



Australian Government

Department of Education, Employment and Workplace Relations

SFIOBSV302B Collect reliable scientific data and samples

Release: 1

SFIOBSV302B Collect reliable scientific data and samples

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency involves the collection of a wide range of reliable scientific data and samples for fisheries management and scientific research purposes. Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking this unit.
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Application of the Unit

Application of the unit	This unit has application to observers collecting scientific data and samples related to fisheries management. All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>. Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for measurements and sampling	1.1. Purpose of collection is confirmed and explained to vessel crew. 1.2. Relevant sampling plans, procedures, materials and equipment are identified. 1.3. Required measurements, observations, samples and sampling frequencies are confirmed. 1.4. All measuring and sampling equipment is assembled, checked before use, and calibrated if necessary.
2. Conduct measurements and observations	2.1. Required sequence of measurements and observations is performed, according to sampling plan. 2.2. Equipment is operated safely according to manufacturer specifications. 2.3. Measurements and estimations are recorded legibly with the appropriate units, required precision and accuracy. 2.4. Atypical or out of specification data is recognised and explanatory notes are recorded. 2.5. Procedures or equipment problems that have led to atypical data are identified and rectified. 2.6. Measuring equipment is cleaned and stored and any wastes disposed of safely.
3. Obtain samples	3.1. Samples are collected ensuring that sample types and sampling conditions are in accordance with the sampling plan. 3.2. Samples are placed, preserved and stored in labelled containers to maintain security, integrity and traceability. 3.3. Atypical observations made during sampling are recognised and recorded. 3.4. Sampling tools are cleaned and stored and any wastes disposed of safely.
4. Report on data and samples	4.1. Feedback is provided to vessel crew at key stages of the data collection and sampling processes. 4.2. Measurements, observations and samples are validated for relevance and quality as soon as possible after collection. 4.3. Documentation of data and samples is completed promptly, checked for completeness and quality, and

ELEMENT	PERFORMANCE CRITERIA
	duplicated where appropriate. 4.4. End-of-cruise reports are prepared correctly. 4.5. Transportation and storage of samples are arranged. 4.6. Confidentiality of data collected from individual sources is respected.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- preparing and presenting data and samples for use in fisheries research
- routine cleaning, calibrating and maintenance of equipment
- presenting data and information in formats to support its application in fisheries research and management
- providing information to engage vessel crew in data collection and observation
- undertaking measurements and collecting samples and other data suitable for use in fisheries research and management.

Literacy skills used for:

- labelling and recording samples
- preparing end-of-cruise reports.

Numeracy skills used for:

- calibrating measuring equipment
- preparing and measuring samples according to sampling plans and conducting basic measurements, calculations and estimations to reflect fishing operations and environmental impacts.

Required knowledge

- environmental management procedures, regulations and codes of practice relevant to the specific sector within the seafood industry
- measurement techniques, including calibrating equipment
- principles of sampling including:
 - achieving consistency in sampling procedures

REQUIRED SKILLS AND KNOWLEDGE

- maintaining the identification or traceability of samples relative to their source, including labelling
- obtaining representative or randomised samples
- preserving the integrity of samples
- storing and transporting samples
- ESD principles and practices and its application to commercial fishing activity
- fisheries and unique aspects relevant to the fishery, sector or geographic area
- fisheries management methodologies and associated data requirements
- fisheries research methodologies and the application of scientific data to management processes
- species, product, work regime and typical equipment used.

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 evidence required to demonstrate competence in this unit	Assessment must confirm the ability to follow a sampling plan and associated procedures, to conduct measurements and to collect biological samples and other scientific data. Assessment must confirm the ability to: • apply quality data collection processes that yield outcomes that are valid and comparable to other data sources • complete data collection and sampling records • engage other vessel crew members to support data collection • identify atypical measurements and samples and suggest possible causes and effects • identify samples to ensure a link to their origins • obtain specified measurements, observations, estimations and representative samples • preserve or protect samples to minimise change or deterioration. Assessment must confirm knowledge of: • measuring techniques • relevant procedures for planning, designing, conducting, recording and reporting measurements and samples taken • sampling methodologies • use of measuring and sampling equipment • typical and likely atypical occurrences.
Context of and specific resources for assessment	Assessment is to be conducted at the workplace or in a simulated work environment. Resources may include:

EVIDENCE GUIDE	
	• equipment maintenance schedules and procedures • relevant documentation, such as: • standard operating procedures for sampling and data collection • sampling and data collection plans • cruise procedures and protocols for observers • selection of sampling equipment and recording sheets.
Method of assessment	The following assessment methods are suggested: • examples of workplace recording and reporting completed by the candidate • observation of the candidate while conducting onboard observations • practical exercises, including the design and conduct of measurement and sampling processes • third-party reports from team leaders, cruise personnel, users of the marine environment and other relevant personnel • written or oral short-answer testing to assess underpinning knowledge.
Guidance information for assessment	This unit may be assessed holistically with other units in the Observer Skill Set: • SFIOBSV301B Monitor and record fishing operations • SFIOBSV303B Collect routine fishery management data • SFIOBSV304B Analyse and report onboard observations.

