal inconsistencies that, in my view, the Panel should take into account when weighing that evidence (Paragraph 64).

13. This statement does not repeat the detail of my original reports. Those findings stand and are cross-referenced where relevant.

14. This statement is organised thematically rather than comment by comment, because several reviewers raise overlapping concerns, and a thematic treatment avoids repetition and makes the areas of genuine dispute easier for the Panel to identify.

15. This statement covers five areas. The tables below allow the Panel to navigate by area of expertise or by reviewer. Each section heading in the document also carries a bracketed discipline tag for the same purpose.

By Area of Focus:

Area of focus	Evidence Paragraph	Key reviewers
Terrestrial invertebrates	17-22, 30, 33, 38, 41-50	Chinn, Patrick/McGaw, Teele, Hon Grigg, McGovern-Wilson
Bat ecology	51-54	Ellison
Pest management	23-25	Teele, Dale
Effects management (as relating to invertebrates)	41-46	Chinn, Giejsztowt, Harding
Kā Rūnaka / mātauraka (as this relates to invertebrates, bats or animal pests)	28-31	Ellison, Watkin

By Reviewer:

Reviewer	Representing	Evidence Paragraph
Warren Chinn	DOC (independent)	18, 20, 22, 37-40,42-43. 55-58, 65-68, 71-75.
Brian Patrick / Chelsea McGaw	Forest & Bird	19, 33, 36, 37, 70-71
Rebecca Teele	E3 Scientific	23-24, 33, 57
Dr Justyna Giejsztowt	Wildlands / DOC	37, 61
Mike Harding	Central Otago DC	56, 74
Hon Nicola Grigg	Minister of Conservation	47
Edward Ellison	Kā Rūnaka	25, 27-31,51-53, 62
Jade Watkin	Kā Rūnaka	31, 62
Matt Dale	Kā Rūnaka	25, 31, 37
Dr Rick McGovern-Wilson	New Zealand Conservation Authority	34-35

Key Areas of Agreement

16. The reviewers have engaged seriously with a complex body of ecological work and many of their observations are well-founded. Below I outline my **key areas of agreement** with the feedback to assist the Panel in identifying where genuine agreement lies.

Ecological significance of the site [terrestrial invertebrates]

17. The invertebrate assemblage at the BOGP Project Site is ecologically significant, as raised by many of the reviewers. The Terrestrial Invertebrate Survey [B.11A] recorded 18 taxa of conservation interest, including four threatened species. Two moth species carry Nationally Critical or Endangered classifications:

    (a) *Sporophyla oenospora* (Nationally Critical); and

    (b) *Homodotis 'sp. A'* (Nationally Endangered).

18. Mr Chinn's characterisation of the site as rich with endemic moth species and ecologically important [paragraph 73; Chinn 2026] is consistent with my own findings. Bendigo contains established ecological values which have been identified and acknowledged throughout the B.08 Alliance Ecology Consulting – Assessment of Ecological Effects (**AEE**) and management plans, along with the ways in which the BOGP will affect them.

Literature review omission [terrestrial invertebrates]

19. I acknowledge the omission of Patrick (1989) from the literature review of the Terrestrial Invertebrate Survey Report [paragraph 8; McGaw, Patrick 2026]. Having reviewed this paper, its inclusion would not affect the report's findings, conclusions, or recommendations. Although the BOGP is located within the Dunstan Ecological District, rather than the Manorburn Ecological District, which is the primary focus of Patrick (1989), this work forms part of the relevant regional baseline literature for Central Otago.

Sporophyla oenospora captive breeding risk [terrestrial invertebrates]

20. Mr Chinn's concerns about the risk of iatrogenesis in any captive breeding programme for S. oenospora are well-founded [paragraph 59; Chinn 2026]. A viable captive population would ideally draw from multiple source populations to avoid genetic collapse. The Castle Hill and Ben Lomond populations are no longer extant. Any captive breeding attempt using the Bendigo population alone would be a last resort measure rather than a reliable conservation tool. This uncertainty is why a conservative approach has been taken, and captive breeding has not been counted as a clear positive outcome in the AEE.

Experimental nature of salvage and relocation [terrestrial invertebrates]

21. As raised by many reviewers, invertebrate salvage and relocation for most species are experimental in New Zealand. The Terrestrial Invertebrate Management Plan (**TIMP**) and AEE are explicit about this uncertainty and place no weight on the successful outcomes of these approaches. Paragraphs 40-45 of my evidence addresses the significance of that distinction.

Predator fencing around existing weevil habitat [terrestrial invertebrates]

22. Mr Chinn suggests that predator fencing around areas of existing *Inophloeus 'new sp.'* weevil habitat would secure tangible conservation gains for this species [paragraph 61, Chinn 2026]. I agree that predator poof fences would be one way to generate greater gains for *Inophloeus new sp.* and broader invertebrate communities. This would, however, only deliver meaningful outcomes if the fenced area encompasses suitable taramea (*Aciphylla* spp.) habitat.

Baseline pest monitoring limitations [pest management]

23. Mrs Teele raises the general point that baseline pest monitoring at the scale of the BOGP site has inherent limitations, and that chew cards are not the most reliable of the available tools for rodent-specific monitoring [paragraph 2.7, Teele 2026]. Following the recent workshop, Mrs Teele and I are in broad agreement that the baseline surveys were fit for purpose and achieved their primary objective - identifying key pest species and informing the management strategy [paragraph 2.7, Teele 2026]. Rodent-specific monitoring has already been proposed for the sanctuaries and forest regeneration areas. If the Panel considers broader monitoring necessary, the same approach should apply across the site.

24. I agree with Mrs Teele that chew cards have well-documented limitations for rodent detection [paragraph 2.7, Teele 2026]; where rodent monitoring is required, devices suited to rodent detection should be used, with method and timing determined by the relevant management plan.

Pest management is a genuine conservation mechanism [pest management]

25. In requesting Kā Rūnaka participation in pest control programmes supporting taonga species recovery [Tūtohi 9, Ellison 2026], Ellison acknowledges pest management as a genuine and important conservation tool [Appendix 8, Ellison 2026]. Further additional reviewers comment on the importance of predator control and pest management as fundamental to biodiversity gain in New Zealand [e.g., 58-60, Dale 2026]. I agree. The AEE, ARAMP, and LERMP - supported by the MSMP, MPMP, and BPPMP - position pest control within both the sanctuaries and the wider landscape as one of the primary means of delivering meaningful ecological uplift. Both approaches treat pest management as substantive, not peripheral.

Net loss of habitat within the disturbance footprint [offsetting/compensation]

26. As noted in most statements of evidence discussing invertebrate ecology, the project will result in a net loss of invertebrate habitat area within the DDF that cannot be fully offset on a like-for-like basis. Importantly, the AEE does not claim that the compensation package fully replaces what is lost for invertebrates, nor does it rely on uncertain salvage outcomes to close that gap. The AEE's transparency on this point reflects the honest approach taken throughout the terrestrial invertebrate ecology assessments. What the compensation package delivers is a qualitative improvement in the condition and long-term security of habitat elsewhere - a different kind of gain, addressed in paragraphs 58-59 of this statement.

Landscape-scale thinking [offsetting/compensation]

27. The TIMP, LERMP, and ARAMP (through the MPMP and BPPMP) are designed to manage and restore areas broader than the immediate footprint of the proposed mine. Ellison's concern in his evidence that the project's cultural landscape effects extend across a wide area, "ki uta ki tai, from the mountains to the sea" reflects a shared recognition that point-source effects need to be countered at scale, not just within the mine footprint. The TIMP incorporates this principle within its scope, although I acknowledge that the cultural and spiritual dimensions of Ellison's framing extend beyond what technical mitigation alone can address.

Kā rūnaka's inclusion in management plans [kā rūnaka/ Mātauraka]:

28. Iwi review of management plans and all consent documents is important. Although the MSMP and other management plans were submitted with the Substantive application in October 2025, Ellison's evidence explicitly states that these were not available when their evidence was prepared:

> "*We do not currently have access to these reports. It is difficult to provide comprehensive feedback without having sighted these plans*"
>
> [Appendix 8 – BOGP Assessment of Ecological Effects –Terrestrial Ecology, Ellison 2026].

