Australian Government

Department of Education, Employment and Workplace Relations

MSL975015A Prepare animal and plant material for display

Revision Number: 1

MSL975015A Prepare animal and plant material for display

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the ability to perform a range of techniques to collect and preserve animals and plant material for both public and scientific research display. Personnel are required to assist clients to clarify their display requirements, select the most appropriate collection and preservation procedures and display configuration and then assemble and conserve the display items. The unit does not cover techniques and procedures for handling vertebrates that are subject to national and state/territory animal care and ethics regulations.

Application of the Unit

Application of the unit	This unit of competency is applicable to technical assistants and technical officers in research and teaching institutions, museums, herbariums, commercial taxidermy, forestry, zoos and fauna park industry sectors. This unit of competency is relevant to technicians who may work individually or as part of a team. The enterprise will need to equip its personnel with relevant animal handling skills should they be required. Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These can be found at the end of this unit of competency under the section 'This competency in practice'.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		
	MSL974006A	*Perform biological procedures*
	MSL973007A	*Perform microscopic examination*
	MSL973004A	*Perform aseptic techniques*

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm the requirements of the display and plan the work	1.1. Clarify the purpose and design of the display in consultation with other staff 1.2. Determine suitable methods of collection, preservation and display in order to meet the display requirements
2. Work safely according to the legal and regulatory framework	2.1. Ensure work practices and personal actions conform to all relevant legislation, regulations, codes and guidelines 2.2. Identify hazards and enterprise control measures associated with the specimens, samples, collection and preservation methods, reagents and equipment 2.3. Select, fit and use personal protective clothing and safety equipment 2.4. Address hazards and incidents as they arise 2.5. Ensure the safe disposal of biohazardous materials and other wastes
3. Collect plants and animal material	3.1. Assemble equipment required for collection and preservation 3.2. Collect specimens to meet display requirements 3.3. Check identification of specimens and assess their suitability for the display 3.4. Label specimens and accurately record data to ensure traceability of specimen from the source through to the final display 3.5. Store specimens during transportation to ensure it retains the required characteristics
4. Preserve plant and animal material	4.1. Confirm the identification of specimens and suitability for the purpose 4.2. Examine the specimens and record data 4.3. Take samples from the specimens and prepare them for preservation 4.4. Preserve the specimens using enterprise procedures
5. Display plant and animal material	5.1. Ensure the specimen is conserved to minimise deterioration 5.2. Place the preserved specimen in the display to meet the display plan and security requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- complying with all legislative, regulatory and enterprise requirements
- selecting collection, preservation and display techniques to suit particular display requirements
- recognising, identifying and collecting suitable animal and plant specimens
- storing and transporting specimens safely while maintaining their wellbeing, viability and/or integrity
- preserving and preparing animal and plant specimens for a range of display purposes
- completing displays that meet client and security requirements
- keeping records to providing chain of custody of specimens and samples through collection, storage, preservation and display

Required knowledge

Required knowledge includes:

- enterprise processes and procedures for creation of displays
- classification/taxonomy/flora and fauna recognition and identification methods
- legislative limitations on collection of flora and fauna
- principles of fixation and preservation
- principles of a range of methods for preparing skeletal material
- relevant health, safety and environment requirements

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors should ensure that candidates can: • select appropriate collection, preservation and display techniques to suit particular display requirements • recognise, identify and collect suitable animal and plant specimens • store and transport specimens safely while maintaining their wellbeing, viability and/or integrity, as appropriate • comply with all legislative, regulatory and enterprise requirements • preserve and prepare animal and plant specimens for a range of display purposes • complete a variety of displays that meet client and security requirements (could be part of a team) • keep records to provide chain of custody of specimens and samples through collection, storage, preservation and display.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or simulated workplace environment. This unit of competency may be assessed with: • *MSL975017A Perform laboratory-based ecological techniques*. Resources may include: • standard laboratory equipped with appropriate equipment and reagents • enterprise procedures for the collection, storage, preservation, mounting and documentation of specimens and preparation of displays.
Method of assessment	The following assessment methods are suggested: • review of display plans prepared by the candidate (or as part of a team) • examination of animal and plant display material prepared by the candidate

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	• observation of the candidate collecting, preserving and mounting specimens • oral and written tests for relevant knowledge. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work like environment.
This competency in practice	Industry representatives have provided the case studies below to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. **Education** A laboratory technician at a university botany school is required to prepare display material for a practical class to study cycads. They look up the procedures manual and discuss the requirements of the class with the lecturing staff and then arrange to visit the botanic gardens and collect the required specimens with the curator. The specimens are identified, collected and labelled, transported back to the laboratory in water in a refrigerated van and displayed for the practical class to use the next day. **Museum** An exhibition project officer in a museum works in a team to design and create a display as part of an exhibition about spiders. It is decided that a display of live funnel web spiders in a perspex showcase would capture public interest. The project officer designs and makes the showcase taking note of the need to provide for the environmental, feeding and security requirements of the specimens, the safety and information needs of the public, and the display's visual appeal and accuracy of

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	the spider habitat. They liaise with a nearby reptile park to obtain the spiders for the duration of the display and prepare the necessary documentation.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used

