



Australian Government

Department of Education, Employment and Workplace Relations

SFIAQUA314A Support hatchery operations

Release: 1

SFIAQUA314A Support hatchery operations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency involves routine husbandry and handling of broodstock, larvae and juveniles on an aquaculture hatchery or ornamental facility. It covers using technical equipment appropriately, and involves operations, such as conditioning and spawning of stock. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	This unit has application to aquaculture hatcheries and ornamental facilities and involves <i>cultured or held stock</i>. This unit does not cover crocodiles nor does it cover the collection of gastropod or bivalve molluscs or other aquatic broodstock or seedstock from the sea by qualified divers. Live transport of broodstock or seedstock is covered by SFISTOR204A Prepare, pack and dispatch stock for live transport. It does not cover the production of micro-algae or live-feeds which is covered by SFIAQUA214B Produce algal or live-feed cultures and SFIAQUA311B Oversee production and maintain algal or live-feed cultures. Coordination of staff is covered by RTE3704A Coordinate worksite activities. 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. Collect and care for broodstock	1.1. Hatchery production schedule is interpreted and confirmed with senior personnel. 1.2. Labour and resource requirements for hatchery production are confirmed with senior personnel and arranged. 1.3. Risk factors that could affect the quality of the end cultured or held stock progeny are identified and plans made to minimise risk. 1.4. Broodstock structure or system is prepared to provide clean, disinfected and functional conditions for broodstock activities. 1.5. Selected broodstock are introduced into broodstock structure or system with minimal stress. 1.6. Both male and female broodstock are conditioned to induce maturation or breeding/spawning behaviour. 1.7. Broodstock to be spawned are identified and moved to spawning tanks and undergo spawning induction treatment. 1.8. Appropriate water quality requirements of broodstock are monitored and maintained.
2. Breed and raise progeny	2.1. Signs of imminent spawning are monitored and the environment controlled to ensure successful spawning. 2.2. Spawn is collected, washed and counted and quality assessment of eggs and sperm is undertaken followed by fertilisation of the eggs, if appropriate. 2.3. Post-spawning broodstock husbandry practices are undertaken, as appropriate. 2.4. Fertilised eggs are hatched and cared for according to biological requirements. 2.5. Rearing of subsequent progeny is monitored to ensure water quality and relevant environment needs are met by appropriate post-hatch rearing procedures.
3. Harvest and distribute progeny	3.1. Progeny are selected through quality assessment with senior personnel and harvested. 3.2. Progeny for on-farm facility distribution are graded, sorted and/or transported to new culture or holding structures. 3.3. Order requirements for off-farm facility distribution are noted, harvested and packed for external

ELEMENT	PERFORMANCE CRITERIA
	transport.
4. Complete breeding clean up activities	4.1. Clean up of work area, including repairs and storage of equipment, is completed and condition report prepared. 4.2. Relevant breeding data, observations or information are recorded legibly and accurately, and any out of range or unusual records are checked. 4.3. Compliance and other required reports are prepared and conveyed to senior personnel advising of the effectiveness of breeding, and recommendations made for improvements. 4.4. Options for improving efficiency through mechanisation or automation of process or activity, or use of specialised contract staff are researched and presented to senior personnel as potential improvements 4.5. Staff are given feedback on their work performance.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- communicating with senior personnel on production schedule, labour and resource requirements
- coordinating hatchery operations and staff
- efficiently carrying out care of broodstock, larvae and juveniles
- handling and moving broodstock safely
- identifying potential improvements
- manipulating culture environment, as appropriate
- performing routine health care
- providing feedback on performance to staff
- reporting orally and in writing on hatchery operations to senior personnel
- researching options for improvements.

Literacy skills used for:

REQUIRED SKILLS AND KNOWLEDGE

- labelling containers for shipment
- interpreting hatchery production schedule and order requirements
- recording information relating to hatchery operations
- writing reports to management on hatchery operations.

Numeracy skills used for:

- counting quantities of stock
- recording and interpreting data relating to water quality.

Required knowledge

- assessing options for mechanisation or automation of process or activity, including the use of specialised contract services
- cleaning and disinfection procedures and requirements for adequate disinfection
- clinical signs of ovulation and/or imminent spawning
- feed and other requirements of breeding stock and progeny
- other environmental factors or cues for reproductive behaviour
- preparation of broodstock and/or progeny for distribution or transport.

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.

