Flying-fox translocation and transport guidelines

Introduction

Temporary or permanent movement of wildlife can be a useful welfare and conservation management tool. The management approach may be used to help reduce risks to threatened populations, to help resolve human-wildlife conflict and in some circumstances as temporary respite for acute animal health, release post-rehabilitation, or welfare issues.

Wildlife transport can be expensive, logistically difficult and can lead to a plethora of cascade risks that require prior consideration.

- Prolonged containment during transport may jeopardise the health and welfare of the translocated animals.
- Inadvertent escape of animals is possible if the ground transport logistics are not properly planned.
- Translocation and release of wildlife into novel environments, whether inadvertent or planned, has the potential for maladaptation and compromise of the donor animals as well as the potential to disrupt the receiving ecosystem.
- Wildlife populations at the receiving site may risk unpredictable effects of introducing novel genes, microbiota, or pathogens into the system.

Four types of translocation may be considered:

1. Captive to Wild movements – this would include flying-foxes that have been in care prior to release. In the case of adults, they can be released at a camp. In the case of juveniles that have been hand-raised, they are left in a release aviary adjacent to a camp and soft released (provision fed).
2. Captive to Captive movements – this would include flying-foxes that have been in care and need to be relocated to another carer for creching or to a release aviary prior to release, or to other carers for management purposes.
3. Wild to Captive movement – flying-foxes that require care and/or veterinary treatment having being injured, orphaned, or found unwell.
4. Wild to Wild movements – this is very unlikely given the highly mobile nature of flying-foxes but there could be a reason in future.

When considering flying-fox transport/translocation, persons with prior experience in the area should be consulted. Translocations should also be coordinated and overseen by a central agreed party to confirm they are necessary, for example first ensuring all appropriate local options have been exhausted.

Transport of flying-foxes, as with any wildlife, can pose a disease risk to the wild population. Wild animals in care can be exposed to pathogens they might not normally encounter, either from humans or other animals in care, which they could transmit to others after release. Animals in care may have a compromised immune system due to the stress of captivity and the circumstances that brought them there. Although most flying-fox species mix widely across their range, there is still the

potential to introduce or spread a disease through human movement of flying-foxes. Planning and implementation of good biosecurity practices are important to reduce the risk of disease transmission.

Document Purpose

This document is intended to assist any personnel involved in planning, facilitating, or regulating transport and/or translocation of flying-foxes, and should be used in conjunction with guidelines in the reference list below. A decision flow diagram is provided for use in planning, risk assessment and risk management of this process.

The document is not intended for the translocation of flying-foxes for scientific purposes.

Translocation Flow Diagram

The flow diagram – see below – is intended to help guide those considering transport and translocation of flying-foxes, through a risk management process. It should be noted that this process is a start point and we expect that it will be refined with time and experience.

The flow diagram comprises five main parts:

i.	Rationale	Steps 1-3
ii.	Destination(s) Selection	Steps 3-4
iii.	Prepare for Transport	Steps 5-8
iv.	Commence Transport	Steps 9-10
v.	Evaluate and Report	Step 11.

RATIONALE (STEPS 1-3)

The reason(s) for the transport/translocation attempt need to be defined. These will generally centre around a problem with a species of conservation significance or an animal welfare, animal health or public health problem. Specific conservation, animal health/welfare or public health objectives should be determined and documented at this stage (program objectives). If the resources necessary to meet those objectives are not available in a particular location, and this is confirmed by the agreed coordinating party, then translocation for the purposes of meeting those objectives can be considered.

DESTINATION(S) SELECTION (STEPS 3-4)

Factors that should be considered when validating the suitability of the remote site(s) to accept the translocated animals include:

1. Can the site physically house and feed the number of animals in the group for the period necessary to achieve the objectives?
2. Is there adequate staff with the necessary experience, rabies vaccination status and personal protective equipment (PPE) at the receiving site to ensure that animals are properly managed, and monitored on a day-to-day basis?
3. Is there adequate expertise at the site to oversee the health and wellbeing of the animals and ensure that the program objectives are met?