29. Many of Ellison's concerns are directly addressed by those management plans. I consider it appropriate for Kā Rūnaka to be involved in management plan workshopping, and it should it occur. This would provide an opportunity to work through the concerns raised in all Kā Rūnaka evidence within the proposed management frameworks, and to incorporate mana whenua input into how those plans are implemented and refined over time.

Taramea as ecologically and culturally significant [Kā Rūnaka / Mātauraka | terrestrial invertebrates]

30. Taramea (Aciphylla aurea) is identified as a culturally significant species in the Cultural Impact Assessment [Appendix 7, Ellison 2026]. Additionally, taramea holds ecological significance as a host plant for notable invertebrates, making it an explicit target of rehabilitation and regeneration under the LERMP and ARAMP. Its cultural and ecological significance are aligned, and both support the case for active management and protection. If the panel were inclined to seek greater benefits for invertebrates than what is currently offered, the further enhancement and protection of taramea would be one activity I would support.

Long-term management commitments need to be secured [Kā Rūnaka / mātauraka | pest management]

31. All reviewers for Kā Rūnaka request that rehabilitation goals are embedded into the consent conditions, with enforceable outcomes and genuine input from and engagement with Kā Rūnaka as well as intergenerational funding and maintenance arrangements [Appendix 8, Ellison 2026; 34, 37, Watkin 2026; 93, Dale 2026], The tools being requested align with what the application proposes. In my view, any consent conditions relating to pest management should be outcomes-focused rather than tied to a fixed programme of works. Long-term commitment is important, but conditions should remain relevant to actual on-the-ground conditions. For example, predator fence maintenance should be required only while target pest species remain present in the surrounding landscape, and management obligations for a particular species should apply only while that species remains a genuine threat.

Key Areas of Dispute

32. Below, I outline the **key areas of dispute** to assist the Panel in identifying where genuine dispute lies.

Survey methodology and impact area [terrestrial invertebrates]:

33. The adequacy of the Terrestrial Invertebrate Survey [B.11A] was not disputed by most reviewers. Mr Patrick - Forest & Bird's technical expert and arguably the most qualified person in New Zealand to evaluate an invertebrate survey in Central Otago - described the survey as "*well done overall*" [Paragraph 7, McGaw, Patrick 2026]. While Mrs Teele did raise specific methodological questions in her peer review [Paragraph 6, Teele 2026], each was addressed through written correspondence in January 2026 and at the applicant workshop in February 2026. Her updated position accepted the responses as sufficient on all points she raised. The Panel should approach the detail that follows in that context. It is provided for completeness and to address the record, not because the methodology is genuinely in dispute among specialist reviewers.

34. Dr McGovern-Wilson asks specifically about invertebrates in the covenant area. The covenant area was not separately assessed for covenant uplift impacts - it falls within the broader ESA boundary covered by the general invertebrate survey. The effects assessment addressed BOGP activities only and did not include covenant uplift; effects were assessed using population sizes, life history traits, and NZTCS threat rankings, with taxonomic experts consulted where data gaps existed.

35. Dr McGovern-Wilson emphasises the role of invertebrates in dryland ecosystem functioning and linkage to lizard habitat. That role is not disputed, but it is not the basis on which the survey was designed or should be judged — the survey assessed the invertebrate community in its own right, and the assessment of ecological effects evaluated project impacts against that community.

36. Mr Patrick inquired about the inclusion of the Tūhura Otago Museum collection [paragraph 9, McGaw,Patrick 2026]. The collection was consulted - Dr Robert Hoare used it physically to confirm specimen identifications - but it is not a practical tool for establishing historical species records from a defined locality and was not used as such.

37. Mr Chinn and Dr Giejsztowt maintain that the survey was inadequate, but Dr Giejsztowt is not an invertebrate expert and acknowledges her position on this point relies on Mr Chinn's input. Mr Chinn's specific concerns are addressed below.

    (a) ***Taxonomic level of analysis***: Mr Chinn's asserts that family level was used for diversity and habitat comparison analyses [47; Chinn 2026]. However, as stated in the Terrestrial Survey Report [3.6.1, B.11A], taxonomic classification varied with survey method and only one survey method (pitfall trapping) resulted in family-level classification. Despite this, both the survey report [B.11A] and Mr Chinn's interpretation of the data [‘Invertebrate Community Structure’ Chinn 2026] reached similar conclusions about community structure, highlighting this difference as presentational rather than substantive.

    (b) ***Species count and RTU inconsistency:*** Mr Chinn identified an apparent discrepancy between 251 species in the report text and 425 taxa in Appendix 2 [38-40; Chinn 2026]. While there is no inconsistency in the survey data, the terminology used in the report was unclear, resulting in confusion about the counts.

        (i) Surveys found 425 RTUs across all taxonomic levels - species, genus, family, and order. Of these, 251 were identified to species level (222 native and 29 exotic). Where species-level identification was not achievable, taxa were recorded at the highest achievable taxonomic resolution. Mr Chinn and I have independently arrived at the same RTU count. Supplementary figures presenting invertebrates by order as both specimen and RTU counts are provided at Appendix 1 (Figures 1-4), and the full dataset has been reviewed for accuracy.

(ii) The gap between RTUs and species-level identifications is not a survey deficiency. Many specimens could only be identified to genus, family, or order due to incomplete samples or unresolved taxonomy [4.1, B.11A] — characteristic of invertebrate survey work in New Zealand, where a large proportion of taxa remain undescribed [1.3, B.11A; Dugdale 1988; Patrick 1994]. For this reason, the assessment focuses on notable species rather than total taxon counts, directing attention to where conservation outcomes matter most.

(c) ***Survey Completeness:*** Mr Chinn's observations on species presence were made during a single field visit in December 2025 [43-44; Chinn 2026], which is not a comparable basis for assessing a systematic, multi-season, multi-method survey programme. Further, no single survey could be expected to capture all species, as stated in the report, and is a well-established practical reality of ecological survey work. To determine how representative the invertebrate surveys were, family accumulation curves are presented in this evidence (Appendix 2; Figures 5-12) and show a gradual levelling off in taxon discovery across methods, indicating the survey was approaching a reasonable representation of the invertebrate community present.

(d) ***Missed Species, Odonata, Micro Snails, And Tiger Beetles:*** Mr Chinn questioned why Odonata (dragonflies and damselflies), terrestrial micro snails, and tiger beetles were absent from the survey [44, Chinn 2026]. Odonata are aquatic invertebrates and were explicitly excluded from the scope of the assessment (Section 3.1, B.11A) - their absence from the species list is not an oversight. Xanthocnemis zealandica, identified by Chinn during his site visit, was also recorded by Dr Allibone in his Assessment of Effects on Aquatic Habitat (Appendix 9, Allibone 2025). As for micro snails and tiger beetles, the iNaturalist records cited only confirm presence in the broader landscape, a Thermia snail recorded above Bendigo, and a tiger beetle (Neocicindela dunedinense) recorded 2–3 km from the mine area. Both records are from outside the ESA boundary and do not demonstrate occurrence within the surveyed area. The only species Mr Chinn validly identified as missing from the Terrestrial Invertebrate Survey during his own field visit was a single Neoramia spider [43, Chinn 2026].

(e) **Assessed Impact Area:** The impact area of 1,183 ha was calculated as the disturbance footprint plus a 150 m buffer. Mr Patrick, Forest & Bird's lepidoptera expert, considered 50 m reasonable for Lepidoptera [11, McGaw, Patrick 2026], which would have yielded 790 ha had it been adopted. The 150 m buffer, therefore, produces an impact area approximately 50% larger than that recommended by the reviewer with the most directly relevant expertise. The suggestion that invertebrate impacts have been underestimated is not supported by the evidence.

