



Stakeholder Response Summary

Importing live garden snails for heliciculture

The Department of Agriculture, Fisheries and Forestry received eight stakeholder submissions on the report. Five submissions were from members of the public and producers, and one submission was from a peak industry body unrelated to the heliciculture industry. Two submissions were from Australian government departments.

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| (1) It is not possible to manage the heliciculture should the farm be damage due to flood or fire. (2) No heliciculture possible as other agriculture industries takes precedent over the heliciculture. | (1) The department assumes that the stakeholder is concerned about the possibility of snails escaping from the farm in the event of an adverse incident such as flood or fire. The risk of larger common garden snails entering the environment and causing an impact has been examined by the department. The environmental risk is acceptable given the import conditions that will be applied at the time of importation. Despite being introduced into Australia over 200 years ago, there are no reports of this species moving into the Australian natural environment, so the environmental biosecurity risk for <i>C. aspersum maximum</i> is considered very low as the impact of <i>C. aspersum aspersum</i> has already been realised. (2) Each year, the department considers all requests lodged in the context of determining its work program. The department does not sequentially undertake work related to import requests in the order they are received but does take this into account. Other factors such as the priority of each request, available technical capacity and other competing demands are considered when determining how many and which requests can be placed on the work program. This project was evaluated for placement on the work program and was able to be progressed. |
| (1) [Respondent] commented that baby snails can be directly imported from Cherasco to hasten the process of excluding the intermediary parasitic host | (1) The department is aware that one stakeholder's preferred supplier is the International Heliciculture Institute in Cherasco, Italy. Other stakeholders have |



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thereby reducing the need to carry out breeding and verification in Australia. Also that Cherasco can certify the purity the baby snails as *Cornu aspersum* and provide appropriate veterinarian certification.

(2) Cherasco can provide their protocols for sending snails to countries outside Europe. I have requested this from the director of the Heliculture Institute in Cherasco, Italy.

All the parasites described are killed on either purging or cooking.

(1) The risks and potential impacts to existing agricultural industries of the importation of live garden snails is not commensurate with the benefits for a developing industry that has other pathways for development. We suggest more work is required of DAFF to determine these potential impacts to the environment and existing sectors before anything should be imported – particularly noting the high likelihood of integration into the wild.

(2) [Respondent] would advise the government to support the domestic snail industry in investigating other avenues for achieving the desired snail type, prior to importing an introduced species that could have unknown impacts on the broader Australian environment. Specifically, the lifecycle of a snail is only

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proposed to import snails from other suppliers and countries. The department agrees that it may be possible to import baby snails, as opposed to adults. The chief benefit of this approach would be to negate the need for a grow-out period within an Australian Approved Arrangement, as baby snails would not have had exposure to the hazards of concern. The baby snails would, however, require definitive identification and whilst molecular methods are, in principle, feasible they may not be cost-effective or otherwise practicable.

(2) The department thanks the stakeholder for this information and acknowledges that related information was received prior to publishing the draft report.

Whilst parasites may be killed on either purging or cooking, this is only of relevance to those snails that have been released from quarantine facility to the commercial farm and are ready for human consumption. The department's concern is the parasites that might be imported with *C. aspersum* from overseas. As these snails are to be imported as breed-stock (and not for human consumption), they are unlikely to be purged and will not be cooked. It is for this reason that imported snails must be imported into a quarantine facility (an approved arrangement site) where they will be bred to the next generation while remaining in isolation from other snails and the definitive host, thus breaking the lifecycle of the parasites. The next generation of *C. aspersum* will then be free of the parasites and will be eligible for release from the approved arrangement site.

(1) The risk of larger common garden snails entering the environment and causing an impact has been examined by the department. The environmental risk is acceptable given the import conditions that will be applied at the time of importation. Despite being introduced into Australia over 200 years ago, there are no reports of this species moving into the Australian natural environment, so the environmental biosecurity risk for *C. aspersum maximum* is considered very low as the impact of *C. aspersum aspersum* has already been realised.

(2) The department can respond in this forum only to matters associated with biosecurity risk and the importation of animals, plants and their products. All biosecurity import risk analyses and reviews are undertaken in reference to the same



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short, as such [Respondent] would suggest that changes to the size of snails with selective breeding would not be a significant time investment. Other established Australian agricultural industries, including livestock, have had to do similar as the importation of biological materials was not viable due to importation bans or other regulations that made it extremely difficult to import from overseas.