Critical aspects for assessment evidence required to demonstrate competence in this unit

Assessment must confirm the ability to:

- collect and care for broodstock, breed and raise progeny and prepare them for distribution.
- read and interpret work procedures
- record relevant data according to workplace procedures.

Assessment must confirm knowledge of:

- breeding, nutritional, health and environmental requirements of broodstock and progeny.

Context of and specific resources for assessment

Assessment is to be conducted at the workplace or in a simulated work environment and should involve stock typically raised on aquaculture farms and hatcheries in the region.

Resources may include:

- broodstock or seedstock
- hatchery and equipment for caring for and raising progeny
- monitoring equipment
- staff to coordinate in a hatchery environment
- reference material (for research).

Method of assessment

The following assessment methods are suggested:

- case study analysis
- project (work or scenario based)
- research assignment
- role play
- submission of records
- written or oral short-answer testing.

Guidance information for assessment

This unit may be assessed holistically with other units within a qualification.

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.

Cultured or held stock may include:

- adults, broodstock (ready to breed), seedstock or stockers, eggs and sperm, fertilised eggs, larvae, post-larvae, seed, spat, hatchlings, yearlings, juveniles, fry, fingerlings, yearlings, smolt, sporophytes, seedlings and tissue cultures
- finfish, crustaceans, molluscs, aquatic reptiles, amphibians, polychaete and oligochaete worms, plankton, micro-algae, seaweed, aquatic plants, live rock, sponges and other aquatic invertebrates
- for human consumption (seafood), stockers for other farms, stockers for conservation or recreational fishing, display or companion animals (ornamentals), and other products, including pearls, skins, shells, eggs, chemicals and pigments.
- wild caught, hatchery or nursery reared.

Relevant government regulations, licensing and other compliance requirements may include:

- 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
- 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
- OHS hazard identification, risk assessment and

RANGE STATEMENT	
	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 • induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner • OHS training register • 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 • systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts • 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 • control of weeds, pests, predators and diseases, stock health maintenance • improving energy efficiency • increasing use of renewable, recyclable and recoverable resources • maintaining biodiversity by sustainable fisheries or broodstock/seedstock collection • minimising noise, dust, light or odour emissions • preventing live cultured or held organisms from escaping into environment • reducing emissions of greenhouse gases

RANGE STATEMENT	
	• reducing energy use • reducing use of non-renewable resources • undertaking environmental hazard identification, risk assessment and control • undertaking facility quarantine, biosecurity and translocation of livestock and genetic material • using and recycling water, and maintaining water quality
PPE may include:	• non-slip and waterproof boots (gumboots) or other safety footwear • protective outdoor clothing for tropical conditions • sun protection (e.g. sun hat, sunscreen and sunglasses) • uniforms or overalls • waterproof clothing (e.g. wet weather gear and waders).
Quality may include:	• disease history • health and activity status • number, density, weight and volume • physical appearance, colour and appendages/fins • previous reproductive performance • sex • size • spawning condition and maturation index • wild caught or cultured stock.
Broodstock activities may include:	• acclimatisation • cleaning or disinfection of culture or holding equipment • condition or maturation activities • holding or recovery • monitoring or treating health • quarantine • spawning induction • staging or assessing maturation and cannulation.
Spawning induction treatment may include:	• chemical • environmental, temperature, light, lunar cycle and atmospheric pressure • hormonal

RANGE STATEMENT	
	• special feed requirements.
<i>Water quality requirements of broodstock</i> may include:	• absence/presence of chemicals • dissolved oxygen • hardness • light • pH • salinity • temperature • water flow and pressure/depth.
<i>Quality assessment</i> may include:	• behaviour and activity • colour and shape • density • health, disease and/or prophylactic treatment history • number • uniformity.
<i>Progeny</i> may include:	• amphibian eggs, larvae or juveniles • aquatic plants or micro-algal cells, buds, seedlings and sporophytes • cell cultures • crustacean post-larvae or juveniles • finfish eyed eggs, fingerlings, fry, smolts or juveniles • molluscan larvae, seed, spat or juveniles • polyp colonies • reptile eggs, hatchlings or juveniles.
<i>Post-hatch rearing</i> procedures:	• changing or treating water • counting density • culling of dead or non-viable individuals • feeding or nutriment addition • grading or sorting, and culling • maintaining culture or holding environment within accepted parameters • sampling • taking visual observations • transferring to clean or larger culture structure • treating by medication or prophylaxis • waste collection and disposal • weighing and measuring.

Unit Sector(s)

Unit sector	Aquaculture operations
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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