Species Identification [terrestrial invertebrates]

38. Mr Chinn suggested that the two Megadromus specimens recorded during the survey are more likely M. sandageri and Neoferonia procerula rather than new species [32-33, Chinn 2026]. Dr Seldon, recognised New Zealand Carabidae specialist, compared all specimens using the most rigorous methodology available for this taxonomic group. His conclusions are clear: Megadromus sp. 1 is a new species; Megadromus sp. 2 is probably (75% confidence) also a new species, closely related to either M. sandageri or M. vagans, with definitive determination requiring specimens from additional localities. Whether these taxa are formally new or previously collected but undescribed, they represent taxa without formal description or name. Mr Chinn offers no physical examination, dissection, or comparison with type material in support of his alternative identification. Dr Seldon's conclusions should therefore carry greater evidential weight.

39. Mr Chinn also noted that threat ranking references were not provided in-text for the 18 taxa of conservation interest in the Terrestrial Survey Report [30, Chinn 2026]. I acknowledge that explicit in-text citation would have been preferable.

40. The underlying references are present in the report's [B.11A] reference list, and Section 3.5.2, which identifies the New Zealand Threat Classification Series (**NZTCS**) as the basis for all classifications. The asterisked Lepidoptera rankings [Table 2, B.11A], which Mr Chinn specifically questions, reflect a pending NZTCS update communicated directly by Dr Hoare and William Frost. As noted in the table itself. Both are members of the panel currently undertaking the review, which is now awaiting publication and were directly involved in the BOGP invertebrate survey. Given this developing environment, these rankings come from the most authoritative possible source: the individuals responsible for the classification, who have direct familiarity with the species recorded at this site.

Invertebrate salvage, relocation, and the weight of mitigation uncertainty [terrestrial invertebrates]

41. As raised by many reviewers, invertebrate salvage and translocation are experimental in New Zealand. The TIMP [Document G.06] and AEE [Document B.08] are explicit about this uncertainty and place no weight on the successful outcomes of these approaches. However, the characterisation of salvage as risky or counterproductive misses a fundamental point. The material being salvaged - taramea, broom, Olearia species, and associated invertebrates - will otherwise be destroyed.

42. Attempting relocation from areas committed to disturbance carries no downside. If it fails, the outcome is no worse than not attempting it. If it succeeds, even partially, it represents a conservation gain that would not otherwise have occurred. The risk Mr Chinn identifies is not a reason to abandon salvage but a reason to be transparent about its limitations, which the AEE is.

43. Mr Chinn characterised the salvage and relocation programme as highly risky, uncertain, and without a proven track record, and predicted it would have the opposite of its intended outcome [Conclusions, Chinn 2026]. As noted in Paragraph 41 and in Section 3 [Document G.06], the experimental nature of these programmes is accepted. However, that uncertainty does not undermine the application, for three key reasons.

44. First, the salvage and relocation programmes are not load-bearing elements of the residual effects assessment. No weight has been placed on their success, and the conclusions of the terrestrial ecology assessment do not depend on the programmes delivering positive outcomes. Failure would not alter the residual effects assessment or undermine the broader offset and compensation package.

45. Second, the substantive offset is delivered through the predator-proof sanctuaries and the landscape-scale habitat management programme, not through salvage. Uncertainty about salvage does not affect the weight of that offset. This is consistent with Dr Baber’s position that salvage does not reduce effect severity and that the substantive offset is delivered through habitat management and the sanctuary programme.

46. Finally, regardless of salvage outcomes, the TIMP reflects the best available analogous practice in New Zealand and internationally. Defined success criteria and adaptive management responses are built in. Uncertainty about outcomes is an evidentiary limitation shared by all novel invertebrate conservation work; it is not indicative of a poorly designed programme, and it is not a reason to discount work that the assessment does not rely upon succeeding

Mitigation for Sporophyla oenospora [Terrestrial invertebrates]

47. The Minister for the Environment raises that mitigation for S. oenospora is reliant on salvage and does not account for vehicle movements, dust, vibration, lighting, and loss of habitat and landscape connections [Other matters (b), Grigg 2026].

48. Salvage is not listed as a management measure for *S. oenospora* as the primary mitigation is avoidance through design. The Ardgour Rise alignment was adjusted to avoid the only known location where the species has been recorded. The captive breeding study, which is contingent on detecting additional individuals, sits outside the formal impact management programme, and has not been counted as a certain positive outcome in the AEE.

49. The indirect effects the Minister identifies were addressed at the design stage. A 250 m buffer was established around the known *S. oenospora* location, and the road routed accordingly. Lighting is addressed through the ALAN protocols in section 3.5.1 of the TIMP [Document G.06]. The species' host plant, microhabitat requirements, and full distribution beyond the known location remain unknown, which limits characterisation of any residual effects.

50. One practical measure could be considered to directly address the lighting concerns the Minister raises. Maximum light levels within 250 m of any known *S. oenospora* location could be conditioned by consent, with the threshold informed by photometric modelling. No species-specific lighting threshold exists for *S. oenospora*; however, 0.3 lux is widely used in New Zealand as a benchmark for light-sensitive species and would provide a quantified, enforceable standard rather than reliance on general ALAN protocols alone.

Project impacts on native bats [bat ecology]

51. Both Ellison [Appendix 8 – Bendigo-Ophir Gold Project: Native Bat Survey, Ellison 2026] and Habitat NZ Native Bat Survey [B.10A; O'Donnell, 2001] acknowledge that long-tailed bats have extensive home ranges and utilise a variety of habitat for roosting, foraging, and movement. These characteristics make native bats particularly challenging to survey. To maximise detection probability, 28 ABMs were deployed across major habitat features, including potential roosting trees, flyways, movement corridors, and foraging areas, providing comprehensive spatial coverage of the survey area. Two rounds of monitoring were conducted between October and March, when bats are most active, totalling 1,111 valid survey nights [details in section 3, document B.10]. No bat passes were detected across the total surveying effort [Section 4.3, in document B.10]. Taken together with the desktop review that determined the nearest known bat activity to be at least 60 km from the BOGP study area [Section 4.1, in documentB.10], well outside the generally accepted of 25 km, the survey results provide robust evidence that long-tailed bats are not present on the site.

Removal of the proximate National Bat Database record lacks transparency [bat ecology]

52. Mr Ellison inquires about the removal of the proximate database record [Appendix 8 – Bendigo-Ophir Gold Project: Native Bat Survey, Ellison 2026]. During the database review, a positive record appeared approximately 2 km from the survey area. Since the location was inconsistent with surrounding habitat, I queried the record with DOC. DOC, through internal review of the original recording, determined it was not a valid bat call, and removed it from the database accordingly (M. Pryde, DOC, *pers. Comm.*, September 2023). The nearest confirmed bat activity is now at least 60 km away, well outside the National Bat Recovery Group's 25 km planning threshold. Further as outlined above, the bat monitoring survey returned zero detections [Document B.10].

Five-year monitoring programme and adaptive management framework is required [bat ecology]

53. I do not support ongoing bat monitoring at this site as a consent condition, as there is no evidential basis for a monitoring program [Appendix 8 – Bendigo-Ophir Gold Project: Native Bat Survey, Ellison 2026]. Both bat desktop surveys using the DOC bat database and site surveys [details in Paragraph 51 and B.10] show no evidence of bats being present on or within 25km of the site.

54. Long-tailed bats are Nationally Critical with an estimated population decline of 5–9% per annum and monitoring resources are finite. Directing effort and funding to a site where bats are extremely unlikely to be present would divert those resources from areas where they are known to occur and where data would have real conservation value.

Net effects and the balance of the offset package [offsetting/compensation]

55. Mr Chinn advanced an “ecological ratchet” argument: the trajectory of Central Otago dryland ecosystems is one of steady modification away from indigenous values, and the BOGP mitigation and offset package amounts to a zero-sum exchange at best, a net loss at worst. He concluded that restoration efforts will encourage exotic invertebrate communities rather than recovering native ones [70-72, Chinn 2026].

