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FOR INFORMATION

NAMP Technical Committee Annual Meeting 2024
Agenda Item 5.10
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REFERENCE ENTOMOLOGY

RECOMMENDATION

1. That the NAMP Technical Committee NOTE:

a) Completion of a project to develop a key to help to identify females of all species present in Australia
b) Issues surrounding naming and recording of species in the NAMP Info database have been resolved

BACKGROUND

2. The functions of the NAMP reference entomology program are:

1. Confirm identification of *Culicoides* specimens collected by NAMP;
2. Build and maintain a reference collection of Australian and important exotic species of *Culicoides* DNA barcodes and both slide-mounted and ethanol preserved specimens to assist with identification of specimens collected by NAMP;
3. Provision of mounted specimens of *Culicoides* species to NAMP entomologists on request;
4. Assisting in the preparation of identification aids for *Culicoides* species;
5. Provide advice and reports to stakeholders and clients (particularly producers, exporters, and AG-DAFF) as required;
6. Monitor NAMP entomology operations to ensure that they are effective and efficient in meeting the program objectives and report to the program manager;
7. Advise the program manager of national and international entomology issues which may affect the future focus of the NAMP;
8. Coordinate and propose to the NAMP Technical Committee, technical development of the NAMP entomology capacity as required;
9. Contribute to the maintenance of the NAMP Business and Operational Plans including ensuring that an adequate budget is proposed for agreed reference entomology activities;
10. Organise slide mounting of *Culicoides* specimens;
11. Monitor succession training for the role of Reference Entomologist;
12. Facilitate the publication of technical entomology material for the NAMP as agreed by the NAMP Technical Committee.

The NAMP reference entomology budget is used to pay for the mounting of specimens onto slides (function 10) which is required to facilitate the identification of specimens (function 1), build a reference collection (function 2), provide specimens to other entomologists (function 3), identify changes in risk posed by exotic species (function 7) and used in the production of identification aids (function 4). Where required, for example the detection of species not previously reported from Australia, confirmation of identifications is provided by DNA analysis conducted by NSW DPI (function 1) relies on data from the DNA library (function 2). A system to pay for this service is now available and part of the Reference Entomology budget will be used to support this function.

DISCUSSION

3.

a. Detections: Several detections of *C. nudipalpis* were made this year, including some very large collections from Croker Island indicating that this species is now firmly established. Details are discussed in the NT Entomology report. No other exotic species were detected in NAMP activities this year.
b. Identification service: A total of 101 specimens from 47 collections were received for identification from all jurisdictions. Mounting of these specimens onto slides and submission for DNA barcoding continues and the reference collection is slowly becoming more comprehensive.
c. Key: A NAMP-funded project to produce an identification key for female specimens of all species of *Culicoides* reported from Australia was completed. The key is constantly being updated as the NAMP entomology team continue to test it with their specimens. The latest version has been converted into a manual format and will be published onto the AHA website and in hard copy in the near future.
d. NAMP Info: Issues surrounding the list of species names available on NAMP info have been discussed and finalized. Work has begun with Daniela López from AHA to validate entomology data on NAMPinfo.
e. A project to develop an identification key to male specimens of all species of *Culicoides* present in Australia has been approved.
f. A DAFF-funded project investigated the potential of *Culicoides* to act as vectors of Lumpy Skin disease in Thailand. The project identified several species as carriers of the virus and ranked species as potential vectors of bovid diseases.
g. A DAFF-funded project developed a metabarcoding method to identify the species of *Culicoides* present in light trap samples. The DNA library that formed the basis of this study was developed largely from the NAMP reference collection.

FINANCIAL IMPLICATIONS

4. The retirement of the Reference Entomologist from full time employment has led to Reference Entomology services provided now being charged to the Reference Entomology budget.

CONSULTATION/COMMUNICATION

5.

a. Copies of the identification keys have been distributed to all NAMP entomologists for testing. Numerous suggestions for improvements to clarity and user-friendliness have been received, mostly from Leanne Nelson, Birgit Loecker, Sukanya Akepati, Martin Shivas, Anna Genge, Luke Watson and Grant Bellis. These suggestions have been incorporated into the keys and updated versions have been distributed to the entomology team and to AHA.
b. Improvements to the integrity of entomology data on NAMPinfo have been made in collaboration with Daniela López from AHA.

NEXT STEPS/ACTIONS

6.

a. Completion of the key for females of all species recorded from Australia is a significant milestone for the NAMP program. The logical next step, to develop a similar key for male specimens, has been approved although starting and completion dates have not yet been negotiated.
b. OAI has reported 37 species from NAMP collections in the southern states since they assumed responsibility for NAMP entomology work in 2020. This includes 10 species (26%) not reported during the 30 years previous NAMP activity.