Unit 35: Understanding Ecology of Game Species

Unit code: K/600/9417

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

This unit aims to introduce learners to the skills and knowledge in game species ecology and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

Unit introduction

This unit will enable learners to develop knowledge and skills in the identification, ecology and population assessment of wild game and in the management of their habitats. Deer species are not included within the unit, as these are covered in *Unit: Ecology of Deer Species*. Health, safety and environmental issues will be stressed throughout delivery of this unit.

Learning outcome 1 looks at the identification and preferred habitats of species legitimately shot with shotguns for sport, as listed in the relevant acts of Parliament.

In learning outcome 2 learners will investigate the life cycles of specified game species, how they use their habitats and their interaction with other species that affect them.

Learning outcome 3 investigates the main habitat requirements that wild game species need to survive, ie nesting cover, brood cover, winter cover and food. It is a practical learning outcome, which should be based around wild game habitats and the methods used to restore, enhance or create them.

The commonly used methods of calculating wild game populations using estimation techniques are covered in learning outcome 4. Being able to estimate population size is essential for all aspects of game management.

Learning outcomes

On completion of this unit a learner should:

1 Be able to identify game species found in the UK

2 Understand the ecology and associated behaviour of game species

3 Be able to manage habitats to encourage wild game populations

4 Know techniques used to determine game population size.

Unit content

1 Be able to identify game species found in the UK

Game species that are shot with shotguns for sport legitimately: listed as game in relevant legislation eg Game Act 1831, species listed in Schedule 2 of the Wildlife and Countryside Act 1981

Identification: features identifying species, age and sex eg plumage, body shape, posture, calls, behaviour; location and habitat type; variations within species; use of identification keys

2 Understand the ecology and associated behaviour of game species

Annual life cycle: breeding ecology; breeding and nesting sites; juvenile requirements; territories; home ranges; migration patterns; mating behaviour; feed requirements throughout the year; habitat use throughout the year; examples of hybridisation of game species eg partridge, pheasant

Interaction with other species: effects of pests, predators and parasites

3 Be able to manage habitats to encourage wild game populations

Habitat management: methods used to provide breeding cover, brood cover and winter cover; management techniques eg hedge coppicing, planting and laying, woodland coppicing, thinning and planting, heather burning and cutting, grass margins, cover crops, beetle banks, conservation headlands; development and use of habitat management schemes; tools and equipment (types, safe use, servicing, maintenance); health and safety; personal protective equipment (PPE); relevant current legislation and codes of practice; animal welfare

4 Know techniques used to determine game population size

Techniques: direct methods eg pair counts, brood counts; equipment; recording systems; information required and the calculations used to estimate the population; possible causes of error eg double counts, misidentification, unknown individuals; health and safety; animal welfare

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P1 identify game species found in the UK	**M1** identify the sex and age of game species at different times of year.	
P2 describe features of game birds used to identify their sex		
P3 describe features of game birds used to identify age		
P4 explain the annual life cycle of game birds	**M2** explain how food and habitat requirements change throughout the year for selected game species	**D1** discuss the interaction and effects of pests, predators and parasites on selected game species
P5 discuss the breeding ecology of game birds		
P6 compare the habitat requirements of different game species [CT, SM]		
P7 assess the changes in habitat requirements throughout the year		
P8 select equipment required to carry out game habitat management		
P9 carry out practical habitat management to improve or create habitats for game birds [TW]	**M3** select and explain the methods used to restore, improve or create a game habitat to meet given objectives	
P10 explain how habitat is managed to optimise sporting and nature conservation value		

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P11 describe the methods commonly used to survey wild game populations	**M4** calculate the population of a selected game species in a given area using one estimation technique.	**D2** produce a management plan for a selected game species.
P12 list equipment required to carry out a wild game survey		
P13 specify the information and calculations required to estimate a game population.		

PLTS: This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessment, visits to suitable collections and will link to work experience placements.

Learning outcome 1 covers the identification of all the game species that are shot with shotguns for sport legitimately and the methods used to distinguish game species by age and sex. This is likely to be delivered by formal lectures, discussions, site visits and independent learner research. Learners will also look at the types of habitat where game species are most likely to be found throughout the year.

Ideally, identification techniques should be taught using live animals. However, if these are not available then tutors should use high quality audio-visual materials or preserved specimens. It would also be beneficial for learners to visit habitats, for example wildfowl collections such as a Wildfowl and Wetlands Trust reserve.

