

HEALTH SURVEILLANCE OF THE GREAT CORMORANT (*PHALACROCORAX CARBO*) IN CATALONIA

INTRODUCTION AND OBJECTIVE

The great cormorant (*Phalacrocorax carbo*) is a native piscivorous bird in Catalonia that has caused conflicts with the fishing sector. Its growing population and feeding habits have raised concerns about its ecological impact and its role in the transmission of diseases.

Objective: analyse the diseases carried by the great cormorant and assess their potential impact on human and animal health.

LITERATURE REVIEW

Impact on fish:

The great cormorant can affect fish populations in two ways:

- Directly: through predation.
- Indirectly: by causing physical injuries and stress, which can ↑ their parasitism levels and ↓ the fish condition score.

Reviewed diseases:

- Newcastle disease (ND) and Avian Influenza (AI): both have been reported in *P. carbo* and are relevant for public health.
- *Contracaecum rudolphii*: gastrointestinal nematodes for which *P. carbo* is the main host. They can affect both humans and fish.
- *Cyathostoma microspiculum*: red tracheal nematodes primarily found in juvenile cormorants.
- Threats to cormorants: fishing gear entanglement and electrocution are causes of injury and mortality in cormorants.



MATERIALS AND METHODS

Animals necropsied:

- Found dead or ill and brought to wildlife rescue centres.
- Shot by rural agents.

Samples collected:

- Tracheal and cloacal swabs → PCR testing for AI and ND.
- Complete gastrointestinal tract → parasite analysis.
- Parasites found in other locations.
- Relevant findings → histopathological analysis.

RESULTS

Of the 34 individuals collected, only 32 were necropsied, as two were in poor condition due to electrocution.

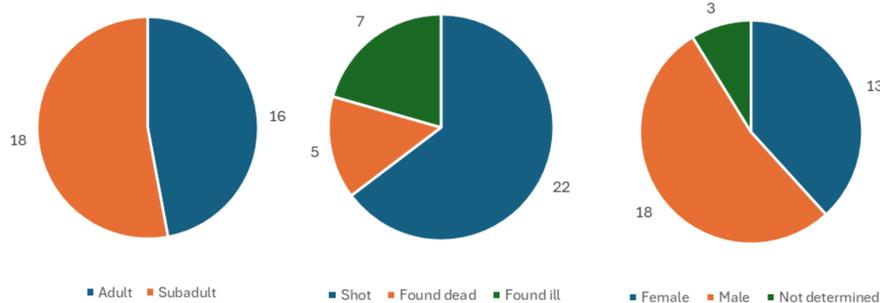


Figure 1. Age ranges Figure 2. Method of obtention Figure 3. Sex

ND and AI: all individuals tested **negative**.

***C. rudolphii*:** results are seen in table 1 and figure 4.

Table 1. Prevalence, minimum and maximum parasite count and median of *C. rudolphii* in the esophagus, proventriculus, intestine and in total.

	Esophagus	Proventriculus	Intestine	Total
Prevalence	6/32 (18,75%)	30/32 (93,75%)	7/32 (21,88%)	31/32 (96,88%)
Min and max	0 to 150	0 to 322	0 to 30	0 to 413
Median	9,78±30,08	105,31±101,07	1,28±5,31	116,38±115,54

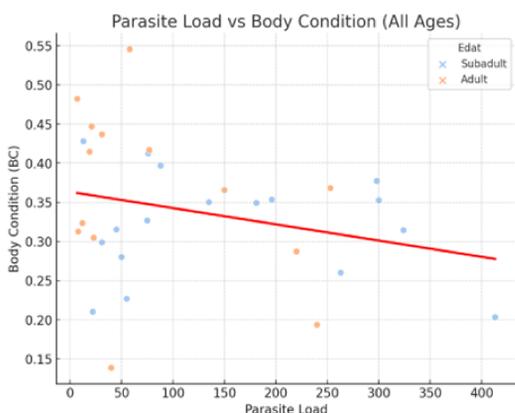


Figure 4. Relationship between parasite load and body condition (BC), stratified by age class (adult vs subadult), with a single linear regression line shown in red.



Figure 5. Proventriculus filled with *Contracaecum rudolphii*.

A weak negative correlation was observed between parasite load and BC (Spearman's $\rho = -0.218$, p -value = 0.240), although not statistically significant.

***Cyathostoma microspiculum*:** compatible parasites were found in four juvenile individuals. It can be seen macroscopically in figure 6.

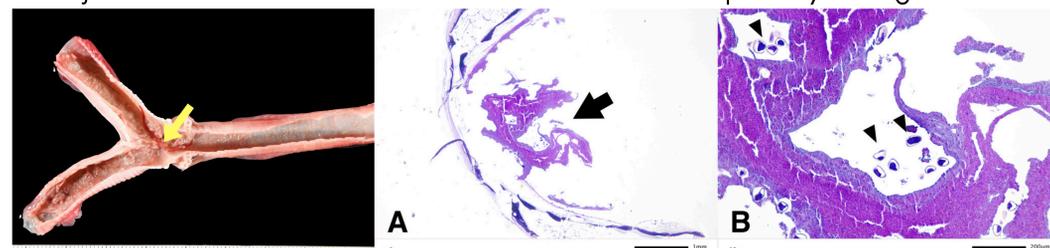


Figure 6. Trachea and primary bronchi. Inflammatory exudate and fibrine covering mucose. Nematode compatible with *C. microspiculum* (yellow arrow).

Figure 7. (A) microscopic image of the trachea where the inflammatory exudate can be observed. (B) Magnified, parasite eggs can be observed surrounded by the exudate (marked with arrow heads). Hematoxylin and eosin stain.

Other causes of disease and mortality:

- Fishing gear entanglement: two individuals were found injured by fishing line and hook (figure 8).

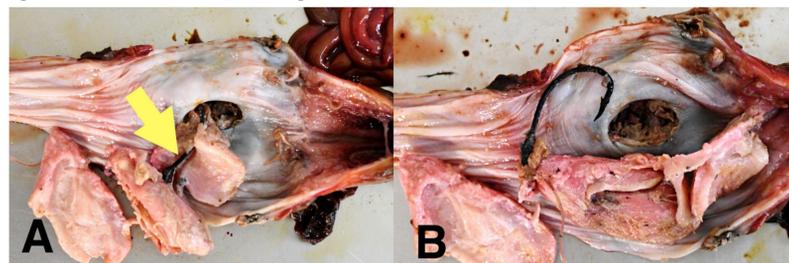


Figure 8. Proventriculus. (A) hook (yellow arrow) causing a wound in the proventriculus wall. (B) hook extracted from the wound.

- Electrocution: two individuals were found dead.
- Emaciation: five cormorants were found with extreme weakness and brought to wildlife rescue centres.

CONCLUSIONS

1. Currently the great cormorant in Catalonia tests **negative for Avian Influenza and Newcastle disease**. Despite this, the epidemiological surveillance should continue, as they could still be carriers.
2. The parasites detected in the **gastrointestinal tract** were ***Contracaecum rudolphii***, although not statistically significant there seems to be a slight correlation between parasitic load and body condition. In addition, severe gastric lesions have been reported. It can also cause disease in fish and humans.
3. ***C. rudolphii* and *C. microspiculum*** have a **wide distribution** throughout Catalonia, with parasite loads varying among individuals at the same location.
4. The great cormorant has an **effect on the environment and fisheries**, although it also benefits other animal and plant species so eradication is not an option.
5. There is **limited literature** about this bird in our country.

REFERENCES

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