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.

RANGE STATEMENT	
<i>Relevant government regulations, licensing and other compliance requirements</i> are followed including:	• biodiversity and genetically modified organisms • biosecurity, translocation and quarantine • Australian Quarantine Inspection Service (AQIS) and other import requirements • business or workplace operations, policies and practices • correct marketing names and labelling • ESD principles, environmental hazard identification, risk assessment and control • fisheries or aquaculture regulations, permits and licences • health and welfare of aquatic animals • Indigenous land rights and cultural activities, including fishing by traditional methods • maritime and occupational diving operations, safety at sea and pollution control • OHS hazard identification, risk assessment and control
<i>OHS guidelines</i> may include:	• appropriate workplace provision of first aid kits and fire extinguishers • codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector • enterprise-specific OHS procedures, policies or standards • hazard and risk assessment of workplace, maintenance activities and control measures • safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances • safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace • the appropriate use, maintenance and storage of PPE.
<i>ESD principles</i> may include:	• applying animal welfare ethics and procedures • control of effluents, chemical residues, contaminants, wastes and pollution • maintaining biodiversity by sustainable fisheries or broodstock/seedstock collection

RANGE STATEMENT	
	• reducing energy use • improving energy efficiency • reducing emissions of greenhouse gases • reducing use of non-renewable resources • increasing use of renewable, recyclable and recoverable resources • undertaking environmental hazard identification, risk assessment and control.
PPE may include	• buoyancy vest or personal floatation device (PFD) • gloves, mitts or gauntlets, and protective hand and arm covering • insulated protective clothing for freezers or chillers and refrigeration units • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective outdoor clothing for tropical conditions • safety harness • sun protection (e.g. sun hat, sunscreen and sunglasses) • waterproof clothing (e.g. wet weather gear).
Equipment may include:	• calibrating equipment • callipers • computers, including laptops and software • data logging equipment and buoys • digital and polaroid cameras • electronic measuring devices • pens and pencils • preservatives • tagging equipment • sample storage materials and containers • scales • soft measuring boards • waterproof record sheets and labels.
Measurements and observations may include:	• environmental conditions: • bottom and surface water temperatures • bottom conditions • debris

RANGE STATEMENT

- oily substances
- pH
- water quality
- interrogation of data loggers
- location (latitude and longitude) and distance from significant port or landmark
- number and species of by-catch, including per shot and per day
- number and species of fish, including dead and undersized
- number and species of seabirds and marine mammals
- quantity of catch:
 - number
 - percentage of bin
 - weight
- retrieval of tags:
 - colour
 - damage
 - double tag
 - location
 - reproductive status
 - sex
 - size
- seabird activity:
 - distance from vessel
 - diving
 - hook ups
 - level of interest or disinterest
 - numbers
 - species
- sex of fish and gonad state
- size of catch:
 - eye-fork
 - eye-tail
 - fork length
 - snout to anus
 - standard length
- time and date

RANGE STATEMENT	
	• weather and sea conditions: • phase of moon • tides and currents • wave and swell height and direction • wind speed and direction • weight: • cleaned • fresh • with and without head.
<i>Samples</i> may include:	• 'dumb' and 'smart' tags • environmental conditions, including water and microscopic organisms • gonads • muscle samples for genetic analysis • samples of species: • whole animals for identification • hard or soft samples • otoliths • stomach contents.
<i>Estimations</i> may include:	• catch conversion factors for a variety of processing techniques, such as skin on/off, head on/off, fillets and square/diagonal cut • extrapolation of data to estimate catch from sample time to trawl time, and from sample number and weight to total catch • percentage of bin • time • whole catch.
<i>Procedures</i> may include:	• agency recording and reporting procedures • Australian and international standards • calibration and maintenance schedules • equipment manuals • OHS procedures • standard operating procedures (SOPs) • storage of samples, including preservation and freezing.
<i>Sampling conditions</i> may include:	• appropriate transportation methods • labelling information • monitoring of storage conditions, including temperature control

RANGE STATEMENT	
	- percentage of bin - random and stratified (time dependent, top/bottom) samples - spill to bin - use of appropriate containers - use of preservatives - wrapping and preparations for freezing to prevent burn.
<i>Atypical measurements and observations</i> may include:	- catch of sea birds and marine mammals - changed fishing practice, such as into wind, across wind and depth - fish kills and algal blooms - measurements outside expected ranges due to calibration errors or faulty equipment - unexpected species or by-catch - unusual biological features of catch (e.g. size, weight and age) - unusual environmental conditions.

Unit Sector(s)

Unit sector	Observer operations
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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