4. Is there adequate expertise and infrastructure at the site to ensure on-site quarantine and security over the course of the program?
5. Are there adequate wash stations and first aid facilities on site, and access to medical facilities should this be required?
6. Are there adequate facilities and equipment at the destination to meet any special technical requirements of the program?
7. Is it the closest site (minimum travel time) that meets requirements set out above?
8. What are the biosecurity and ecological risks to the local region in the case of a quarantine failure during the program? How do they compare to those of other potential sites?

It is important to maintain the best possible biosecurity before, during and after transport of flying-foxes. This includes appropriate hand, equipment and environmental hygiene; use of PPE; and cleaning and disinfection (WHA 2018, Chapter 5; WHA 2020a; see WHA 2020b for specific advice on COVID-19). Physical isolation or segregation of individuals or groups of animals may need to be considered. Pre-transport assessment should include the health status of the animal, both in terms of suitability to travel, and the risk of transmission of disease to other flying-foxes. Ideally, a biosecurity risk management plan should be developed prior to transport (WHA, 2018).

PREPARE FOR TRANSPORT (STEPS 5-8)

Once it is determined that translocation is necessary, and a feasible receiving site has been identified, the following are required.

1. **Pre-transport Assessment (5).** The aim of the pre-transport assessment is to determine the best transport method or combination of transport methods to get the animals to their destination with the least compromise. The following factors should be considered:
    a. Number of animals.
    b. Clinical status of the animals – are they healthy?
    c. Description of the animals including their species, sex, age, colouration, body condition, specific identifying features and their nutrition, hydration and reproductive status.
    d. Ambient conditions.
    e. Accessibility and ability to supervise or husband animals *en route*.
    f. Potential for inadvertent public exposure to animals *en route*.
2. **In-transport Plan (6).** Once the method of transport has been selected then an in-transport plan is designed to help consider the husbandry of the animals *en route*. The In-transport Plan aims to maintain the animals in a good physiological state until they reach their destination. Some considerations for this plan include:
    a. Adequate food and water on hand and or available *en route*.
    b. Space requirements, including whether animals should be housed together or separately.
    c. At least two levels of containment around animals to prevent escape.
    d. Management of ambient extremes during transport including temperature, humidity, sonic hazard and barometric pressure. Temperature gauges are needed to ensure air conditioning is effective throughout the travel period.

e. There should be sufficient experienced vaccinated handlers to monitor and care for the animals during transport.

f. For animals <4 weeks of age (forearm length <105 mm) the maximum time between feeds is 7 hours, so transport types and sectors should be planned accordingly. In particular if travelling by aircraft be aware that animals may be exposed to extended intervals of terminal transit time and during long flights may dehydrate quickly.

g. During road transport the vehicle should stop and animals should be checked visually and assessed at least every three hours. In transit video monitoring is recommend for animals secured in compartments outside of direct line of sight.

h. Plan and stage long journeys to include stopovers at suitable facilities along the way, if possible. This step is best done by developing a network of potential stopover sites well in advance of any urgent requirement for transport.

i. Consider contingency plans for systems failures e.g. aircraft delay, vehicle breakdown, air-con failure, food unavailable, etc.

j. Maintain fatigue management and communication protocols when travelling including appropriate methods for remote areas.

3. **Program Plan (7).** Permit approval will depend on a clear statement of the rationale and objectives of translocation (as above), the method and logistics used at the receiving site to achieve the objectives, and the plan for animals once objectives are met. Things to be considered in the Program Plan at the receiving site include:

    a. Arrival, admission, and acclimatisation procedures.

    b. Staffing/volunteer levels and staff Occupational Health and Safety (OHS) plan.

    c. Routine treatment, monitoring and documentation procedures.

    d. Measurement and documentation of endpoint goals and performance indicators.

    e. Quarantine and biohazard assessment at the receiving site.

    f. Final return and/or release plan.

    g. Budget.

4. **Secure permits (8)** from wildlife authorities. Permit applications require detailed information on all aspects outlined in these guidelines, and application processing can take time. Licencing will involve liaising with multiple regulators when moving animals across jurisdictional borders.

COMMENCE TRANSPORT (STEPS 9-10)

Transport should only commence when the transport method and forecast ambient conditions allow flexibility aimed at minimising morbidity and mortality during transport. Delays, cancellation, or significant modification of transport methods may be a result of this process and it is best carried out by persons experienced in judging flying-fox health and behaviour.

