Scientific Advisory Group - Capercaillie Emergency Plan Meeting note

Tuesday 23 September, 10.00 – 12.30 | Forest Lodge, Abernethy and Teams

Attendees

- Alice Broome - Forest Research, Senior Scientist - Priority species / habitats
- Carolyn Robertson - Park Authority, Cairngorms Nature Manager
- Chris Sutherland - University of St Andrews, Reader of Statistics
- Dave Parish - NatureScot, Terrestrial Ornithologist
- Helen Senn - RZSS, Head of Conservation and Science Programmes
- Jason Matthiopoulos - University of Glasgow, Head of Ecology and Environmental Change
- Kathy Fletcher - GWCT, Senior Scientist Scottish Upland Research
- Steven Ewing - RSPB, Senior Conservation Scientist
- Stuart MacQuarrie - NatureScot, Deputy Director Nature and Climate Change (Chair)

Apologies

- Xavier Lambin - University of Aberdeen, Professor of Ecology

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Meeting summary

The group reviewed and discussed a draft Research and Monitoring Plan for the Capercaillie Emergency Plan. The draft included all the interventions included in the Capercaillie Emergency Plan, their objectives, measures of success, and the monitoring data currently available. Members were asked to highlight key areas where monitoring data is missing or insufficient and suggest which data collection and or data gaps should be prioritised.

Key points raised by the group included the need for:

- **Consistency** in monitoring approaches across sites where interventions are being delivered

- **Better granularity** of data where possible, including precise intervention detail, e.g. grazing regimes, fence and corresponding lek locations
- **Improved alignment** of datasets spatially and temporally
- **Integration of existing and future data** into CaperMap as a central repository
- **Resourcing** to sustain monitoring programmes and the Integrated Capercaillie Population Model
- **Clarity on success indicators**, ensuring population-level outcomes are included alongside site-based measures of success
- **Acknowledgement of interdependencies** where success is linked to other strategies, e.g. deer management

The Research and Monitoring Plan needs to be in place by the end of the year, with an updated draft to be circulated in response to the meeting. It was acknowledged that the plan will need to remain flexible over the Emergency Plan period, adapting as new datasets and resources become available.

Key discussion points

Coordination and consistency

- Consistency in monitoring across sites is essential, including monitoring at the right scale and frequency to detect impacts. It's important to understand the granularity of available data so gaps can be identified.
- Monitoring regimes should be replicable and sustainable. RSPB's large-scale trial on cattle grazing and robocutting, monitored with camera traps, will help determine whether the camera network is fit for wider use. Smaller-scale monitoring remains important, with results feeding into the broader dataset.
- The need for specific intervention records was highlighted, e.g. grazing regimes rather than general grazing zones, noting that most cattle grazing in woodlands for capercaillie wear no fence GPS collars that can provide fine-scale grazing data.
- To put new data into context and support modelling, data from past interventions, e.g. delivered through the Cairngorms Capercaillie Project, should be included in the plan.
- Population-level outcomes remain a key success indicator yet to be defined. This warrants further discussion as does the scope for monitoring outside current core capercaillie areas. Recommendations were made that there should be a focus on where capercaillie might exist in future, in addition to where they are currently. A more detailed, habitat and connectivity driven investigation could identify potential capercaillie areas beyond the current core sites.

Habitat improvement and expansion

- Monitoring forest stand structure and connectivity could be most beneficial**,** particularly identifying areas where stand structure is, or is projected to be, most favourable to capercaillie as identified through the EU LIFE project - *Urgent Conservation Management for Scottish Capercaillie.*
- Tools such as Forestry and Land Scotland's sub-compartment database with growth modelling, LiDAR surveys and aerial photography all offer potential to monitor stand structure and connectivity, though some products are still in development and or limited to specific areas. Current LiDAR work across the Cairngorms Connect landscape aims to help identify which elements within more widely available satellite data are most informative. This will be valuable in the longer term. Data currently available through this work includes ground-truthed LiDAR data from the Cairngorms Connect landscape showing blaeberry and heather-dominated understories.

Reducing the impacts of predation

- Currently vole survey points and camera traps monitoring predators and capercaillie are not spatially or temporally aligned. Alignment is essential to link vole availability, predator density, and capercaillie outcomes, making the data far more powerful for assessing success.
- Maintaining vole surveys is essential but currently the surveys face logistical constraints, so support is required. Resource is also needed to maintain predator monitoring. As part of the Cairngorms Connect Predator Project there is near-complete coverage of the wooded areas of the Cairngorms Connect landscape using camera traps, creating an emerging time series of standardised data on the mammalian predator community. The cameras are paired with audio recorders to capture the wider predator community. Resource is needed to keep this monitoring going and to potentially extend it to create a wider monitoring programme. This could support the action in the Emergency Plan to study predator activity in relation to capercaillie hen densities and breeding performance in all areas where predator management strategies are in place, i.e. diversionary feeding and lethal fox and crow control.
- Data on the exact location and timing of diversionary feeding (grid references of feeding sites) is available and should be collected annually. Pine marten distribution surveys have begun, though it was noted density variation will be more useful than baseline presence.