56. Before addressing the offset package itself, the ecological ratchet framing is internally contested. Mr Harding and Mr Crowe both commented that the native vegetation communities at the BOGP site are not in decline [paragraph 12, Harding 2026; Crowe 2026], a position that directly conflicts with Mr Chinn's characterisation of ongoing ecological deterioration. Both cannot be correct. Dr Norton addresses ecological decline at the site more generally in his evidence.

57. Further, the assertion that restoration will fail because native invertebrates will not recolonise is also directly inconsistent with Mr Chinn’s own characterisation of the fauna [Paragraph 37, Chinn 2026], which is addressed in Paragraphs 41-46 On the [3.1.4, Teele 2026], I maintain that "uncertain" is correct.

    For invertebrates specifically, the uncertainty is evidentiary, not practical as the current state of knowledge for these species does not allow outcomes to be demonstrated in advance. That constraint is shared by all novel invertebrate conservation work in New Zealand. Describing outcomes as net loss would be equally unprovable and would misrepresent the genuine ecological gains the compensation package is designed to deliver. I refer the Panel to Dr Baber's evidence on how outcomes under the offset package should be characterised more broadly.

58. Mr Chinn characterises offsetting for invertebrates is “a zero-sum phenomenon in which one gain is equivalent to one loss [Paragraph 72, Chinn 2026].” That framing does not account for qualitative improvements in ecological function, and the Panel should not accept it.

59. The two predator-proof sanctuaries at Bendigo and Ardgour create ecological conditions that do not currently exist anywhere in the surrounding landscape. Mammalian predator exclusion fundamentally improves habitat quality in ways that unmanaged habitat - however intact - cannot deliver. This is not a like-for-like replacement; it is a step-change improvement in the quality and security of the remaining habitat, delivering conditions the existing unmanaged landscape cannot provide regardless of its current intactness.

60. A net loss of habitat area within the DDF is accepted. What the compensation package delivers in return is a genuine improvement in ecological condition and trajectory - a different kind of gain, but a real one, and one I consider the Panel should weigh accordingly.

Review of Dr Giejsztowt's Compensation and Offsetting Assessment [Offsetting / compensation]

61. Dr Giejsztowt is not an invertebrate specialist and acknowledges that her conclusions on invertebrate's rest on Mr Chinn's input. Where her assessment repeats concerns already addressed in my response to Mr Chinn, the Panel is referred to those responses above. Of more concern are the instances where her assessment goes beyond Mr Chinn's evidence without specialist invertebrate support - including unsupported assertions about invertebrate population viability, donor and recipient habitat criteria, and the evidential foundation of the effects assessment. The Panel should weigh these elements, accordingly, bearing in mind that they are not grounded in specialist input and in several cases do not engage with application material that directly addresses the points raised.

Recognition of mātauraka Māori in Native Bat Survey, Terrestrial Invertebrate Survey, AEE (Invertebrate section), TIMP, MSMP, BPPMP and MPMP [Kā Rūnaka / mātauraka]

62. Kā Rūnaka observed that the technical reports contain little explicit recognition of Kāi Tahu values and mātauraka [8.1, Ellison 2026; 18 Watkin 2026]. I acknowledge that the technical reports could have done more to acknowledge the cultural significance of the species and habitats they describe. However, the substantive assessment of effects is not compromised by that gap. The species that were identified by Kāi Tahu as culturally significant [Appendix 7, Ellison 2026] were assessed. The appropriate place for mātauraka to shape how the project proceeds is through Kā Rūnaka's involvement in the management plans, which I agree should be supported (see Paragraphs 28-29).

Rodent control, especially mouse control [pest management]

63. Pest control, particularly mouse, has been raised by multiple reviewers. I agree it would benefit invertebrates, and Dr Ussher's evidence suggests this would also benefit lizards.

    (a) Sustained landscape-scale mouse control has not been practically achieved anywhere in New Zealand over long periods. There is no example of open, non-predator-proof fenced land at the scale of the BOGP site, or anything approaching it, being maintained at meaningful low mouse densities over timeframes comparable to this project. Committing to it as a consent condition over a 35-year project life would create an obligation with no practical delivery pathway.

    (b) Reviewers have not addressed whether the control they recommend can be delivered. A consent condition that cannot be implemented in practice provides no protection for the species it is intended to benefit.

    (c) I consider targeted mouse control in defined, limited areas to be achievable and would deliver real outcomes. The sanctuaries are the clear priority, where fencing already constrains reinvasion and control effort is efficient.

    (d) Where genuine population-level suppression is required, or where the area extends beyond small discrete patches, predator-proof fencing is the only management tool that has demonstrated sustained mouse control in a New Zealand context. At that scale, fencing is not an add-on to mouse control — it is the mouse control.

Internally Inconsistent Evidence

64. Below I respond to reviewer evidence that I consider is internally inconsistent and does not support the conclusions reached in the relevant evidence.

Invertebrate mobility and recolonisation (Chinn) [terrestrial invertebrate]

65. Mr Chinn states that the invertebrates at Bendigo are “generally mobile within the landscape” and that any effective conservation programme needs to operate at a landscape scale “to effect community-level interactions between many species [37, Chinn 2026].”

66. This characterisation is consistent with the findings of the Habitat NZ Terrestrial Invertebrate Survey and with the operating scale of the LERMP and ARAMP, both of which are designed to manage and restore habitat across areas wider than the broader Shepherds Creek catchment during and after mining.

67. However, Mr Chinn also concludes that restoration will fail because indigenous invertebrates will not recolonise disturbed surfaces and that exotic species will dominate instead [Paragraphs 69-72, Chinn 2026]. This conclusion is directly inconsistent with his earlier characterisation. Species that are “generally mobile within the landscape” are precisely those most capable of recolonising progressively restored habitat as it becomes available.

68. I disagree with Mr Chinn's conclusion that recolonisation will fail. Mr Chinn’s conclusions on invertebrate mobility at Paragraph 65 are difficult to reconcile with his conclusions on recolonisation at Paragraph 67. The Panel should weigh these conclusions according

Buffer width and impact area [terrestrial invertebrate]

69. This is addressed in Paragraphs 37(e) and 49 above.

70. In summary, the 150 m buffer adopted is much more conservative than the 50 m buffer Mr Patrick considered reasonable [Paragraph 11, McGaw, Patrick 2026].

71. Mr Chinn places the impact area at approximately 1,600 ha [paragraph 29, Chinn 2026], but that position cannot be sustained against the buffer that Mr Patrick - the reviewer whose expertise is most directly relevant - considered appropriate.

72. I disagree with Mr Chinn’s estimate of 1,600 ha. The assessed impact area of 1,183 ha is not an underestimate - the assessment treats the entire area within the DDF plus buffer as impacted, all impact area estimates are conservative and well above what could reasonably be characterised as an underestimation of effects. The Panel should give this considerable weight when evaluating the "underestimated impacts" argument.

Divergent review opinions on ecological trajectory [offsetting/compensation]

73. Mr Chinn’s ecological ratchet argument rests on the premise that the indigenous vegetation communities at the BOGP site are in decline [paragraphs 70-72, Chinn 2026].

74. That premise is directly contradicted by the observations of Mr Harding [paragraph 12, Harding 2026] and Mr Crowe, both of whom commented that native vegetation communities at the site are stable or increasing. If the native vegetation communities are stable or increasing, as those reviewers observe, the invertebrate communities that depend on them are unlikely to be on the trajectory of decline that underpins Mr Chinn’s ratchet argument.

75. The Panel faces a direct conflict between reviewers on this foundational question of fact. Mr Chinn's net loss conclusions cannot be accepted without also accepting his characterisation of the site's ecological trajectory - a characterisation that other reviewers do not share.

Conclusions

76. The invertebrate assemblage at Bendigo-Ophir is ecologically significant. The project will cause a net loss of habitat area within the DDF that cannot be fully offset on a like-for-like basis. These evidential conclusions are not in dispute.