EVALUATE AND REPORT (STEP 11)

All translocation programs should be reviewed and evaluated after the event to make improvements for the future. An evaluation report should be submitted to permit authorities.

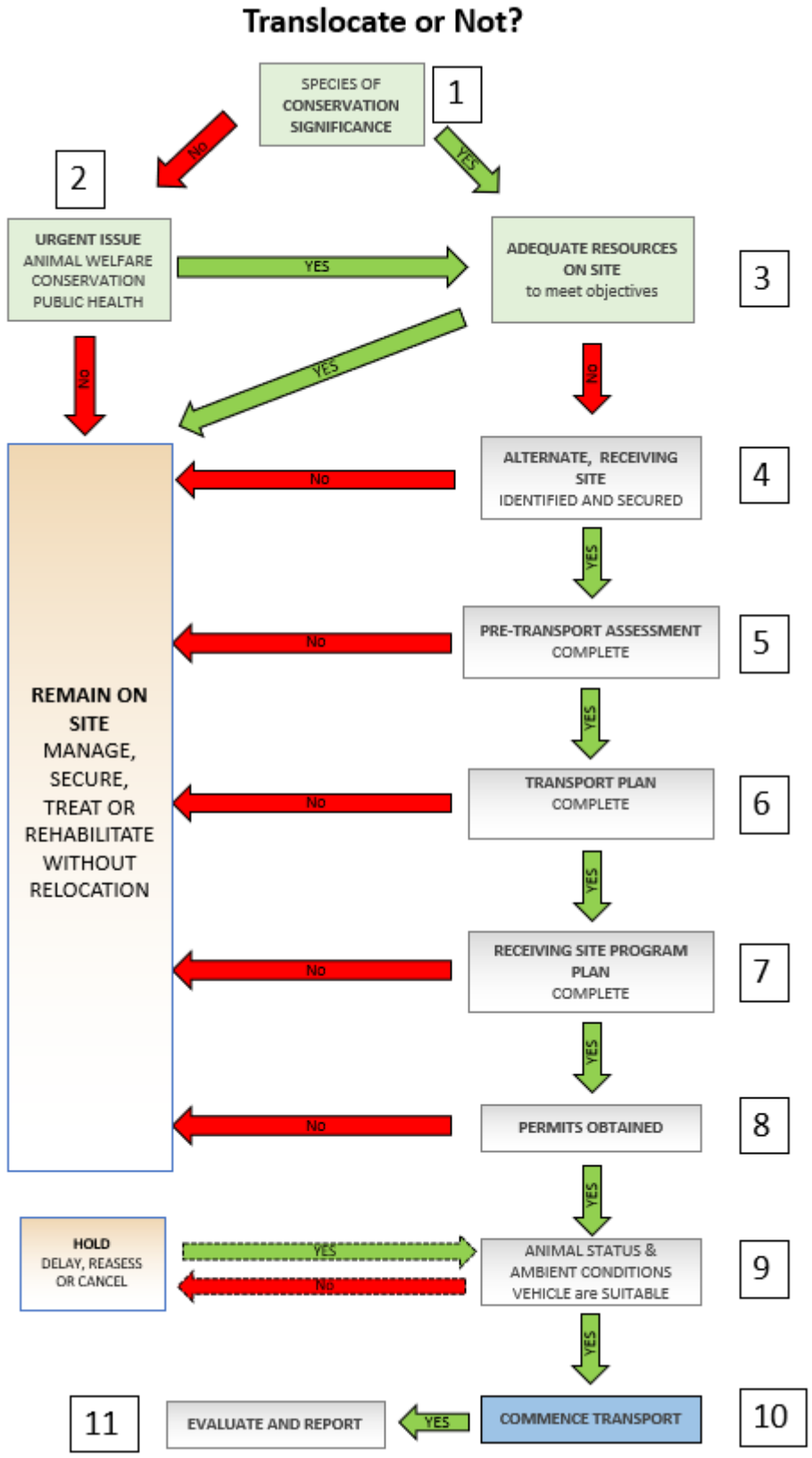

Figure 1 Flying-fox translocation and transport decision flow diagram. Numbers refer to explanatory detail above

References and recommended reading

General guidelines on rationale, feasibility and methods for wildlife translocation

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