Standards, **codes**, **procedures and/or enterprise requirements**	Standards, codes, procedures and/or enterprise requirements may include:
	• Australian and international standards, such as:
	  • AS 1940-2004 Storage and handling of flammable and combustible liquids
	  • AS 2252 Biological safety cabinets
	  • AS/NZS 2243 Set:2006 Safety in laboratories set
	  • AS/NZS 4452:1997 The storage and handling of toxic substances
	  • AS/NZS 4501 Set:2008 Occupational clothing set
	  • AS/NZS ISO 14000 Set:2005 Environmental management standards set
	  • HB 9-1994 Occupational personal protection
	• Australian Dangerous Goods Code
	• animal welfare legislation and codes of practice
	• Australian Quarantine and Inspection Service (AQIS) Import Guidelines
	• gene technology regulations
	• Guide to physical containment levels and facility types
	• National Code of Practice for the labelling of workplace substances (NOHSC:2012 (1994))
	• occupational health and safety (OHS) national standards and codes of practice
	• permits for wildlife capture and handling
	• principles of good laboratory practice (GLP)

RANGE STATEMENT	
Staff	Staff may include: • curator • conservator • design exhibition project officer • project manager
Requirements of a display plan	Requirements of a display plan may include: • purpose (public display or part of a collection for research purposes) • length of time (permanent or temporary) • accessibility (static or interactive) • type (diorama, live or preserved specimens and additions to existing showcase) • two- or three-dimensional • exclusion of pests • specific features of the specimen to be demonstrated • lighting that is sympathetic to the conservation of the specimen • security (particularly for valuable, vulnerable or irreplaceable specimens) • user friendliness for both visitors and maintenance staff
Collection	Collection may include: • collecting live specimens from the wild • accessing specimens from existing collections in the base or other institutions • netting, trapping and light traps • use of euthanasia techniques, such as shooting, stunning, anaesthetics, gases and chemicals
Hazards	Hazards may include: • electric shock • microbiological organisms and agents associated with soil, air, water, animal tissue and fluids • solar radiation, dust and noise • chemicals, such as preservatives and stains • sharps, broken glassware and hand tools • flammable liquids and gases • cryogenics, such as dry ice and liquid nitrogen

RANGE STATEMENT	
	• disturbance or interruption of services • slips, trips and falls • manual handling and working at heights • crushing, entanglement and cuts associated with moving machinery or falling objects • pedestrian and vehicular traffic • vehicle and boat handling
Hazard control measures	Hazard control measures may include: • ensuring access to service shut-off points • recognising and observing hazard warnings and safety signs • using material safety data sheets (MSDS) • labelling of samples, reagents, aliquoted samples and hazardous materials • handling and storage of all hazardous materials and equipment in accordance with labelling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning and decontaminating equipment and work areas regularly using recommended procedures • using personal protective equipment, such as hearing protection, sunscreen lotion, gloves, safety glasses, face guards, coveralls, gowns and safety boots • reporting abnormal emissions, discharges and airborne contaminants, such as noise, light, solids, liquids, water/waste water, gases, smoke, vapour, fumes, odour and particulates to appropriate personnel • following established procedures for handling animals
Identification	Identification may include: • collection access number • tags and labels on existing specimens • use of field guides, keys and taxonomic charts • collaboration with experts
Suitability of specimen	Suitability of specimen may include: • whole or part

RANGE STATEMENT	
	• sex, age and breeding condition • type and characteristics • level of preservation • whether dead or alive • inclusion of features for identification, such as flowers, fruit, roots and leaves

Data to be recorded	Data to be recorded may include:
	• collection information, such as location, time, date, collector, behaviour, environment, depth, altitude, weather and habitat
	• reference photographs of the environment in the field
	• reference drawings to characterise colour and shape
	• identification number, collection access number, collection database and catalogue details
	• ossification of bird skulls
	• characteristics of the specimen:
	  • standard measurements (mass, length and size)
	  • plumage characteristics (age, pattern and colour)
	  • flesh characteristics (skin tone, naked flesh texture and internal organs)
	  • sex
	• X-rays and scans
	• manual or electronic data

Samples	Samples may include: • DNA • tissue • bone fragments • stomach contents
Preparation for preservation	Preparation for preservation may include: • treatment of the specimen (dissection, mounting, pinning, use of backing boards, fixing, staining, colour retention, latex injection and vascular preservation) • preparation of the display (painting, making of wet boxes, choice of vessel and storage fluid,

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	planning of mould sections and lay up) • maceration of tissue from skeletons by sand, invertebrates, cold or warm water, enzymes, physical removal or chemical treatment
Preservation	Preservation may include: • temporary (freezing) • wet (whole mounts in formalin and tissue staining) • dry (freeze drying, air drying, pressing, taxidermy, including exhibition quality mounts, study skins, tanning and plastination techniques, such as dry mounting of seeds, bird skins, pin mounted invertebrates and pressing of plants) • skeletal (maceration, degreasing, bleaching, articulation and mounting or sectioning (e.g. whale skeletons)) • mould and cast (alignate, plaster, stone plaster, polyester, latex, silicone, Vinamould, gelatine, urethane elastomers, glass and carbon fibre (e.g. fish, amphibians and reptiles)) • embedding (encapsulation in clear plastic or resin, can be wet or dry techniques)
Detailing of specimens	Detailing of specimens may include: • cleaning • touch up • addition of false eyes
Conservation	Conservation involves minimisation of deterioration which can be caused by: • pests • light • humidity
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time

RANGE STATEMENT	
	• all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health

Unit Sector(s)

Unit sector	Testing

Competency field

Competency field	

Co-requisite units

Co-requisite units		