77. Where there is a difference of opinion of relevant experts is whether the survey adequately characterised those values, whether the impact area was correctly assessed, and whether the offset and compensation package is capable of delivering genuine ecological gain. On each of these points, I conclude:

    (a) The dispute there is the most comprehensive terrestrial invertebrate investigation undertaken for any resource consent or Fast Track application in New Zealand, to my knowledge. The specific methodological concerns raised by reviewers have been addressed and, in several cases, accepted by those reviewers.

    (b) The assessed impact area of 1,183 ha uses a buffer more conservative than that recommended by a key expert witness for one of the reviewing parties. The "underestimated impacts" argument cannot be sustained on that basis.

    (c) The experimental nature of the salvage and relocation programmes is acknowledged. Therefore, they are not relied upon in the residual effects assessment, and their success or failure does not change the effects picture. However, this programme provides a unique opportunity to trial novel invertebrate conservation methods without affecting the overall residual effects assessment.

    (d) The predator-proof sanctuaries, 35 years of active pest and weed management, and landscape-scale habitat restoration under the LERMP and ARAMP deliver ecological conditions and trajectory that do not currently exist anywhere in the surrounding landscape. This is a qualitative improvement, not a like-for-like trade.

78. Finally, this process has identified opportunities to further enhance invertebrate values beyond the current package. Should the Panel consider it appropriate to require these by condition, I would support their inclusion:

(a) Further protection and enhancement of taramea habitat for Inophloeus.

(b) The acquisition or legal protection (e.g. covenanting) of a substantial area of high-value cushionfield habitat on private land via the BOGP Biodiversity and Heritage Fund to deliver greater invertebrate benefits.

(c) Dedicating a portion of the BOGP Biodiversity and Heritage fund towards invertebrate management, monitoring and/or research.

(d) Additional conditions for stating maximum lux level at the known location of Sporpphyla oenospora.

(e) Inclusion of an entomologist or invertebrate ecologist on a biodiversity advisory group if it is established.

79. I consider what is before the Panel to assess is an application supported by an assessment of real and acknowledged effects, a conservative assessment, and an offset package that genuinely works to counter the trajectory of invertebrate loss that reviewers identify as a regional concern. The reviewers have engaged seriously with a complex body of work. Where they are right, I have said so. Where the evidence does not support their conclusions, I have said that too. That is the only basis on which the Panel can make a sound decision, and it is the basis on which this evidence has been prepared.

Keith Stephen Barber

17 April 2026

APPENDIX 1 - TERRESTRIAL INVERTEBRATE TAXA PER ORDER

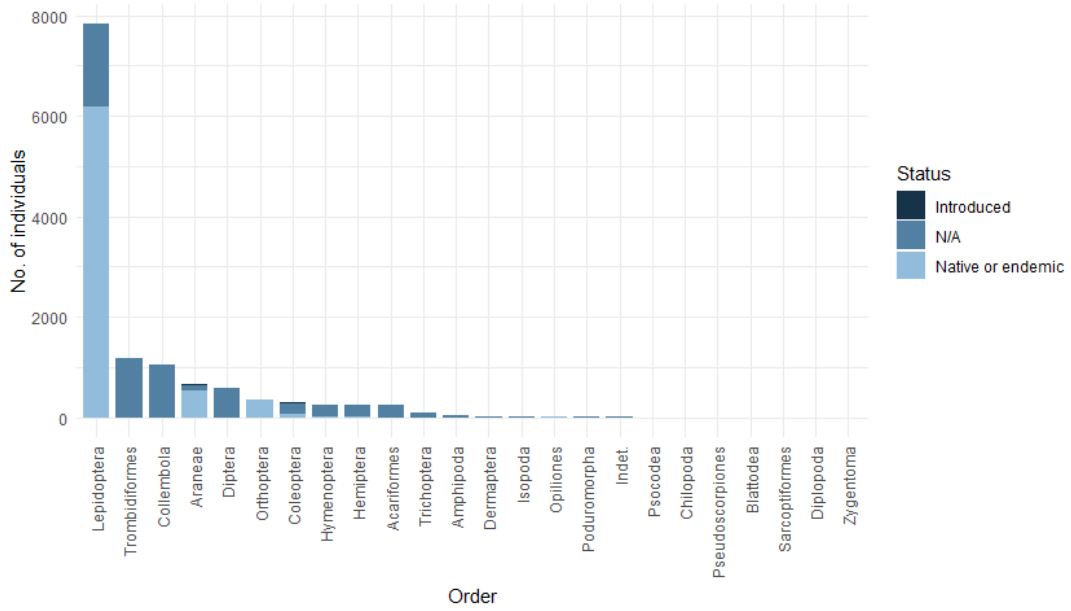


Figure 1. Number (abundance) of terrestrial invertebrates per order, collected within the Direct Disturbance Footprint (DDF) using light trapping, pitfall trapping, manual searching, foliage beating and wooden disks, including proportion of native, introduced, and N/A (i.e. indeterminate at species level) individuals.

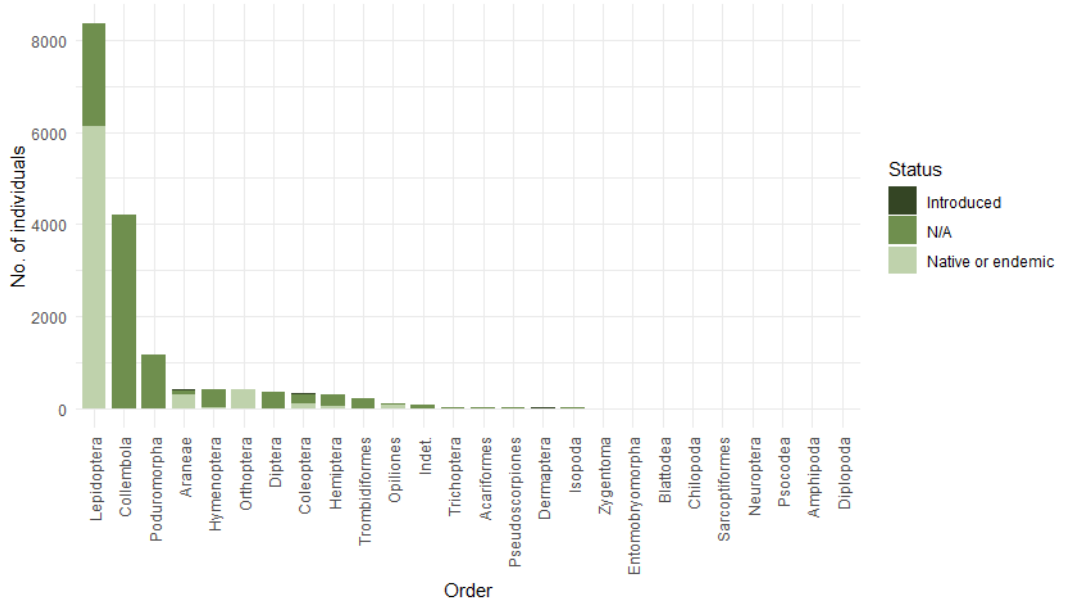


Figure 2. Number (abundance) of terrestrial invertebrates per order, collected within the Surrounding Landscape (SL) using light trapping, pitfall trapping, manual searching, foliage beating and wooden disks, including proportion of native, introduced, and N/A (i.e. indeterminate at species level) individuals.