The Import Risk Review acknowledges this risks of imported live garden snails ending up in the wild. The report states *“There is a significant likelihood that snails imported into Australia and released to commercial snail farms in Australia will enter the broader Australian environment, so hazards of concern must be effectively managed prior to that point”*.

(1) [Respondent] holds concerns relating to imported snails entering the broader environment and what unintended and unforeseen impacts that may have on the natural environment and existing agricultural production sectors. [Respondent] also holds concerns around the potential for imported snails to serve as an intermediate host for a number of parasites that could impact a number of agricultural industries and livestock sectors.

[Respondent] would urge the Department of Agriculture, Fisheries, and Forestry’s Biosecurity Animal Division to deeply consider and make a public assessment on what these impacts could be and how existing agricultural industries, and the natural environment, might be impacted by the introduction of imported snails.

(2) We are concerned that progression of this import pathway for a niche, developing industry would unreasonably create significant known and

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ALOP (appropriate level of protection). If conditions have been placed on the importation of other similar goods or products, then these conditions will reflect the extent to which the department believes that the level of biosecurity risk attached to those goods or products must be controlled in order to meet Australia’s ALOP.

The undertaking of a breeding program within Australia using Australian stock would eliminate risk from exotic disease and wrongly identified snails of another species being accidentally imported. The measures required by the department for importing snails, including quarantining and molecular identification will sufficiently address the risk of exotic disease and mis-identified snails. However, a selective breeding program in Australia will still involve the risk of larger garden snails entering the environment. The decision to selectively breed a larger snail suitable for human consumption is a commercial decision and beyond the scope of the risk assessment.

Although there is a degree of overlap between this uploaded letter from [Respondent] and the questionnaire submission provided by an [Respondent] representative (above) the matters raised are sufficiently different as to require a separate response.

(1) The risk assessment has identified environmental risks resulting from the proposed importation of a snail species that is already present in the Australian environment. The snail being considered for importation is the *Cornu aspersum* subspecies - *C. aspersum maximum*. Another *C. aspersum* subspecies *C. aspersum aspersum* is widely distributed across Australia in areas associated with human activity, such as gardens and agriculture (Blacket et al 2016). Despite being introduced into Australia over 200 years ago, there are no reports of this species moving into the Australian natural environment, so the environmental biosecurity risk for *C. aspersum maximum* is considered very low as the impact of *C. aspersum aspersum* has already been realised.

(2) Please see above.

(3) In accordance with its responsibilities as a WTO member, Australia does not consider the benefits of trade when evaluating the level of biosecurity risk.



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unknown risks or impacts to the Australia horticulture and livestock industries which provide food security, jobs, and economic growth to regional communities.

(3) On balance, we do not see that these risks associated with an introduced biological species are commensurate with the potential advantages, namely the development of the domestic snail industry, when other pathways are available.

(4) [Respondent] would advise the government to support the domestic snail industry in investigating other avenues for achieving the desired snail type, prior to importing an introduced species that could have unknown impacts on the broader Australian environment. Specifically, the lifecycle of a snail is only short, as such [Respondent] would suggest that changes to the size of snails with selective breeding would not be a significant time investment. Other established Australian agricultural industries, including livestock, have had to do similar as the importation of biological materials was not viable due to importation bans or other regulations that made it extremely difficult to import from overseas.

The report notes – *“The applicants wish to use imported snails as a base to breed from, rather than ‘spending years developing snails of a suitable size from domestic stock’.*” However, the first application for the importation of these snails occurred in June 2020 meaning that the industry could have undertaken 4 years of selective breeding to date. *C. aspersum* in artificial conditions generally take 10-12 months to become mature, producing one generation per year.

