

A winter landscape with bare trees and a field under a cloudy sky. The scene is captured in a wide-angle shot, showing a line of leafless trees in the middle ground and a field in the foreground. The sky is overcast with soft, grey clouds. The overall tone is muted and cold.

**ULF JOHANSSON**

SWEDISH MUSEUM OF NATURAL HISTORY  
STOCKHOLM

**Obtaining Raptor specimens for  
taxonomic (systematic)  
and contaminant research  
to the Swedish Museum of Natural History  
- the “Swedish Game Act”-law**

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# The Swedish Museum of Natural History (NRM)

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- The museum was formally founded 1819 but the collection has its roots in a number of 18th century collections  
e.g.,
  - Royal Acedemy of Sciences (founded 1739)
  - Gustaf von Paykull (private collection)
  - Adolf Ulrik Grill (private collection)



# The Swedish Museum of Natural History (NRM)



- Approximately 250 employees
- 3 main divisions
  - Exhibitions and outreach
  - Internal service and support
  - Research and collections

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## Research and collections

- 6 departments
  - *Bioinformatics and genetics*
  - *Botany*
  - *Environmental research and monitoring*
  - *Geosciences*
  - *Palaeobiology*
  - *Zoology*





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# The Swedish Museum of Natural History (NRM)

Research and collections

## *Department of Zoology*

- taxonomic and systematic research
- vertebrates, invertebrates and entomology
- large collections
  - e.g., 120 000 bird skins



# The Swedish Museum of Natural History (NRM)

Research and collections

## *Department of Environmental research and monitoring*

- monitors environmental contaminants
- runs the Environmental Specimen Bank
- administrate bird ringing in Sweden
- conduct pollen analyses and prognoses







# Incoming material of Birds of Prey and Owls

Photo: Ingrid Cederholm



# The “Swedish Game Act”

A law in Sweden that states that...

*“...in order to protect threatened, rare or particularly valuable species and make available for science and education specimens of these species, the government can prescribe that game [in this case = all birds and mammals] which are found dead or killed should accrue to the state”*

This means that the all specimens of certain species, **MUST** be handed in, or reported, to the police...

..., which in turn have to send the specimens to the Swedish Veterinary Institute  
or  
the Swedish Museum of Natural History



# The “Swedish Game Act”

The species include are specified in the Hunting Decree

Includes both mammals and birds,  
e.g., bears, wolves, lynx and polar foxes

many raptor and owl species (but not all)

The first species to be included in the “Swedish Game Act” were **bear** and **lynx** (1927)

The first birds to be include were **eagles** (1938)

- White-tailed Eagle *Haliaeetus albicilla*

- Golden Eagle *Aquila chrysaetos*

The species list have been updated several times and new species included and other excluded





# Birds of Prey

included in the “Swedish Game Act”

Osprey *Pandion haliaetus*  
Honey Buzzard *Pernis apivorus*

eagles - White-tailed Eagle *Haliaeetus albicilla*  
- Golden Eagle *Aquila chrysaetos*  
kites - Black Kite *Milvus migrans*  
- Red Kite *Milvus milvus*  
harriers - Marsh Harrier *Circus aeruginosus*  
- Hen Harrier *Circus cyaneus*  
- Montague's Harrier *Circus pygargus*  
falcons - Common Kestrel *Falco tinnunculus*  
- Merlin *Falco columbarius*  
- Eurasian Hobby *Falco subbuteo*  
- Gyr Falcon *Falco rusticolus*  
- Peregrine Falcon *Falco peregrinus*



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## NOT included in the “Swedish Game Act”

- Goshawk *Accipiter gentilis*

- Sparrowhawk *Accipiter nisus*

- Common Buzzard *Buteo buteo*

- Rough-legged Buzzard *Buteo lagopus*





# Owls

included in the “Swedish Game Act”

|                    |                        |
|--------------------|------------------------|
| Eurasian Eagle Owl | <i>Bubo bubo</i>       |
| Snowy Owl          | <i>Bubo scandiacus</i> |
| Northern Hawk Owl  | <i>Surnia ulula</i>    |
| Ural Owl           | <i>Strix uralensis</i> |
| Great Grey Owl     | <i>Strix nebulosa</i>  |
| Barn Owl           | <i>Tyto tyto</i>       |





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## NOT included in the “Swedish Game Act”

|                    |                              |
|--------------------|------------------------------|
| Eurasian Pygmy Owl | <i>Glaucidium passerinum</i> |
| Tawny Owl          | <i>Strix aluco</i>           |
| Long-eared Owl     | <i>Asio otus</i>             |
| Short-eared Owl    | <i>Asio flammeus</i>         |
| Tengmalm's Owl     | <i>Aegolius funereus</i>     |



# Birds of Prey

received by NRM 1997 to 2018 (22 years)

Osprey *Pandion haliaetus* – 222 individuals  
Honey Buzzard *Pernis apivorus*

eagles - White-tailed Eagle *Haliaeetus albicilla* – 1274 individuals  
- Golden Eagle *Aquila chrysaetos* – 561 individuals  
kites - Black Kite *Milvus migrans*  
- Red Kite *Milvus milvus*  
harriers - Marsh Harrier *Circus aeruginosus*  
- Hen Harrier *Circus cyaneus*  
- Montague's Harrier *Circus pygargus*  
falcons - Common Kestrel *Falco tinnunculus* – 513 individuals  
- Merlin *Falco columbarius*  
- Eurasian Hobby *Falco subbuteo*  
- Gyr Falcon *Falco rusticolus*  
- Peregrine Falcon *Falco peregrinus* – 147 individuals

NOT included in the “Swedish Game Act”

