Agenda Item: CEP 8a

Presented by: SCAR

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Measures to reduce the risk of non-native species introductions to the Antarctic region associated with fresh foods

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Summary

Following discussions at CEP on the issue of introduction of non-native species to Antarctica, SCAR has developed simple practical measures to reduce the risk of introductions of non-native species into the Antarctic Treaty area, via fresh foods.

SCAR would welcome comments on these guidelines (at Annex A to this paper) as the basis for the development and eventual adoption of formal CEP guidelines via the Non-native Species Intersessional Contact Group.

Introduction

The Protocol on Environmental Protection to the Antarctic Treaty states that Parties should take precautions to reduce the risk of introduction of non-native species [Annex II, Article 4(1)]. Such introductions are a major threat to biodiversity and could have serious negative impacts upon existing high-latitude ecosystems.

Fruits and vegetables, originating from a wide range of locations, are transported routinely into and around Antarctica by ship and aircraft. Non-sterile soil and biological material, containing invertebrates and microorganisms, can remain attached to fresh foods following harvesting and packaging. When moved from one location to another, fresh foods can therefore carry biological organisms and soil over large distances to areas beyond their previous known distribution. This was demonstrated in a recent study performed by the International Polar Year *Aliens in Antarctica* project, whereby >11,250 fruit and vegetables sent to nine research stations in Antarctica and the sub-Antarctic islands, were examined for associated soil, invertebrates and microbial decomposition. On average, 12% of food items had soil on their surface, 28% showed microbial infection resulting in rot and more than 56 invertebrates were recorded, mainly from leafy produce.

Although clearly a biosecurity threat, to date, little information has been available on how to mitigate against the risks of non-native species transfer associated with fresh produce. To address this need, SCAR has developed measures to reduce the risk of transfer of soil and biological material into and within Antarctica on fresh foods (at Annex A to this paper).

Recommendations

SCAR recommends that the CEP:

- discusses, with a view to considering adoption, the measures presented in the guidelines;
- in the interim encourages Parties to implement the measures to the maximum extent practicable;
- requests the Intersessional Contact Group on Non-native Species to consider the measures for incorporation into the proposed biosecurity manual/resource kit.

Further information

Hughes, K.A., Lee, J. E., Tsujimoto M., Imura, S., Bergstrom, D. M., Ware, C., Lebouvier, M., Huiskes, A. H. L., Gremmen, N. J. M., Frenot, Y., Bridge, P. D., and Chown, S. L. (2011). Food for thought: risks of non-native species transfer to the Antarctic region with fresh produce. Biological Conservation, doi: 10.1016/j.biocon.2011.03.001

Annex A

MEASURES TO REDUCE THE RISK OF NON-NATIVE SPECIES INTRODUCTIONS TO THE ANTARCTIC REGION ASSOCIATED WITH FRESH FOODS

1. Planning

a) When planning the purchase of food types for consumption in the Antarctic region, consideration should be given to banning, or limiting seasonally, the importation of fresh foods that are likely to have high propagule loads, to stations in environments where non-native species are likely to be able to become established.

2. Food sourcing and preparation for transportation

a) Consideration should be made of the transit time between the port where food supplies are taken on and the Antarctic destination. If possible, fresh food should be transported when voyage times are at their shortest. If long transit times are predicted, only fresh foods likely to remain unspoiled (e.g. apples and potatoes) should be carried and foods prone to rapid spoiling avoided.

b) Use contract management strategies to ensure delivery of clean produce from suppliers:

   i) Ensure the produce has good post-harvest condition and generally high levels of agricultural cleanliness (e.g. such as soil-free food items and boxes)

   ii) Ensure underground or near-ground crops (e.g. root vegetables or cabbages and lettuces) have been cleaned to remove attached soil and, especially in the case of cabbages and lettuces, associated invertebrates.

   iii) Instruct suppliers to undertake checks for soil and invertebrates before leaving the source country. Check, in particular, leafy fresh food varieties that may be more likely to trap soil and invertebrates.

c) Avoid sourcing out of season foods, which may have already been cold-stored for many months, as they may be more susceptible to spoilage and risk carrying cold-selected microorganisms.

d) Package fruit and vegetables to contain any remaining soil or invertebrates, so propagules can be disposed of in an appropriate way later.

e) If feasible, irradiate or fumigate produce before exportation to Antarctica.

f) Immediately before transportation, foods should be checked to ensure they are free of soil and invertebrates and are not excessively decayed. If any soil or viable biological organisms are found, the contaminated food should not be accepted for transportation or should be cleaned and then re-inspected.

g) Ensure produce transported by air is free of invertebrates, as short transit times increases the likelihood of them arriving in Antarctica in a viable state.

h) If aircraft or ship departure to Antarctica is delayed, ensure that any fresh foods that have decayed during the delay period are removed before further transportation.

3. Food in transit to the Antarctic region

a) Any live insects found within the ship or aircraft cabin should be destroyed.

b) Aircraft and ships should carry insecticide spray to eradicate any insects found.

c) When transporting food by ship:

   i) produce should be stored in a refrigerator or cool room to reduce microbial growth and food spoilage

ii) insect traps should be installed both within and immediately outside refrigerator or cool room areas

iii) insect traps should be installed in all kitchen areas as well as areas that are warm and have potential invertebrate food sources (e.g. mess areas)

d) Biosecurity precautions should be extended to ships conducting landings within the Antarctic region to prevent distribution of non-native species to terrestrial Antarctic habitats directly from ships.

4. Food checks either on arrival or immediately before off-loading

a) Before off-loading or on arrival, fresh produce should be examined for excessively decomposed food items. If found, such produce should not be off-loaded but sealed immediately in burnable packaging for transport to an incinerator and then incinerated, dumped out to sea in accordance with the provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78; Annex IV: Prevention of pollution by sewage from ships, and Annex V: Prevention of pollution by garbage from ships) or returned to the host port for disposal using recognised port waste disposal facilities.

b) If the produce has already been off-loaded it should be contained immediately and either incinerated on the station or returned to the ship or aircraft as soon as possible for disposal as detailed in 4(a).

c) Before off-loading or on arrival, food should be examined for invertebrates and any invertebrates found should be killed immediately.

d) The inspection of fresh foods within containers that have already been landed should take place in a closed room with a sealed floor.

e) During transportation of produce between ship/aircraft and the station, fresh foods and their containers should not be left outside.

5. Fresh food storage on station or in field huts

a) Fresh fruit and vegetables should be stored and sealed in specified areas containing UV lamp electric fly killers and insect sticky traps.

b) Boxes/bags of food items, including non-irradiated eggs, should be stored in washable spill-trays, to capture soil or organic material that falls off the produce, and/or stored in rooms with solid washable floors.

c) The food storage area, spill-trays and floors should be cleaned regularly with an antimicrobial cleaning product/disinfectant (e.g. Virkon® or dilute bleach). No runoff from floors should be allowed outside to the environment.

d) Transport of fresh food between station buildings should be within sealed containers (boxes, plastic bags, etc).

6. Food waste disposal

a) Fresh food wastes should be disposed of by incineration or made sterile through autoclaving or cooking before disposal.

b) Disposal of uncooked food waste through the kitchen grey water or sewage system should be avoided if no post-treatment sterilisation exists, as this may release non-native microorganisms to the environment.

c) Ensure all boxes, crates, bags and other packaging is disposed off in a way that prevents release of any associated non-native organisms, e.g. by incineration or containment and shipping.