[Respondent] understands that an issue faced by the existing domestic snail industry in Australia is that not all snails that are bred and raised reach a marketable size. We understand that the industry would be trying to diminish this issue by importing larger snails to use a breeding stock to reduce product that is used in pet food manufacturing or similar due to their unmarketable size. However, [Respondent] stresses that all agricultural industries face waste

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(4) The department can respond in this forum only to matters associated with biosecurity risk and the importation of animals, plants and their products. All biosecurity import risk analyses and reviews are undertaken in reference to the same ALOP (appropriate level of protection). If conditions have been placed on the importation of other similar goods or products, then these conditions will reflect the extent to which the department believes that the level of biosecurity risk attached to those goods or products must be controlled in order to meet Australia’s ALOP.

(5) The department’s response to the matter of the invasive potential of *C. aspersum* is outlined in point (2).

(6) The department has assessed the level of biosecurity risk for the lancet fluke (*Dicrocoelium dendriticum*) to be very low and, thus, meeting Australia’s ALOP. This judgement reflected both its likelihood of entry and establishment, and the likely consequences in Australia. The department notes, however, that the measures that will be required for *C. aspersum* in respect of certain other parasites will also address the risk for the lancet liver fluke.

The department consistently seeks to ensure the rigour of its scientific analysis in relation to biosecurity risk. This is also ‘tested’ through interactions with stakeholders, including via responses to published draft reports. The department therefore values the coherent, well-articulated responses received to date, including those submitted by [Respondent]. Where critique of this nature is received, the department looks to re-examine the detail of its analyses in relation to the specific points made. The department remains confident, having done so, that the biosecurity risk assessments, and risk management measures, proposed are appropriate and meet Australia’s legislated ALOP of very low but not zero.



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product and market specification challenges and that the importation of live snails from overseas should not be the immediate solution to this without proper environmental and potential knock-on impacts to other industries clearly identified.

(5) Whilst the scientific evidence provided in the report suggests that *C. aspersum maximum* is very similar to the endemic subspecies that we already have in Australia and suggests that the impact will be commensurate with that of existing species, the exact biological differences between the two are not wholly known. Whilst the report notes similar biology between the two, and that the larger species has not become a pest in other countries where it has been introduced, it has not been introduced into a climate which is the same as Australia and its survivability in this climate is untested.

(6) The introduction of *D. dendriticum* (Lancet liver fluke) to Australia could have adverse consequences for the agriculture industry. As seen in Iran, it is possible that infection could slow development, and impair fertility in livestock, which can reduce product quality and rate of production. It could also increase costs associated with anthelmintic treatments and costs of stock replacements. There is a lack of clinical symptoms in grazing animals which makes the presence of this parasite particularly hard to identify and management. Additionally, two intermediate snail hosts are already widespread in Australia (*C. virgata* and *C. acuta*), therefore there are already suitable intermediate hosts present within Australia for *D. dendriticum*.

Overall, [Respondent] is of the position that the risks and potential impacts to existing agricultural industries of the importation of live garden snails is not commensurate with the benefits for a developing industry that has other pathways for development. We suggest more work is required of DAFF to determine these potential impacts to the environment and existing sectors before anything should be imported – particularly noting the high likelihood of integration into the wild. [Respondent] would draw the Department's attention to previous biological importations that have escaped biological



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control and become a major pest in Australia – namely, the Cane Toad, as an example of the potential for significant negative unintended consequences.

While [Respondent] assesses the science provided in the review as sound, a number of risks remain unknown, under-considered and under-identified. The livelihood of Australia and the Australian economy is reliant on the livestock sector and the impact of impaired fertility and reduction of quality and rate of production are not inconsequential impacts should the importation of live snails contribute to these issues.

Were wild snails in Australia tested for the presence of the organisms described in the review?

As part of the review, no wild snails in Australia were tested for the presence of the organisms described in the review. The review applied the process for import risk analysis set out in the World Organisation of Animal Health (WOAH) Terrestrial Animal Health Code. This process includes as its first step, the procedure termed Hazard Identification. This is a categorisation step that is intended to identify those disease agents that should be carried through for further risk assessment. The Hazard Identification step does not (in the context of this import risk review) require a survey of wild Australian snails. However, the department understands the intent of the question – we assume this is to understand whether these pathogens are here already. To the extent possible, this was considered in the hazard identification stage. However, it must be recognised that the conclusions are based on the best information available (as for any biosecurity risk assessment) and this can be scarce in relation to snails and the biosecurity risks they pose.

