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Inter-Parties' Action Plan to Manage the Non-Native Flies in King George Island, South Shetland Islands

Inter-Parties' Action Plan to Manage the Non-Native Flies in King George Island, South Shetland Islands

A Working Paper submitted by the Republic of Korea, Uruguay, Chile and the United Kingdom

Summary

Non-native flies have colonised the sewage treatment plants of several stations on King George Island, South Shetland Islands. As the first step of a co-ordinated international response to manage the flies, most of the overwintering stations on King George Island checked their station buildings, facilities, and environments around their stations as the response to the survey entitled 'A short questionnaire on Non-native Flies at Antarctic Stations'. Based on the findings of the survey, the Republic of Korea, Uruguay, Chile, and the United Kingdom recommend that the CEP: (1) continues to encourage Parties with stations on King George Island to check their facilities for non-native flies and to undertake both continuous and periodic monitoring to indicate, if there are any non-native flies inhabiting the environment; (2) encourages the Parties to jointly develop co-ordinated standardized monitoring and eradication programmes to effectively control the spread of the flies, and join the collaborative research project; and (3) asks COMNAP to play a central role in sharing information and best practices between Parties and other stakeholders.

Background

Despite Antarctica's isolation and harsh climatic conditions, biological invasions are now recognised as a serious risk to the ice free areas of Antarctica and sub-Antarctic islands (CEP Non-Native Species Manual, Edition 2016). The reports of species introductions are increasing as awareness of biological invasions as a major conservation threat, within the context of increased human activities and climate change scenarios, has grown within the Antarctic community (ATCMXXXVIII – IP46; Newman et al., 2014; Hughes and Frenot 2015).

Among three known non-native terrestrial invertebrate species in Antarctica, non-native flies' (*Trichocera maculipennis*) infestations in sewage treatment plants have been reported at three research stations around Maxwell Bay, King George Island (ATCM XXXIX – WP 52; Volonterio et al., 2013). Following the eradication attempts in the Uruguayan Artigas station and Korean King Sejong station, this species recolonised the stations' sewage tanks. The Republic of Korea, the United Kingdom, Chile, and Uruguay recommended the CEP to promote a co-ordinated international response by encouraging Parties with stations on King George Island to check their sewage treatment plants for non-native invertebrate infestations and, if present, join collaborative research to identify and determine the origin of these species. The four Parties also asked COMNAP to report on the extent of sewage treatment plant infestations across the Antarctic Treaty area and investigate practical methods of infestation prevention, monitoring and response (ATCM XXXIX – WP 52).

Status quo of Non-native flies in the Stations on King George Island

All overwintering stations on King George Island were invited to complete with 'A short questionnaire on Non-native Flies at Antarctic Stations' (Attachment A) in March 2017. The survey aims to gather knowledge of the *status quo* and develop collaborative eradication or control measures and initiate joint research. Most of the stations on the island have faithfully provided us with their response. We greatly appreciate their cooperation regarding the survey.

As the result of survey, the non-native species have been found in at least 3 stations with sewage treatment plant and was located around Maxwell Bay. Furthermore the flies were also found in the lakes near some stations. Fortunately, there was no evidence of introduction of this species at the stations around Admiralty Bay, King George Island (ASMA No. 1). The fly's distribution range seems to be limited to Maxwell Bay region, so far. Two affected stations have independently implemented monitoring and control activities.

Planned International Collaborative Research

Given the scale of non-native fly colonisation in the stations on King George Island and the capacity of the species to disperse around the local area, the risk of further distribution and becoming an invasive species is very high. In order to mitigate such circumstances, collaborative research and management action by all affected Parties is likely to produce the best outcome, in accordance with Annex II to the Protocol. Uruguay, Chile and the Republic of Korea are developing a co-ordinated research project to answer important questions for comprehensively understanding the non-native species. The research project aims to:

- contribute to present knowledge on the non-native trichocerid fly, through systematic identification, phylogenetic and population genetic analyses;
- determine the life cycle and identify locations of life cycle completion (i.e. egg-deposit sites, larvae development period and enclosing time of adult);
- determine their distribution range with demographic history, following their introduction into Antarctica, and
- identify practical and co-ordinated management responses for fly eradication and population control

Recommendations

The Republic of Korea, Uruguay, Chile and the United Kingdom recommend that the CEP:

- continues to encourage Parties with stations on King George Island to check their facilities for non-native flies and to undertake both continuous and periodic monitoring to indicate, if there are any non-native flies inhabiting the environment;
- encourages the Parties to jointly develop co-ordinated standardized monitoring and eradication programmes to effectively control the spread of the flies, and to join the collaborative research project;
- asks COMNAP to play a central role in sharing information and best practice between Parties and other stakeholders.

Supporting documentation

CEP 2016. Committee for Environmental Protection Non-Native Species Manual. Edition 2016.

http://www.ats.aq/documents/ATCM39/ww/atcm39_ww009_e.pdf.

Hughes, K.A., Frenot, Y. 2015 - Status of known non-native species introductions and impacts. Antarctic Environments Portal Information Summary Version 1.0. <https://environments.aq/information-summaries/status-of-known-non-native-species-introductions-and-impacts/>

Newman, J., Coetzee, B.W.T., Chown, S.L., Terauds, A., McIvor, E. 2014 - The introduction of non-native species to the Antarctic. Antarctic Environments Portal Information Summary Version 1.0.

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Volonterio, O., de León, R.P., Convey, P., Krzeminska, E. 2013 - First record of Trichoceridae (Diptera) in the maritime Antarctic. *Polar Biol.*, 36, 1125-1131.