

RAPTOR AND SEABIRD FOOD HABITS USING REGURGITATED PELLETS AND PREY REMAINS

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PURPOSE

Predators may play a key role in the functioning of arctic tundra ecosystems and could potentially control the abundance of their prey. Avian predators, mostly raptors and seabirds, are the most diverse groups of predators in the Arctic and range from highly specialists to highly generalists. Quantifying the annual variation in their diet according to the availability of their prey will help us better understand trophic interactions in the tundra. Depending on the study site and bird species, two methods will be used to determine their food habits. Methods describe here will relate only to the collect of regurgitated pellets and prey remains at nests (the other method relies on stable isotopes using blood sampling and is described in another protocol).

TIME PERIOD

The best time to collect pellets and prey remains at nests of raptors and seabirds is during the period that chicks are present at the nest. On Bylot Island, this period usually extend from 15 June to end of July for raptors and from the second week of July to the beginning of August for seabirds. Dates may need to be adjusted at other sites depending on the latitude and the bird species.

PROCEDURE

All raptor and seabird species described in the abundance protocols are of interest. However, those most likely to be encountered are:

- Snowy Owl (SNOW)
- Rough-legged Hawk (RLHA)
- Peregrine Falcon (PEFA)
- Gyrfalcon (GYFA)
- Long-tailed Jaeger (LTJA)
- Parasitic Jaeger (PAJA)
- Pomarine Jaeger (POJA)
- Glaucous Gull (GLGU)

Normally, the collection of prey remains and regurgitated pellets should occur during visits to monitor reproductive success (see protocol on reproductive success of these species) in order to minimize disturbance. Ideally, nests should be visited at 7-10 days from hatching of the chicks until the fledging (or death) of all chicks but nests in located in remote areas may be sampled less intensively. All nests that are accessible should be considered for this monitoring.

Pellets and prey remains are normally collected over an area of 5-10m radius around the nest. For raptor nests located on inaccessible cliffs, search an area below the cliff where pellets may fall. Some raptors often use specific perching site at some distance of their nest where they often regurgitate pellets. If you identify such sites, it is fine to collect pellets there. Although these sites may be at some distance from the nest (e.g. 50 or even 100m), you should ensure that you are still in the territory of the pair whose

nest is located nearby. This is important because each “pair” is the sampling unit so we want to be sure that pellets collected at such perching site can be associated with a specific nesting pair. Do not collect pellets at perching site that you cannot associate to a specific breeding pair.

Gull nests are frequently located in the middle of ponds too deep to wade through. When available, use a small inflatable raft to reach those islands. If this is not possible, or if nesting islands of gulls are too small (i.e. limited to the size of the nest), you should search a 5-m wide area along the shores of the pond closest to the nest. Such sites are frequently used by gulls to regurgitate pellets or abandon prey remains.

We want to be sure to collect only fresh pellets. To ensure that, it is **IMPORTANT** that all nests are visited just before or at hatch and the area around the nest (or perching site) is thoroughly searched for old pellets and prey remains, **which should be removed** (i.e. collected and discarded far away).

During each subsequent visit, all prey remains should be counted and identified to the species. The state of the prey remain (i.e. whole, partially eaten or carcass) should be noted. Once counted, all prey remains are removed and discarded far away from the site to avoid counting them again during subsequent visits. If some preys cannot be identified, collect it in a plastic bag, identify it by the nest number date of visit, and bring it back to camp.

For pellets, the goal is to collect as many as pellets possible during each visit to the nest (ideally between 10 and 20). Pellets are collected in a plastic bag with the following information: the nest number, the date of visit (including year) and the **number of pellets collected**. When pellets are broken, try to estimate the number of pellets as accurately as possible (e.g. a pellet broken into 3 obvious pieces would count as “1” pellet). Be careful not to collect old pellets from previous years, which are paler and drier than recent pellets. At jaegers nests, if you are unable to find any pellets, you may gently manipulate chicks, which often regurgitate.

Pellets are brought back to camp where they should be put into ovens at 45-60°C until they are completely dry (24-48 hrs). Dried pellets should be stored in dry plastic bags and bring back south for laboratory analyses. If new plastic bags are used after drying, they must be clearly identified with the same information as before, i.e. nest number, date of visit (including year) and number of pellets collected.

MATERIAL

- Map of the sector and field book
- GPS
- Plastic bags (ziploc)
- Felt-tip marker
- Oven (at the camp)

DATA MANAGEMENT

It is important to keep an inventory of all samples collected. This inventory should include the same information than the one indicated on the bags, as well as the name of the person who made the collection and any additional relevant information (e.g., collected at perch site rather than the nest itself). This inventory will ensure that no samples are lost and will be useful to determine when nests need to be visited again for further collections. Information on prey remains counted and identified should be entered in datasheets prepared for that.