(1) A key component to establish commercially viable farming is the establishment of fit-for-purpose facilities designed specifically for housing snails. These facilities are crucial in mitigating biosecurity risks and ensuring the safe and effective management of snail production.

(2) It is our intent to build a facility on both of our properties to act as a post import, approved arrangement and production facility. This would be available at any time for visits from the Department or representatives.

(3) It is our intention to only import the necessary stock of snails once, to establish a controlled and biosecure breeding population. While the risk has

(1) The department essentially agrees with this view. However, as per section 6.1 (Proposed biosecurity measures) snails must be imported into a quarantine facility (an approved arrangement site) where they will be bred to the next generation while remaining in isolation from other snails thus breaking the lifecycle of the pathogens of biosecurity concern. The next generation of *C. aspersum* will then be free of the pathogens of biosecurity concern and will be eligible for release from the approved arrangement site. It can therefore be seen that the biosecurity risks are mitigated before the snails are released to commercial/production establishments. See also (2) below.



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been assessed as low, we will seek to further mitigate it by controlling the initial import and ensuring rigorous quarantine and health checks, we can maintain high biosecurity standards. We can then provide locally grown snails to support the growth of the heliculture industry in Australia.

(4) We propose to import from Cyprus a well-established commercial snail farm that exports globally as a franchise of Touchstone Snails based in Cyprus.

(5) The intent is to import 1200Kg of snails for breeding to operate on a commercially viable scale. There would be roughly 100,000 snails in the shipment so it would be impractical to examine every snail. They would be in netted bags (similar to 'onion bags') of around 10Kg each so could be sampled from several different groups.

(6) The snails will come with a veterinary certification for health and species identification. The snails are grown in a commercial snail farm that only breeds *Cornu aspersum* for export. No other species has contact with this farm.

(7) A custom designed facility will be built for the production of snails. This would act as the post import approved arrangement facility on our own property. The structure is designed to ensure that the snails are contained and do not have access to the environment outside of the facility.

(8) The approved facility could not be at any quarantine facility already established, as this farming method has not been done to date in Australia. The snails need room to breed and to be fed and watered for the growth cycle of around 8 months. As applicants we are the ones that have the knowledge on how to breed and grow the snails and this could not be allocated to another person.

(9) The intent is to sell the imported snails for human consumption when no longer required as breeding stock. They have been certified as disease free from the exporting country and fit for human consumption as happens globally outside of Australia.

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(2) The department, in principle, has no objection to an approved arrangement and a production facility to be on the one property. Construction and design of, particularly, the approved arrangement facility is beyond the scope of this stage of the review, but consideration will have to be given to separation (spatial and/or temporal) between the two enterprises.

More information is available at [Applying for an approved arrangement](#)

(3) By definition, if your establishment is granted approved arrangement status you will be obliged to mitigate the biosecurity risks by implementing the proposed biosecurity measures detailed in section 6.1 of the review. Other stakeholders have also expressed the view that they intend to only import breed-stock once to establish a breeding population. Once finalised, however, the department's import conditions will permit importers to import snails repeatedly (subject to availability of approved arrangements). The department's risk assessment findings are not altered by once-only import assurances.

(4) The department's intended approach for this commodity is to assess an exporting country's Competent Authority (for its ability to reliably and consistently meet Australia's requirements in relation to the proposed export) and, within that country, the department may also require that individual establishments are licenced for export of *C. aspersum* snails to Australia. Applicants can specify their preferences for sourcing. Not all countries or establishments will be suitable sources for this commodity – there will be an appropriate level of rigour here as well to ensure suitability of sourcing of the snails. These details are external to the finalisation of this report and are part of the implementation process. The stakeholder interactions help identify priority countries for applicants.

5) The department agrees that an individual examination of 100,000 snails is impractical. However, the review found that all snails in a consignment must be individually examined to minimise the risk of importation of a species other than *C. aspersum*. This matter will require further consideration.

(6) Full requirements of the Veterinary Certificate that will be required to accompany each consignment are in section 6.2 of the review.



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Our preferred option is to sell the remaining stock for human consumption, however we would be open to other options including:

- Freezing the snails before being sold
- Destroying remaining breeding stock as bio waste.