Learning outcome 2 investigates the ecology and associated behaviour of game species, including their life cycles and typical breeding behaviour. This is likely to be delivered by formal lectures, discussion and independent learner research. Delivery of learning outcome 2 could be linked to that for learning outcome 1. Visiting expert speakers could add to the relevance of the subject. For example, a game conservancy adviser could talk about their work and the current research being carried out.

Learning outcome 3 looks at the methods and techniques used to manage game habitats. This is likely to be delivered through site visits and supervised habitat practicals supported by formal lectures, discussion and independent learner research.

Learning outcome 4 covers the use of estimation techniques to calculate the size of game populations in the wild. Delivery techniques should be varied and can be linked to the delivery of learning outcomes 1 and 2. Delivery is likely to be through formal lectures, discussion, site visits, practicals and independent learner research. Ideally, tutors will use real-life situations to illustrate the techniques. If this is not possible then the use of case study materials is acceptable. Visiting expert speakers could add to the relevance of the subject. For example, a game conservancy adviser or game manager could talk about the estimation techniques that they use within their research or management work.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction and overview of the unit.
Game species identification and ecology – pheasant, partridges, red grouse, other grouse species, geese, ducks, waders.
Assignment 1: Game Species Identification Test (P1, P2, P3, M1)
Habitat requirements of game birds and habitat management techniques used to meet these.
Assignment 2 Managing Habitats for Game Birds (P4, P5, P6, P7, P8, P9, P10, M2, D1)

Topic and suggested assignments/activities and/assessment
Census techniques used to estimate population size. Theory behind each technique plus the practical application of the commoner techniques.
Assignment 3 Game Bird Census Techniques (P11, P12, P13, M4)
Management planning, putting a plan together, case studies of local estates that are actively encouraging wild game birds.
Assignment 4: Management Plan for Wild Game Birds (D2)
Unit review.

Assessment

For P1, they must identify game species found in the UK. Evidence for this could take the form of an annotated field notebook, identification exercises, a pictorial presentation with notes (possibly using appropriate software or an overhead projector) or an annotated poster.

P2 and P3 require learners to provide a description of game species features to identify sex and age. As a minimum learners must cover two different species. Evidence for this could take the same format as for P1.

For P4, P5, P6 and P7, learners must provide information on the life cycle, breeding ecology and preferred habitats of selected game species. Tutors should identify the species or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. As a minimum, learners should provide evidence covering three game species. Evidence for this could take the same format as for P1 and be linked to M2 and D1.

P8, P9 and P10 require learners to carry out and provide information on game habitat management. These could be assessed directly by the tutor during practical activities. If this format is used then suitable evidence from guided activities would be detailed observation records completed by learners and the tutor. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the tutor.

P11, P12 and P13 require learners to provide information on the methods commonly used to survey wild game populations. Evidence for this could take the form of a pictorial presentation with notes (possibly using appropriate software or an overhead projector), an annotated poster or a project.

For M1, learners are required to identify the sex and age of game species at different times of year. Tutors should specify the species or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. As a minimum, learners should provide evidence covering three game species. Evidence could take the same format as for P1 and could be linked to that assessment.

For M2, learners must explain how food and habitat requirements change throughout the year for selected game species. Tutors should identify the game species or agree them through discussion with learners. Learners must provide evidence for a minimum of three species. Evidence could take the same format as for P2 and could be linked to that assessment.

M3 requires learners to select and explain the methods used to restore, improve or create a game habitat to meet given objectives. Tutors should identify the objectives which are likely to be dictated by the needs of the sites to which they have access to. M3 could be assessed directly by the tutor during practical activities possibly being undertaken while providing evidence for P3. If this format is used then suitable evidence from guided activities would be detailed observation records completed by learners and the tutor. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the

tutor. Alternatively, evidence could be provided in a written format, such as a pictorial presentation with notes (possibly using appropriate software or an overhead projector).

M4 requires learners to calculate the population of a selected game species in a given area using one estimation technique. Tutors should identify the game species and estimation technique or agree them through discussion with learners. This could be linked to a practical exercise where learners record the data and then analyse it to establish the population, or it could be a classroom-based exercise where learners analyse a set of data for a given area. Tutors must, however, ensure the fairness of assessment for all learners. Evidence should be in a written format.