Fence removal and marking

- There is a need to extend datasets historically, to understand where fences have been in the past as well as today. A temporal and spatial reconstruction of fence

density would help to capture the impact that fences have had on the capercaillie population and quantify the impacts of marking versus removal.

- The *Urgent Conservation Management for Scottish Capercaillie* project which involved a lot of work marking and removing fencing, may provide access to historical fence datasets. Aerial photography may also be useful for building temporal coverage. It was suggested that all possible data sources on fences be listed, with opportunities explored to integrate and reconstruct these into historical layers. While gaps in historical data remain, forward projections can still be made under plausible assumptions about population impacts, but the more past data we can reconstruct, the more robustly we can model fence removal impacts.
- A fence inventory, which includes current and recorded fences in core capercaillie areas will be included in CaperMap and accessible to the group.
- For fences, the focus is on spatially explicit management - removing particular fences within 5km of specific lek sites, so the Integrated Capercaillie Population Model needs to run spatially explicit projection scenarios. Currently, fence impacts are being assessed at a broad level in terms of mortality, but we need to georeference which leks are directly affected by fence removals so that this can be integrated into the modelling.
- Concerns were raised about measuring net reductions in fencing through deer control, since this is not directly influenced by the Capercaillie Emergency Plan. It was suggested that the Research and Monitoring Plan should flag this interdependency and others including data flows and capacity to collect data.

Reducing disturbance

- There is ongoing interest in understanding how far capercaillie are displaced by disturbance, how this varies with disturbance intensity, and what the cumulative impacts are. Six national surveys provide standardised baseline distribution data, but there are concerns about whether the survey's temporal scale can capture the nuanced impacts of interventions, especially given population fluctuations linked to vole cycles.
- ActiveXchange data looks promising, offering anonymised smartphone GPS data at 100m² resolution, including intensity of human use - something previously missing. This could be linked with national survey data to assess disturbance impacts. There may also be a social science gap in the group's expertise to inform management responses.
- Data alignment remains a challenge - brood data from counts with dogs declines toward 2020, while recreational disturbance data increases from 2022, leaving limited overlap. Expanding the camera trap network to capture birds and broods may help. Overall, there is a need for more evidence on the impacts of interventions to reduce disturbance, making site-specific monitoring critical.

- There is potential to combine ActiveXchange and Strava data. Questions remain about how representative Strava users are of the wider visitor population. The Cairngorms Connect camera network also gathers recreational data, with cameras placed both on and off-path. Data from this monitoring is available at a daily, path level resolution.

Capercaillie monitoring

- Historical productivity data from brood counts with dogs is only consistently available at a forest scale. This limits its usefulness when multiple interventions occur in different parts of the same forest. If cameras are used to collect productivity data, coverage must be consistent across sites to ensure comparability.
- The next national survey (2027/28) will measure capercaillie population change at a wider scale, complementing site-specific datasets. The group has an important role in recognising and supporting the value of the national survey as part of the broader evidence base. Linking the survey with the Integrated Capercaillie Population Model has already improved confidence levels.
- Findings from the recent Gamebird Release Report, commissioned by the Park Authority and undertaken by GWCT, may provide insights for the action in the Emergency Plan to develop a programme of infectious disease surveillance for capercaillie and sympatric Galliformes.

Reinforcement feasibility

- A good outcome could be to ensure that all elements required for a translocation licence application have been assessed for feasibility**.**

CaperMap

- The group will have independent access to CaperMap. As more datasets feed in, the tool will provide an interactive, interrogable geodatabase, allowing data to be aggregated at different scales and highlighting opportunities for higher-resolution monitoring. Members are encouraged to contribute their capercaillie data to maximise its value. Ideally, CaperMap should serve as a single repository where data from separate projects can be combined to create a more powerful tool. CaperMap also has the potential to serve as a public-facing and reporting tool, helping stakeholders visualise progress through the Capercaillie Emergency Plan.
- Currently within CaperMap, capercaillie distribution data is not statistically linked to habitat data to predict density or occurrence probability, and habitat suitability modelling remains a gap. RSPB aims to address this with a proposed project to be completed by 2027, subject to funding.

Actions:

1. Alice to share more information on the current work to monitor forest stand structures.
2. Chris to liaise with Amber (PhD student) to share more detail on the Cairngorms Connect LiDAR dataset available for potential use.
3. Chris to share details of a survey exploring what messaging would motivate people to adopt pro-environmental behaviours to benefit capercaillie.
4. Carolyn to update the draft Research and Monitoring Plan in response to the key points raised and circulate the draft for comment.