(10) We understand the risk level for the management of pathogens is classified as low, but given the pathogens are widely spread in Australia, the additional quarantine measures to eliminate the pathogen seem excessive and impractical from a commercial perspective.

(11) The measures we can put in place to manage the containment of the snails in our own facility as outlined above will diminish any risk of pathogen contamination to wildlife and vegetation in Australia.

(12) The veterinarian certificate to confirm the snail species from the country of origin should be sufficient to address biosecurity concerns. However, if required, we would be happy for you to conduct a biological test to confirm the species from a small sample of the imported snails.

[Respondent] has reviewed the report and note the scope of this risk review is limited only to the terrestrial species '*Cornu aspersum*', as breed-stock to produce edible snails for human consumption. In addition to [respondent's] consolidated comments below, please find attached a copy of the draft risk review with [respondent's] input.

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(7) See response to (2) above.

(8) The department disagrees with this view. But, as stated in (2) above, the department, in principle, has no objection to an approved arrangement and a production facility to be on the one property.

(9) Selling the imported snails for human consumption when no longer required as breeding stock is not acceptable. The snails imported into Australia must be imported into a quarantine facility (an approved arrangement site) where they will be bred to the next generation. Only the next generation will be eligible for release from the approved arrangement site, be that for further breeding or human consumption. The snails initially imported into Australia must remain under biosecurity control at the approved arrangement until no longer required for breeding (or other purposes) when they are to be humanely destroyed and disposed of as biosecurity waste. The department also must evaluate the likely compliance of approved arrangement (permit?) holders and their understanding of the relevant biosecurity risks.

(10) The department accepts a very low, or negligible, levels of biosecurity risk. Risks that have been assessed as exceeding this tolerance require management. The measures stipulated are judged as being as rigorous as required to achieve a very low level of biosecurity risk whilst also being least restrictive to trade.

(11) See response to (2) above.

(12) See response to (5) above, noting that to meet Australia's ALOP the species declaration must be verified. Morphological Identification is only suitable for adults and involves sacrifice of the selected snails as dissection is required. A molecular identification method may be suitable to confirm juvenile snails are *C. aspersum*.

(1) The department notes that the invasiveness of snails was considered in a separate risk assessment undertaken by the (now) Department of Climate Change, Energy, the Environment and Water. The department's risk assessment included the assumption that some snails will 'escape' into the environment.



Hazard Identification

The list of hazards/potential diseases (disease agents) identified to be associated with *Cornu aspersum* (*C. aspersum*) covers for agents of human health concern including *Angiostrongylus*, *Brachylaima* species and *Dicrocoelium dendriticum*. [Respondent] does not have any comments or additional concerns in relation to the risk management measures proposed for the import of *C. aspersum* beyond what has been assessed and reported by DAFF and noted in this email and the attached document.

Further comments regarding the risks of some of these parasites to human health, as provided by [Respondent]'s OzFoodNet team are as below (and also attached):

The snail parasite *angiostrongylus* spp. causes angiostrongyliasis (rat lungworm) in humans and can cause eosinophilic meningitis:

- That rat lungworm can cause lifelong neurological impairments and loss of vision.
- The risk to human health occurs when the snail meat is consumed raw or undercooked and the risk is reduced when the snail meat is cooked.
- There is a risk of transmission of the parasite when raw produce contaminated by infected snails is consumed.

The snail parasite *Brachylaima* causes brachylaimiasis - the risk to human health is reduced when the snail meat is cooked and not consumed raw.

The snail parasite *Dicrocoelium dendriticum* causes dicrocoeliosis - humans can be infected when they consume raw liver of infected ruminants.

(1) With reference to the report page 5, '...this review focussed on live *C. aspersum*, with risk management measures proposed for the importation of foundation breed-stock for snail farms in Australia' and page 9, '.... There is a significant likelihood that snails imported into Australia and released to commercial snail farms in Australia will enter the broader Australian environment, so hazards of concern must be effectively managed prior to that point.' [Respondent] has the following query:

(2) The department did not identify any bacteria that were considered to be potential hazards and, thus, important to include in the hazard identification procedures. The Quality Standard will need to adequately address potential food safety risks.