D1 requires learners to discuss the interaction and effects of pests, predators and parasites on selected game species. Tutors should identify the species or agree them through discussion with learners. Learners must provide evidence for a minimum of three game species. Where possible, to ensure fairness of assessment the complexity of the tasks should be the same for all learners. The evidence for this grading criterion could take the same form as and be linked to M2.

For D2, learners are required to produce a management plan for a selected game species. Tutors should identify the species or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. Evidence could be in the form of a completed plan.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, M1	Game Species Identification Test	Learners will be shown a range of high quality images of UK game species. They will have to correctly identify age and sex of the species.	Class-based identification test.
P4, P5, P6, P7, P8, P9, P10, M2, D1	Managing Habitats for Game Birds	Learners undertake a practical habitat management task and then produce a report that describes the annual life cycle of two species of game bird, including seasonal changes in their requirements, and link this to the habitats they have created.	Practical observation and assessment Verbal questioning and written report.
P11, P12, P13, M4	Game Bird Census Techniques	Undertake a spring pair count and an autumn brood count for one species of game bird. Then produce a report that describes the methods used and indicates the results of each survey.	Practical observation and written report.
D2	Management Plan for Wild Game Birds	Produce a detailed plan for a sporting estate that indicates how it should be managed in order to produce wild game birds of a given species.	Written report.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit has particular links with:

Level 2	Level 3
Introduction to Game Management	Understanding Principles of Game Management
	Undertake Gamebird Production

Essential resources

Supervised access to sites where practical habitat management or creation can take place is essential to the delivery and assessment of this unit. Relevant tools, equipment, materials and PPE are also essential requirements.

Learners will need access to live, preserved or high quality audio-visual presentations of game species for identification purposes.

Tutors delivering this unit should be competent and experienced wild game managers.

Indicative reading for learners

Textbooks

Cooper J and Cooper M – *Captive Birds in Health and Disease: Gamebirds, Raptors, Parrots, Waterfowl and Other Species* (Hancock House Publishers, 2004) ISBN 0888395388

Hudson P – *Ecology and Management of Game Birds* (Blackwell Science, 1988) ISBN 0632018348

Hudson P – *Grouse in Space and Time: The Population Biology of a Managed Gamebird* (The Game Conservancy Trust, 1992) ISBN 0950013013

Johnsgard P – *Pheasants of the World: Biology and Natural History, Second Edition* (Quiller Publishing, 1999) ISBN 1840371293

Marchingham J – *The Natural History of Game* (Boyell and Brewer, 1984) ISBN 0851151965

Martin B – *Sporting Birds of the British Isles* (David and Charles, 1984) ISBN 0715384473

McKelvie C – *Snipe and Woodcock: Sport and Conservation* (Swan-Hill Press, 1996) ISBN 1853107131

Potts G – *The Partridge: Pesticides, Predation and Conservation* (Blackwell Science, 1987) ISBN 0003832988

Robertson P – *The Pheasant* (Swan Hill Press, 1997) ISBN 1853105643

Tapper S – *Game Heritage: An Ecological Review from Shooting and Gamekeeping Records* (Game Conservancy, 1992) ISBN 0950013021

Websites

www.birdguides.com	BirdGuides
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.fwag.org.uk	Farming and Wildlife Advisory Group
www.gwct.org.uk	The Game and Wildlife Conservation Trust
www.lantra.co.uk	Sector Skills Council for the Environmental and Land-based Sectors
www.pheasant.org.uk	The World Pheasant Association
www.rspb.org.uk	The Royal Society for the Protection of Birds
www.wwt.org.uk	Wildfowl and Wetlands Trust

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Creative thinkers	devising habitat management plans for given sites to meet the requirements of game birds
Team workers	practically managing habitats for game birds
Self-managers	producing a management plan for wild game birds.

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	researching the ecology of selected game birds
Reflective learners	comparing practical habitat management techniques to meet the requirements of game birds
Effective participators	discussing suitable habitat management techniques for a given site.

Functional Skills – Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	designing a plan for a sporting estate
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	
Follow and understand the need for safety and security practices	
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	
Identify the situation or problem and the mathematical methods needed to tackle it	analysing results of surveys
Select and apply a range of skills to find solutions	estimating population size
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Draw conclusions and provide mathematical justifications	analysing results of surveys
English	
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing a report on the annual life cycles of game birds producing a management plan for wild game birds.