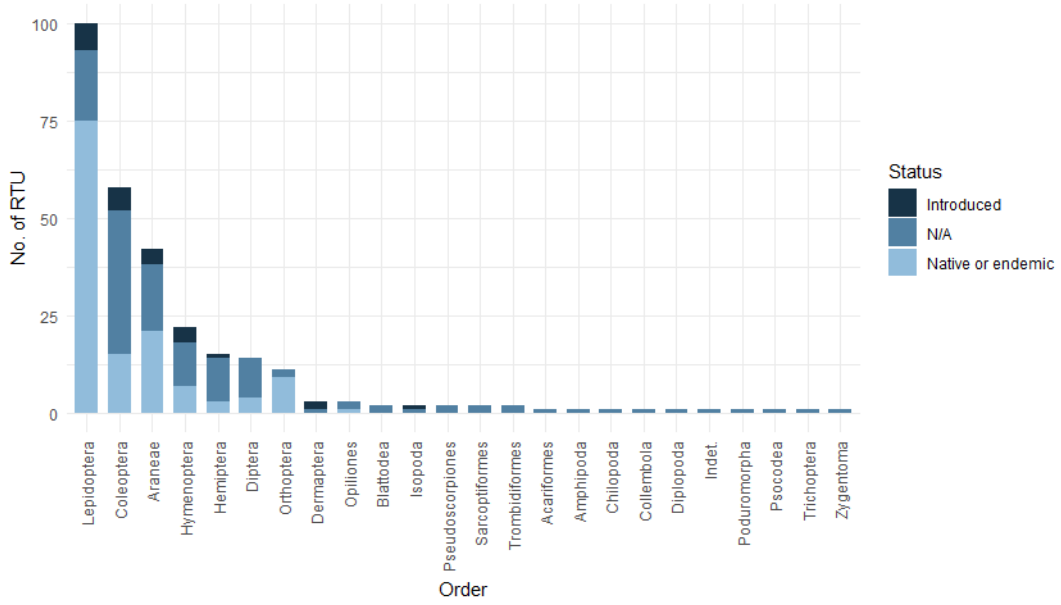


Figure 3. Invertebrate RTU (Recognisable Taxonomic Unit) per order, collected within the Direct Disturbance Footprint (DDF) using light trapping, pitfall trapping, manual searching, foliage beating and wooden disks, including proportion of native, introduced, and N/A (i.e. indeterminate at species level) individuals.

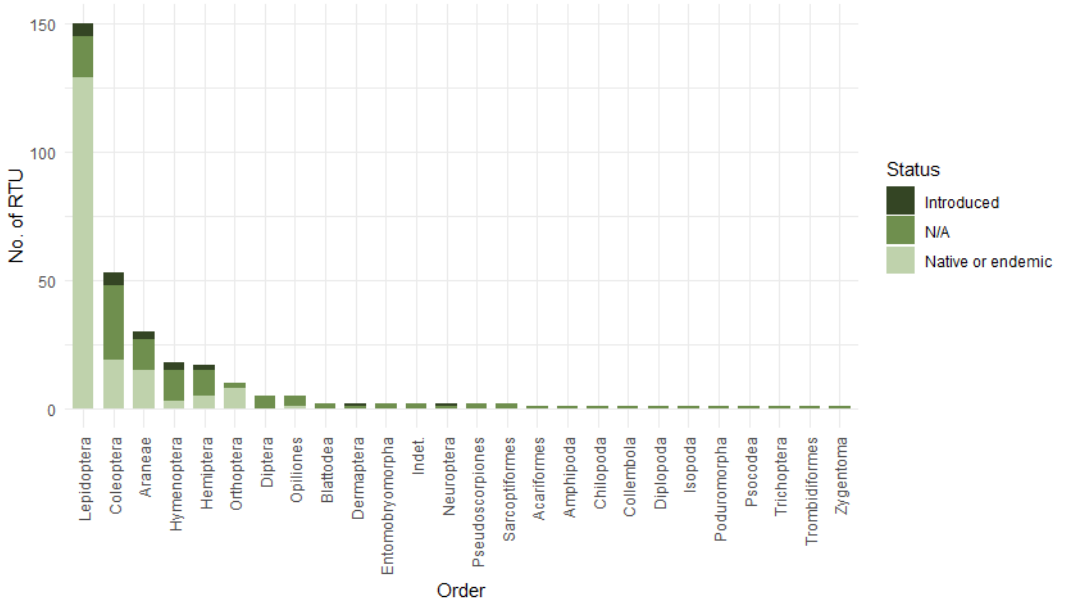


Figure 4. Invertebrate RTU (Recognisable Taxonomic Unit) per order, collected within the Surrounding Landscape (SL) using light trapping, pitfall trapping, manual searching, foliage beating and wooden disks, including proportion of native, introduced, and N/A (i.e. indeterminate at species level) individuals.

APPENDIX 2 – FAMILY ACCUMULATION CURVES

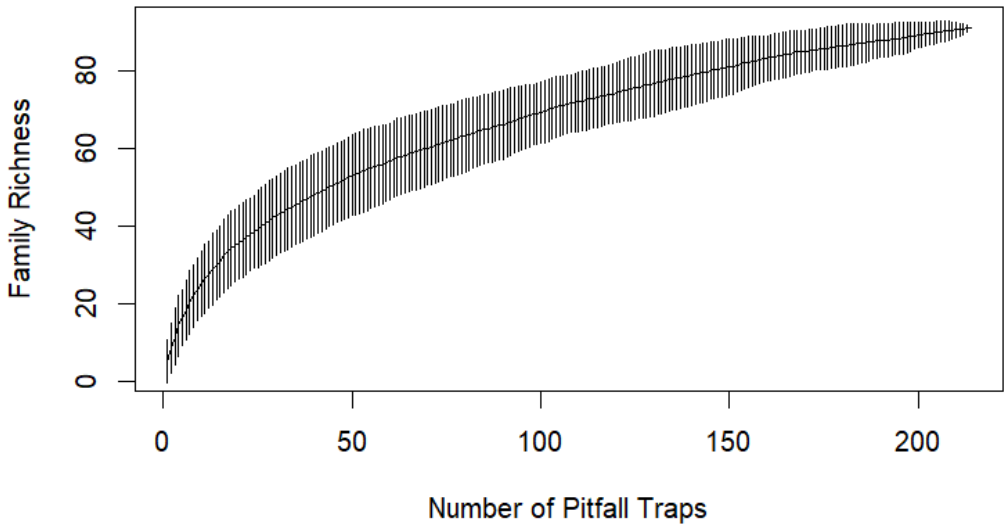


Figure 5. Family accumulation curves for all taxa recorded using pitfall trapping, sampling effort is per pitfall trap at Representative and Targeted Monitoring sites.

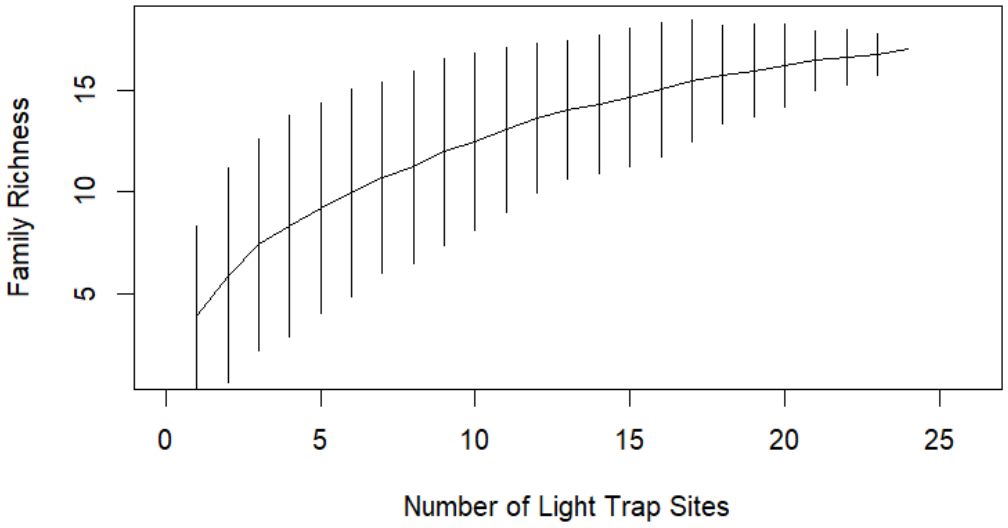


Figure 6. Family accumulation curves for all taxa recorded using light trapping at Representative Monitoring sites.