(3) The Imported Food area of the department approached FSANZ (April 2021) about providing risk advice for imported snails. FSANZ advised that under the FSANZ Act, the role of FSANZ is 'to develop assessment policies in relation to food imported into Australia'. As such, if the snails are not being imported as a food there is no role for FSANZ to provide imported food risk advice. FSANZ advised that these hazards are best addressed by the Department of Health. The safety of snails grown as food in Australia is managed post border by state and territory health jurisdictions. FSANZ recommended that the department consult with the Department of Health on the human biosecurity risk associated with the importation of snails as breeding stock.



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- We note that the imported *C. aspersum* breeding stock will only be imported and contained on Approved Arrangement (AA) sites in Australia. For the next generation of imported *C. aspersum*, it is our understanding that those snails will be eligible for release from AA sites to Government certified commercial snail farms in Australia.
- Noting that the sub-species *C. aspersum maximum* is exotic to Australia, physically larger, have an 8 year life span (double that of other sub-species) and lay more eggs than sub-species *C. aspersum aspersum*, how will the ongoing containment of offspring (and generational offspring) from imported species *C. aspersum* be managed to ensure that the morphically different *C. aspersum* species (especially sub-species *C. aspersum maximum*) snails (or eggs) are not released from commercial snail farms and mix with wild snails?

Bacterial Agents

(2) Noting that no bacterial agents seem to have been considered in the Hazard identification table, we would appreciate your confirmation if any bacterial agents were considered in the initial hazard identification step.

C. aspersum can carry various bacterial agents which can be of human health concern, such as *Pseudomonas aeruginosa* which can cause meningitis in humans if it enters the body through a cut or open wound or presence of bacterial agents such as *Salmonella* spp., *Staphylococcus aureus* and *Listeria monocytogenes* in association with snails/snail eggs if appropriate hygiene standards are not maintained in snail farming.

Acknowledging that some of these bacterial agents may not be exotic to Australia, [Respondent] recommends that the emphasis is on export companies of *C. aspersum* meeting Quality Standards as a minimum, to ensure that the snails being imported are free from bacterial agents of concern and are safe for human consumption.

FSANZ

(3) [Respondent] also recommends consulting with the Food Standard



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Australia New Zealand (FSANZ) (if not done so already) for their review/input from food safety perspective, considering that these snails and their eggs will be used for human consumption in Australia.

We understand that the importation of *C. aspersum* is limited to and only sourced from snail farming establishments of approved countries in which each consignment must be accompanied by a Veterinary Certificate in accordance with the WOAHP Terrestrial Animal Health Code and signed by an Official Veterinarian. For management of *Angiostrongylus* spp. and *Crenosoma vulpis* we note that snails must be imported into an AA site where the snails will be bred to the next generation while remaining in isolation (from other snails and the definitive host), thus breaking the lifecycle of the two nematodes. The next generation of *C. aspersum* will then be free of *Angiostrongylus* spp. and *Crenosoma vulpis* and will be eligible for release from the AA site into Government certified commercial snail farm facilities in Australia.

Separate to the comments from [Respondent] discussed above, an annotated version of the Draft Report was also supplied.

In this annotated report, [Respondent] made 6 comments relating to *angiostrongylosis*, *brachylaimiasis*, *D. dendriticum* and *T. limacus*.

(1) Eosinophilic meningitis can also be associated with lifelong neurological impairments and well as loss of vision

(<https://www.sciencedirect.com/science/article/abs/pii/S0034528820310614>)

(2) Cases of angiostrongylosis in humans have occurred with the accidental consumption of infected snails on produce.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3689494/>)

(3) The consumption of raw snails is the cause of angiostrongylosis. When snails are cooked prior to consumption the risk of angiostrongylosis decreases.

(1) The department will add this information.

(2) The department will add this information.

(3) The department agrees with this position and will clarify the text.

(4) The department agrees with this position and will clarify the text.

(5) The department agrees with this position and will clarify the text.

(6) This is a spelling mistake (*Tetrahymena limacis*) and will be corrected in the report – noting that there are several instances of the mis-spelled term.



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(4) Human brachylaimiasis is caused when undercooked or raw snails are consumed.

(5) Infection with *D. dendriticum* in humans has been associated with consuming raw liver of infected animals. However infections are rare and often spurious (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2660816/>)

(6) Is this a different species to *T. Limacis*?