- Goshawk *Accipiter gentilis* – 294 individuals  
- Sparrowhawk *Accipiter nisus* – 416 individuals  
- Common Buzzard *Buteo buteo* – 254 individuals  
- Rough-legged Buzzard *Buteo lagopus* – 58 individuals





# Birds of Prey

## Number of samples in the environmental specimen bank

Osprey *Pandion haliaetus* – 1854 samples  
Honey Buzzard *Pernis apivorus*

eagles - White-tailed Eagle *Haliaeetus albicilla* – 2849 samples  
- Golden Eagle *Aquila chrysaetos* – 797 samples  
kites - Black Kite *Milvus migrans*  
- Red Kite *Milvus milvus*  
harriers - Marsh Harrier *Circus aeruginosus*  
- Hen Harrier *Circus cyaneus*  
- Montague's Harrier *Circus pygargus*  
falcons - Common Kestrel *Falco tinnunculus* – 752 samples  
- Merlin *Falco columbarius*  
- Eurasian Hobby *Falco subbuteo*  
- Gyr Falcon *Falco rusticolus*  
- Peregrine Falcon *Falco peregrinus* – 198 samples

## NOT included in the “Swedish Game Act”

- Goshawk *Accipiter gentilis* – 268 samples  
- Sparrowhawk *Accipiter nisus* – 238 samples  
- Common Buzzard *Buteo buteo* – 127 samples  
- Rough-legged Buzzard *Buteo lagopus* – 60 samples





# Other ways

- Surveys  
- permits





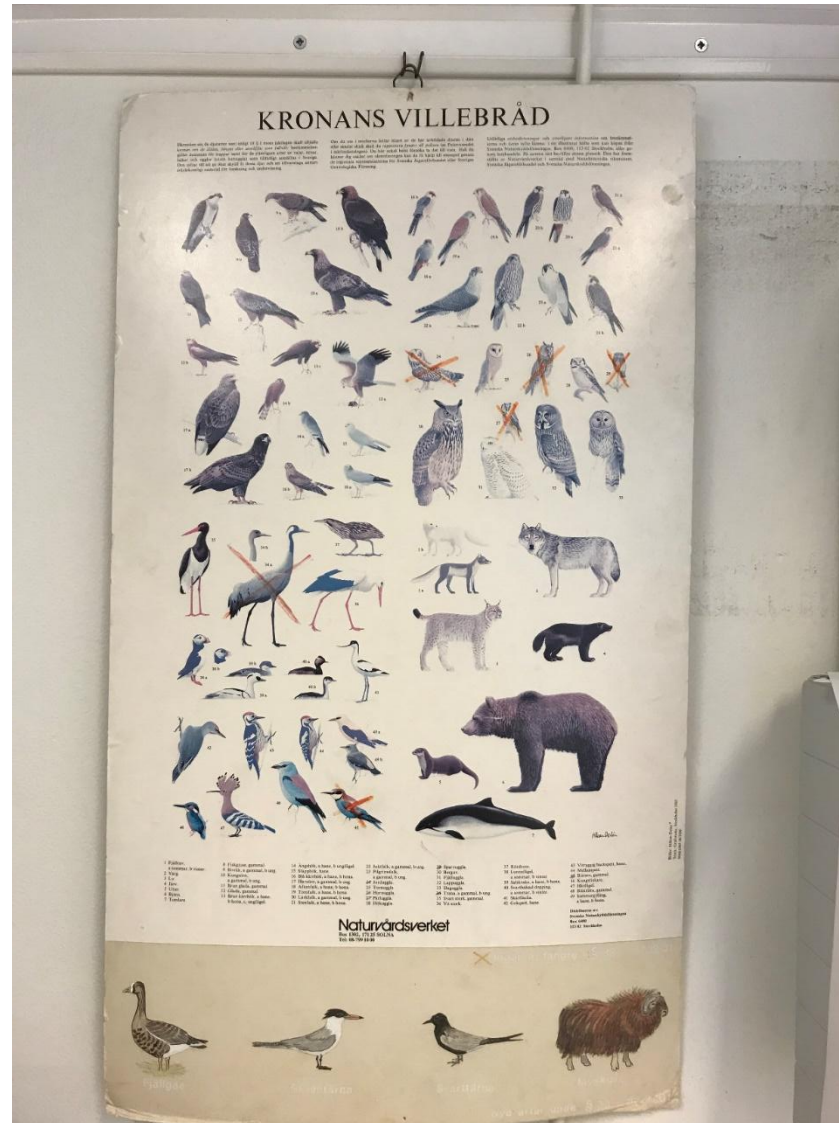
# Observance of the law

The incoming number of raptors to the museum is increasing...

... but the motivation to send in dead birds in general appears to have diminished

The public awareness about the law is apparently decreasing

# Information to the public





# Handling arriving birds

The following determinations and measurements are normally made:

- age
- sex
- weight
- total length (cm)
- liver weight (g)
- description of reproductive tissues
- degree of decay
- state of nutrition

Locality

Coordinates

Date (date found, rarely death date, degree of decay)



# Handling arriving birds

## Samples taken for the Zoology department

- breast muscle (for DNA analysis)
- (skin for preparation of study skin)
- (skeleton)

## Samples taken for the environmental specimen bank

- breast muscle
- liver
- kidney
- gonads
- flight feathers

# X- RAYS



Goshawk  
Air gun .22 caliber diabolopellet



White-tailed sea eagle  
Broken wing, remains of shot in wing



# The collections

**Egg collection**  
28000 eggs



**Wet collection**  
ca 2000 birds





Bird skin  
collection  
120 000 study skins



Mounted  
skins  
9000 mounts





Bird skeleton  
collection  
27 000 skeletons



Tissue  
collection  
(for DNA studies)  
10 000 samples





# Environmental Specimen Bank







**THESSALONIKI**