

STOMACH CONTENTS ANALYSIS OF CORMORANTS AT SOME DIFFERENT FISHERY TYPES IN ENGLAND AND WALES

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Introduction

The population of cormorants wintering in Britain has increased rapidly over the last 25 years and cormorants have extended their range inland from coastal areas and now over-winter and feed on many inland waters. This has increasingly brought these birds into conflict with recreational fisheries.

In England and Wales, cormorants are protected under the Wildlife and Countryside Act 1981, but licences to shoot these birds can be issued where they are causing serious damage to a fishery and there is no other satisfactory solution. It is a requirement that any shot birds should be recovered and made available for examination. This study reports on some of the findings from the analysis of these carcasses.

Methods

Post mortem examination of all shot birds is carried out, primarily to enable information to be collected on the diet of cormorants at different fisheries.



Intact bream from stomach of shot cormorant

The diet analysis for each bird combines:

- Careful identification, enumeration and measurement of intact prey items in a bird's stomach;
- Cleaning, drying and microscopic examination of the bones and other hard remains (e.g. pharyngeal teeth, otoliths, vertebrae, etc.), that are relatively resistant to digestion;



Dried bone remains

'Key' bones

- Measuring the size of specific 'key' remains and estimating the length and weight of all fish prey using species-specific regression equations;
- Estimating the proportion of each fish species, by both number and weight, in the diet of birds from different sites.

The results of these stomach analyses are used to assist in assessing the potential impact of cormorants at different fishery sites and as a basis for providing advice and evaluating licence applications.

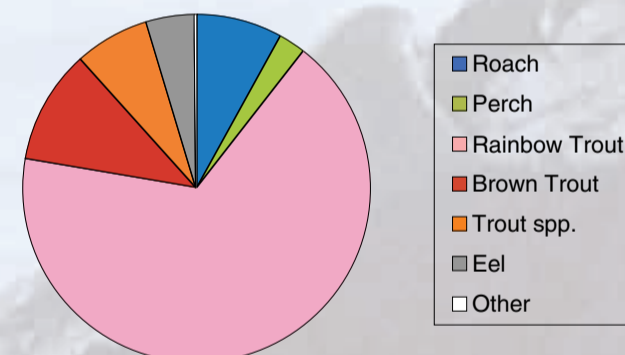
Put-and-take trout fisheries

There are numerous put-and-take trout fisheries in England and Wales, where stocks of trout are introduced specifically with the aim of providing sport for anglers. Cormorants also frequent many of these sites, and the birds are commonly perceived to be having a serious impact upon these introduced fish. In practice, the level of impact on the trout is likely to vary considerably. This is illustrated by two extreme examples:

Site 1: NW England.

- Diet based on a sample of 48 stomachs containing prey items, from birds shot in the winter months;
- Small roach and perch have been main prey items in numbers (75%);
- Trout represent 85% of the diet by weight.

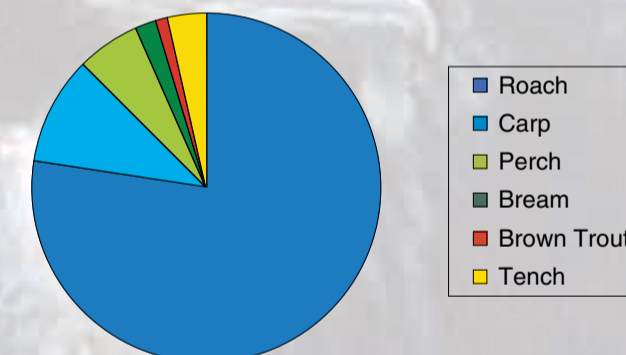
Cormorant diet at a put-and-take trout fishery in NW England - proportion by weight.



Site 2: SE England.

- Diet based on a sample of 25 stomachs containing prey items, from birds shot in the winter months;
- Small cyprinids and perch have been main prey items in numbers (>99%);
- Trout represent only 1% of the diet by weight.

Cormorant diet at a put-and-take trout fishery in SE England - proportion by weight.

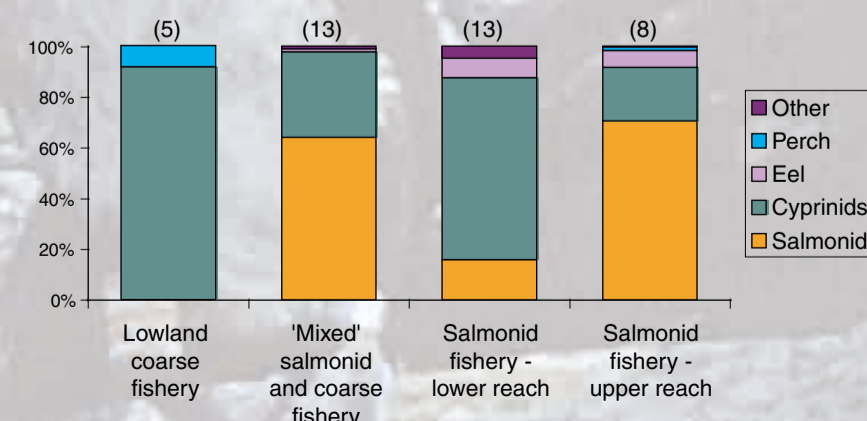


River fisheries

Within England and Wales there is substantial variability in the morphology and topography of rivers and this, together with a range of other factors, affects the composition of the fish populations. Cormorant diet appears to reflect this variability.

The histogram presents the relative proportions of different groups of prey species for four different river 'types'. The number of prey species recorded in the samples is included in parentheses. No detailed information is available on fish populations for these rivers but the species composition is consistent with the expected distribution of species in these catchments.

Proportions of prey species (by weight) in the diet of cormorants from riverine sites.



A cormorant (*Phalacrocorax carbo L.*)

Conclusions

- The results are consistent with the view that cormorants are opportunist predators that select locally abundant prey species.
- The fish species targeted by the cormorants do not always match the initial perceptions.
- The differences between sites highlight the need for careful evaluation and the need to assess potential impact on a case by case basis.

Acknowledgement

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Cormorant photos courtesy of Graham Ekins and Les Steward