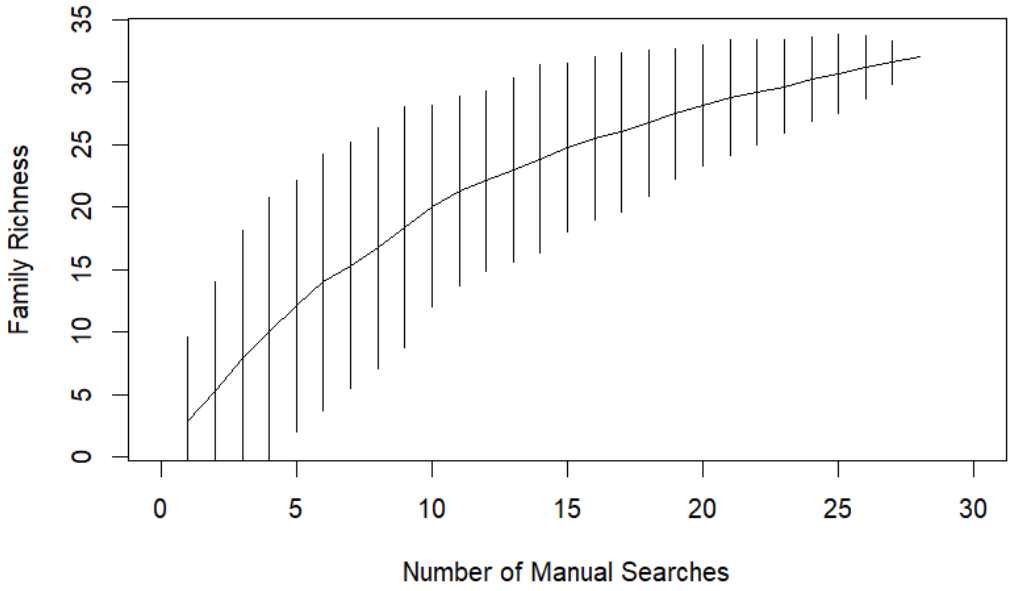


Figure 7. Family accumulation curves for all taxa recorded using timed manual searches at Representative and Targeted Monitoring sites.

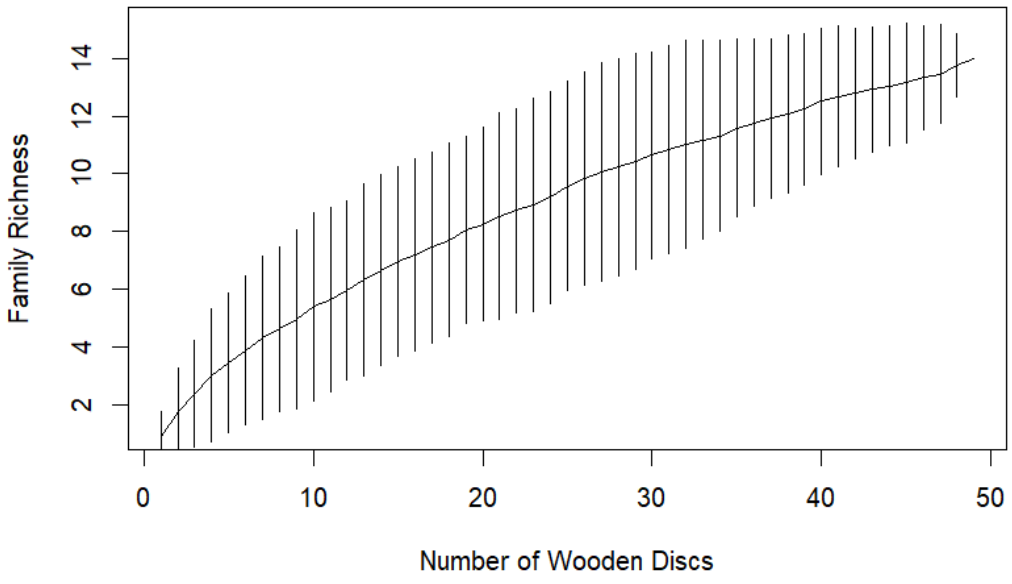


Figure 8. Family accumulation curves for all taxa recorded using wooden discs, sampling effort is per wooden disc at Representative and Targeted Monitoring sites.

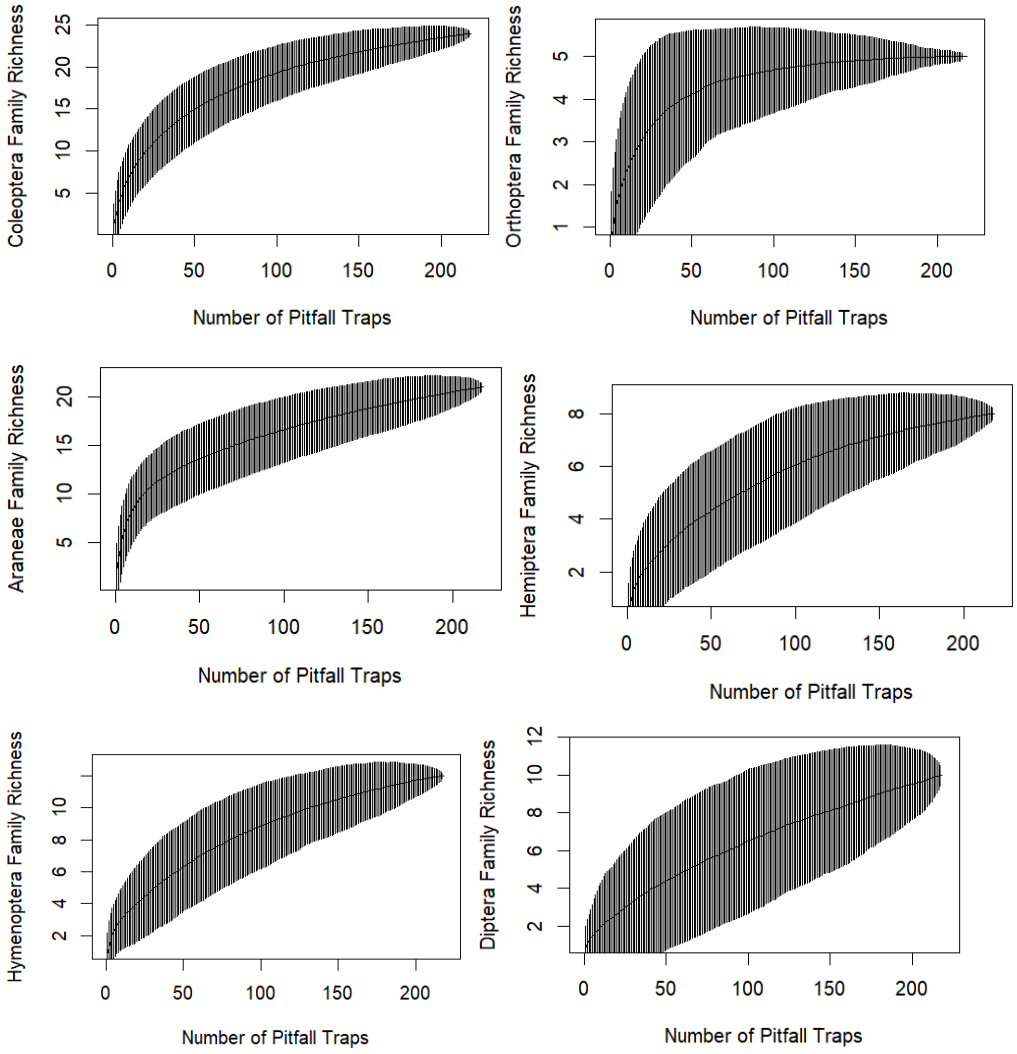


Figure 9. Sampling accumulation curves for family richness in key orders (Coleoptera, Orthoptera, Araneae, Hemiptera, Hymenoptera and Diptera) using pitfall traps at Representative and Targeted Monitoring sites.

