

FOR INFORMATION

SWFSPP Annual Meeting 2025

Agenda Item 5.1

Last updated: 01 September 2025

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REFERENCE ENTOMOLOGIST REPORT 2024-25**RECOMMENDATION**

1. That the SWFSPP Steering Committee **NOTE** and **PROVIDE COMMENT**:
 - a. The recommendations from the 2024 Annual SWFSPP Meeting regarding larval preservation protocols, specifically the acceptability of short-term ethanol storage where heat treatment is not immediately available.
 - b. The discrepancies between published surveillance confidence estimates (Urech et al. 2014; Beckett 2014) and the referral of this matter to QDPI statisticians for resolution.
 - c. The identification by Biosecurity Queensland of three larval species not previously associated with myiasis in Australia, and the implications for diagnostic capacity.
 - d. The need for updated morphological information on eggs and early instars to be incorporated into the SWF Diagnostic Manual to support exclusion of SWF from other species.
 - e. Ongoing collaboration with NAQS, and international partners (e.g. Mexico) on surveillance, trap design, and data standards.
 - f. The need for greater public awareness of myiasis in regions conducive to screwworm fly establishment.

BACKGROUND

This report provides an update on entomological and diagnostic matters discussed at the 2024 Annual SWFSPP Meeting, with particular reference to larval preservation, and screwworm fly myiasis monitoring. Of note, Biosecurity Queensland recently identified three species of larvae that have not previously been associated with myiasis in Australia. This finding highlights the importance of accurate specimen collection, preservation, and identification in ongoing surveillance and diagnostic work.

At the 2024 annual meeting (Section 8.1), the Committee considered practical field methods for preserving larvae, noting the advantages and disadvantages of hot water immersion prior to storage in ethanol, and whether delayed heat treatment could be applied without compromising specimen integrity.

The meeting also discussed the SWFSPP surveillance objective, which in the Business Plan focuses on early detection and the need to reassess incursion risk and pathways, likelihood of establishment and likely sensitivity of surveillance. From this the confidence levels for SWF detection through animal inspection and trapping were reviewed, with differing interpretations by Urech et al. (2014) and Beckett (2014) referred to statisticians for resolution.

The Committee further recommended updates to the Business Plan for the SWF Diagnostic Manual to include morphological information on eggs and early instars to assist in exclusion of SWF from other species—an issue underscored by recent diagnostic enquiries received from wildlife and livestock cases.

This report summarises new developments, field enquiries, and diagnostic challenges relevant to SWF surveillance and myiasis monitoring.

DISCUSSION

1. SPECIMEN PRESERVATION PROTOCOLS AND FIELD HANDLING

Field preservation of larvae was highlighted as a critical challenge. The 2024 Annual SWFSPP Meeting considered whether larvae could be stored directly in ethanol without prior heat treatment and later subjected to hot-water immersion at the laboratory. Recommendations were made that short-term storage (≤ 24 hrs) in 80% or 100% ethanol, or Aqium™ hand sanitiser, is acceptable where hot water is unavailable, but heat treatment should be undertaken as soon as possible to preserve diagnostic features (Attachment A).

2. SURVEILLANCE METHODOLOGIES AND CONFIDENCE LEVELS

Parallel discussions on surveillance methods noted discrepancies between published estimates of required sampling intensity for achieving 95% confidence of SWF detection. Both animal inspections and trapping protocols are being reviewed by QDPI statisticians, with a view to integrating methods for greater certainty.

3. EMERGING DIAGNOSTIC CHALLENGES – NOVEL MYIASIS CASES

Recent developments include difficulties in identification of larvae and eggs, which resulted in the discovery by Biosecurity Queensland of three larval species not previously associated with myiasis in Australia. This underscores the need for robust diagnostic processes to differentiate SWF from native or introduced fly species, and for accurate preservation methods to maintain specimen integrity for identification.

4. DIAGNOSTIC MANUAL UPDATES – EGGS AND EARLY INSTARS

To support these efforts, updates to the SWF Diagnostic Manual are underway to include morphological descriptions of eggs and early instars, providing additional exclusion criteria and improving diagnostic reliability. Diagnostic enquiries from wildlife (echidnas, koalas, possums) and livestock continue to highlight the practical importance of these updates.

5. AWARENESS AND COMMUNICATION – SUSPECT MYIASIS CASE

A recent public query involved a rooster with an unusual maggot infestation highlighting the need for greater awareness of screw-worm fly. The larvae were described as smooth with "barbs", embedded in the fat, and difficult to remove. No samples or photos were available as the bird had been incinerated. The individual was unfamiliar with screw-worm fly so reporting requirements were explained; Qld DPI and NSW DPIRD notified.

6. INTERNATIONAL AND CROSS-JURISDICTIONAL COLLABORATION

In addition, collaborative enquiries via AHA and NAQS have extended the project's relevance beyond Australia, informing surveillance in PNG and Mexico, while trap design modifications are being trialled in northern Australia to improve specimen quality.

7. FINANCIAL IMPLICATIONS

There are no direct financial implications arising at this stage. Activities relating to larval preservation protocols, diagnostic manual updates, and statistical review are being undertaken within existing resources and agency operating budgets. Future costs, if required for broader training, manual re-issue, or trap modification trials, are expected to be met within AOP scope through existing service agreements. No additional funding is sought at this time.

8. CONSULTATION/COMMUNICATION

Consultation has occurred since the 2024 Annual SWFSPP Meeting, with input from jurisdictional representatives, Biosecurity Queensland, QDPI statisticians, NAQS, and AHA. Stakeholders supported further refinement of larval preservation protocols, updates to the Diagnostic Manual, and resolution of discrepancies in surveillance confidence estimates. Additional consultation with statisticians is underway to reconcile differing methodologies for detection sensitivity, with outcomes to be reported back to the Committee.

Future communication will include targeted updates to diagnostic staff and field officers on the revised larval preservation protocols. Wider communication to stakeholders may be required once agreed surveillance standards are finalised, with AHA providing the mechanism for national dissemination.

9. NEXT STEPS/ACTIONS

- Finalise guidance on larval preservation, including clarification of acceptable short-term storage and timing of heat treatment.
- Incorporate morphological information on eggs and early instars into the SWF Diagnostic Manual.
- QDPI statisticians to provide advice on reconciling discrepancies in surveillance confidence levels.
- Continue consultation with NAQS and AHA regarding trap modifications and international enquiries.
- AHA to communicate agreed updates to diagnostic staff and field officers through revised manuals.

Attachment A: 2025 Preservation of Larval Specimens – Heat Treatment vs. Delayed Processing