Naturhistoriska riksmuseet

Manual for collection, preparation and storage of egg and eggshell

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Content

Collection of egg and eggshell

Guillemot (Uria aalge)

Twenty eggs are yearly collected for storage in the Swedish Environmental Specimen Bank (SESB) and chemical analysis. Eggs are collected every year in order to detect changes of levels of contaminants in the environment.

Collection should be carried out as early as possible during the breeding period, not later than 14 days after the laying of the first egg in the colony. Eggs from the population in the Baltic area are collected soon after the laying of eggs in the population is completed.
Eggs are placed individually in solid plastic containers with a lid. Note locality, date of collection, collector and remarks. The egg in its container is placed in a refrigerator, as soon as possible. If the egg is cracked and leaks, the container is placed in a freezer at -20°C.

Raptors

Collection of eggs is usually carried out in connection with scientific projects with the aim to study breeding and population status in relation to levels of toxic and bio-accumulating substances.

Raptors are vulnerable to disturbance at the nest site during the incubation and early nestling periods. One visit is recommended to occupied nests for collection of addled and/or unhatchable eggs. Collection usually takes place in the later part of incubation.

Every time the nests are visited, they should be searched through for shell fragments that often are buried in the soft nest material.

Eggs are placed individually in solid plastic containers with a lid. Each egg should be labelled with species, location, nest number, date and name of the collector. Shell fragments are placed in small solid plastic containers and marked in the same way as eggs. The egg in its container is placed in a refrigerator, as soon as possible. If the egg is cracked and leaks, the container is placed in a freezer at -20°C.

Equipment for collection

- solid plastic containers
- plastic bags
- labels
- insulated cellular plastic bag
- egg cartons/trays

Transportation

The eggs should be packed carefully prior to transportation in order to avoid injuries to the eggs during transportation. Every egg should be placed individually in a plastic bag (polythene) after which they are placed separately in a crush absorbing material in stiff boxes of wood, plastic or cardboard. It is recommended that special boxes made specifically for this purpose is used.

Preparation

Egg

If needed the egg is cleaned in water. Preferably distilled or de-ionized water should be used to avoid destroying microscopic shell structures. The length, width and weight of the egg are measured.

Egg homogenate

A hole (approx. 3 mm in diameter) is drilled at the equator of the egg. The contents of the egg are blown out into glass beakers, using a pipette, blowing pipe or syringe with a coarse needle. Embryos are separated from other egg contents (see Storage, egg content below). When blowing out the contents, the egg is held with the hole down. The blowing pipe is stuck into the hole and the contents are pressed out as air is blown into the egg through the pipe. The contents (fluid) are homogenized in a glass beaker using a small electric homogenizer.

Embryo

If the egg contains an embryo, an opening is sawed in the shell at the egg equator, large enough to remove the embryo. Embryo and fluid egg contents, if any, are stored separately. If the embryo is small or degraded it is homogenized together with the other content. The embryo is measured ("crown - tail") and weighed.

Eggshell

The shell is cleaned and rinsed internally in water. The shell is dried at room temperature until the weight is constant. Weight of the shell is noted. The egg shell thickness, including membranes, is measured at the blowing hole, using a micrometre modified for measurement of egg shell thickness (see photo 1).

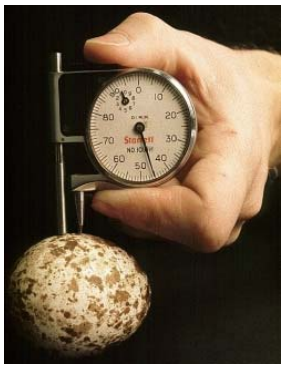

Photo 1. Shell thickness of an peregrine falcon egg are measured

Eggshell fragments

Shell fragments from hatched eggs or eggs crushed during incubation are separated from nest litter. Shell thickness is measured separately for the fragments with and without membranes respectively.

The following determinations and measurements are normally made (special measurements within brackets).

- weight
- length
- width
- shell weight
- shell thickness
- shell index
- degree of putrefaction (colour of egg contents)
- embryonic
- length of embryo
- weight of embryo

Equipment for preparation

- scales
- calliper
- forceps (stainless)
- glass beakers
- glass vessels
- homogenizer

- laboratory blotting paper
- aluminium foil
- micrometre
- plastic bags
- small drill for egg-shells
- bent pasteur pipette
- ruler

Storage

Egg content

Homogenate of fluid egg contents (yolk and white) is poured in glass jars with plastic lids and is stored in freezer, and labelled for identification. Any embryo, separated from the fluid egg content, is packed in diffusion safe laminate. The package is, following evacuation of air, sealed. As an alternative (in the second hand) the embryo can be packed in aluminium foil and sealed in a plastic bag along with a label for identification.

When specimens are expected to be used for biochemical studies or for analyses of non-persistent compounds, the ambition is to store the material at as low temperature as possible, from collection to the final storage (-80°C).

When specimens are intended to be used for analyses of highly persistent compounds, storage at -25°C is used.

During the period between reception of material from the field and final packing, the temperature of the material should be kept as low as possible from a practical point of view.

The whole amount of egg contents is stored in order to satisfy the need of material for more than one single analysis.

Eggshell

Eggshells can be stored at room temperature, temperature <20°C, if nothing else is prescribed.
The shell fragments are dried at room temperature and stored dark at a temperature <20^{o} C in jars with a tight lid.

Equipment for storage

- glass jars with plastic lids
- solid plastic containers
- plastic bags
- aluminium foil
- laminate plastic bag
- labels