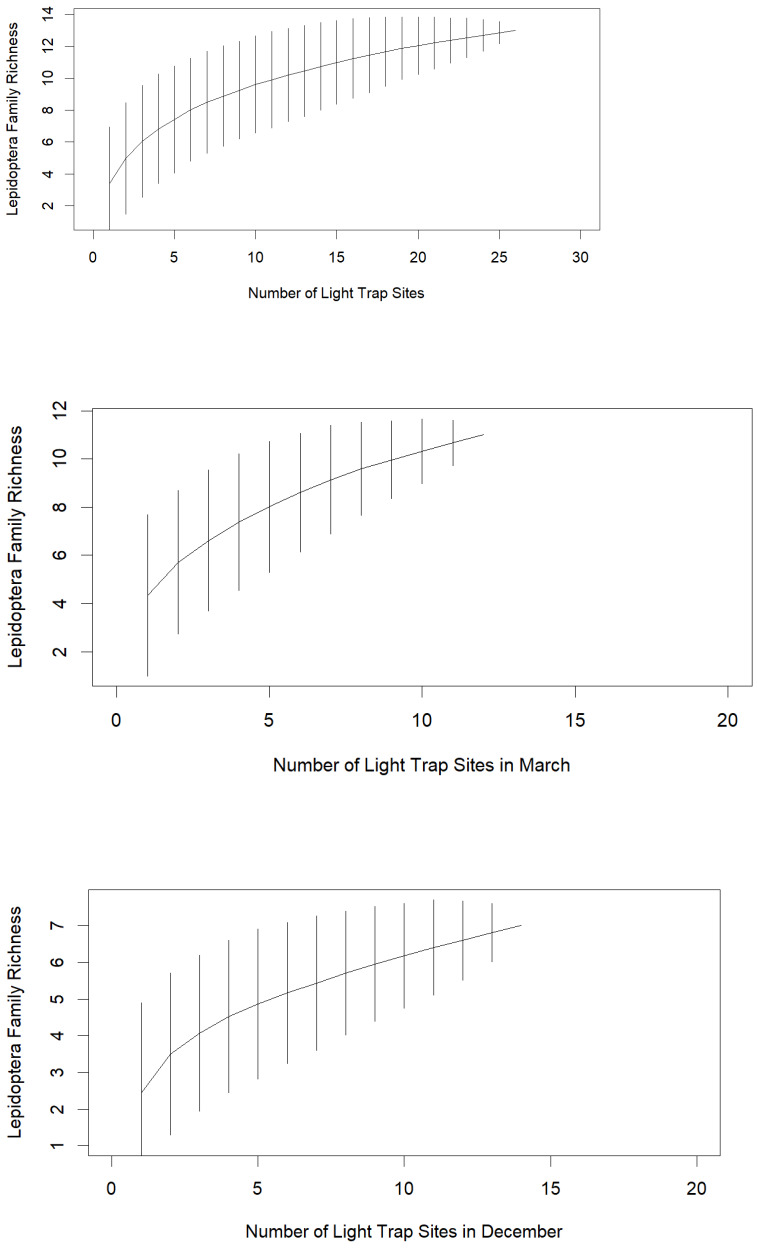


Figure 10. Sampling accumulation curves for Lepidoptera family richness across all surveying efforts (top) as well as two different months using light traps at Representative and Targeted Monitoring sites.

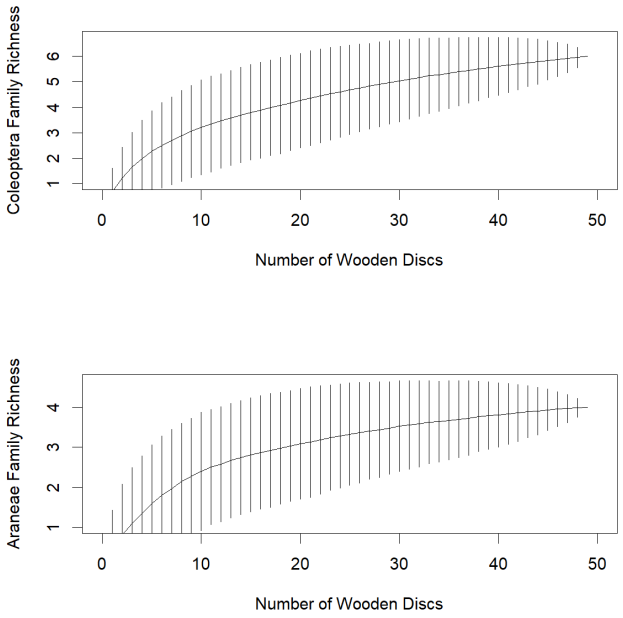
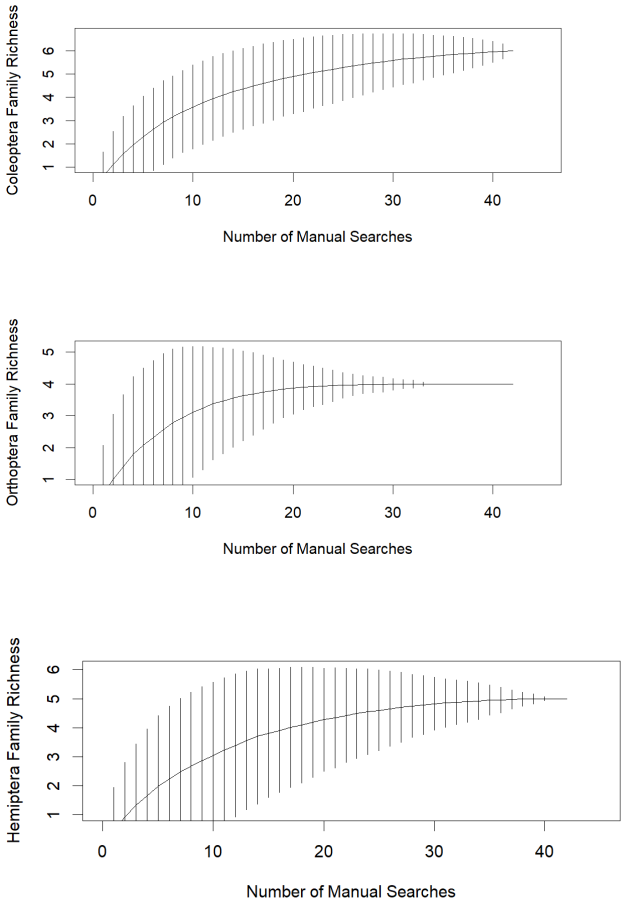


Figure 11. Sampling accumulation curves for family richness in key orders (Coleoptera, Araneae) using wooden disks at Representative and Targeted Monitoring sites.



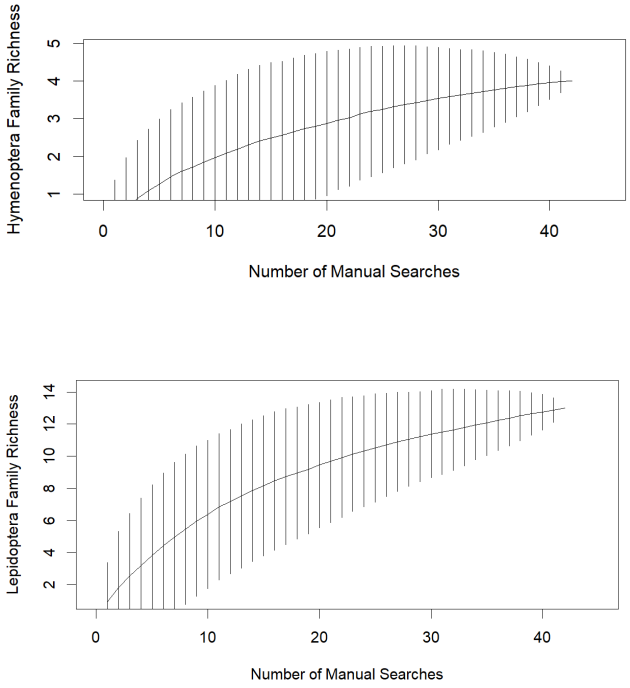


Figure 12. Sampling accumulation curves for family richness in key orders (Coleoptera, Orthoptera, Hemiptera, Hymenoptera and Lepidoptera) using manual searches at Representative and Targeted Monitoring sites.