



Proposed Conditions for Live Sheep Exports during September and October 2019

Submission from the
Australian Veterinary Association Ltd



The Australian Veterinary Association (AVA) response to: *Proposed Conditions for Live Sheep Exports to the Middle East during September and October 2019*

About us

The Australian Veterinary Association (AVA) is the national organisation representing veterinarians in Australia. Our 9,500 members come from all fields within the veterinary profession, including clinical practice, government, industry, research and teaching.

This submission is one in a series of responses by the AVA to the review of the Australian Standards for the Export of Livestock (ASEL) and the review of the Heat Stress Risk Assessment (Hotstuff) model undertaken by the Commonwealth Government during 2018 and 2019.

Executive Summary

1. The AVA supports the requirement for livestock ships to be equipped with automated data logging equipment to record wet bulb temperatures (WBT) from the resumption of trade, and for that data to be reported to the department. The AVA stresses that WBT must be recorded in a range of locations on each deck and continuously throughout the day and night in order to capture accurate WBT information.

The AVA emphasises the need for daily and end of voyage (EOV) reports to be analysed by veterinary epidemiologists, and used to optimise shipping of livestock across the Equator and to/through the Middle East.

2. The AVA does not support option 1, 2 or 3 included in the Department of Agriculture's options paper. In previous submissions, the AVA has stated:

Irrespective of stocking density, thermoregulatory physiology indicates that sheep on live export voyages to the Middle East during May to October will remain susceptible to heat stress and die due to the expected extreme climatic conditions during this time. Accordingly, voyages carrying live sheep to the Middle East during May to October cannot be recommended.¹

The AVA maintains this position. The AVA refers the department back to the previous AVA submissions and the data on which this statement was based, as well as the following discussion.

¹ Source: <https://www.ava.com.au/policy-advocacy/advocacy/improving-animal-welfare/>

Comment on decisions for September and October

September

Sheep should not be commencing any voyages in September because:

1. **Mortalities:** Mortalities in sheep being exported to the Middle East are more likely to occur when voyages commence in the months of May to October, which corresponds to the hotter months and increasing relative humidity in the region (see Figure 5, [AVA submission May 2018](#)). The DAWR Mortality Investigation Reports corroborate that heat stress is a major cause of mortality in sheep during the months of May to October (see Appendix B, [AVA submission May 2018](#)).

With regards to September specifically, mortalities in sheep travelling to or through the Middle East have historically been greater in September than June, whether month of voyage commencement (Figure 1, below) or discharge (Figure 2, below) is examined.

2. **Morbidity:** Consistent with the above, heat stress in sheep being exported to the Middle East is more likely to occur in the months of May to October, corresponding to the hotter months and increasing relative humidity in the region.

There are similar or higher wet bulb temperatures in September than June in Persian Gulf (Doha, Dubai and Kuwait, Strait of Hormuz, Persian Gulf) and Red Sea destinations (Aqaba, Bab el Mandeb Strait, Red Sea); (see Figure 1 and Figures 2-5 in the DA Options Paper).

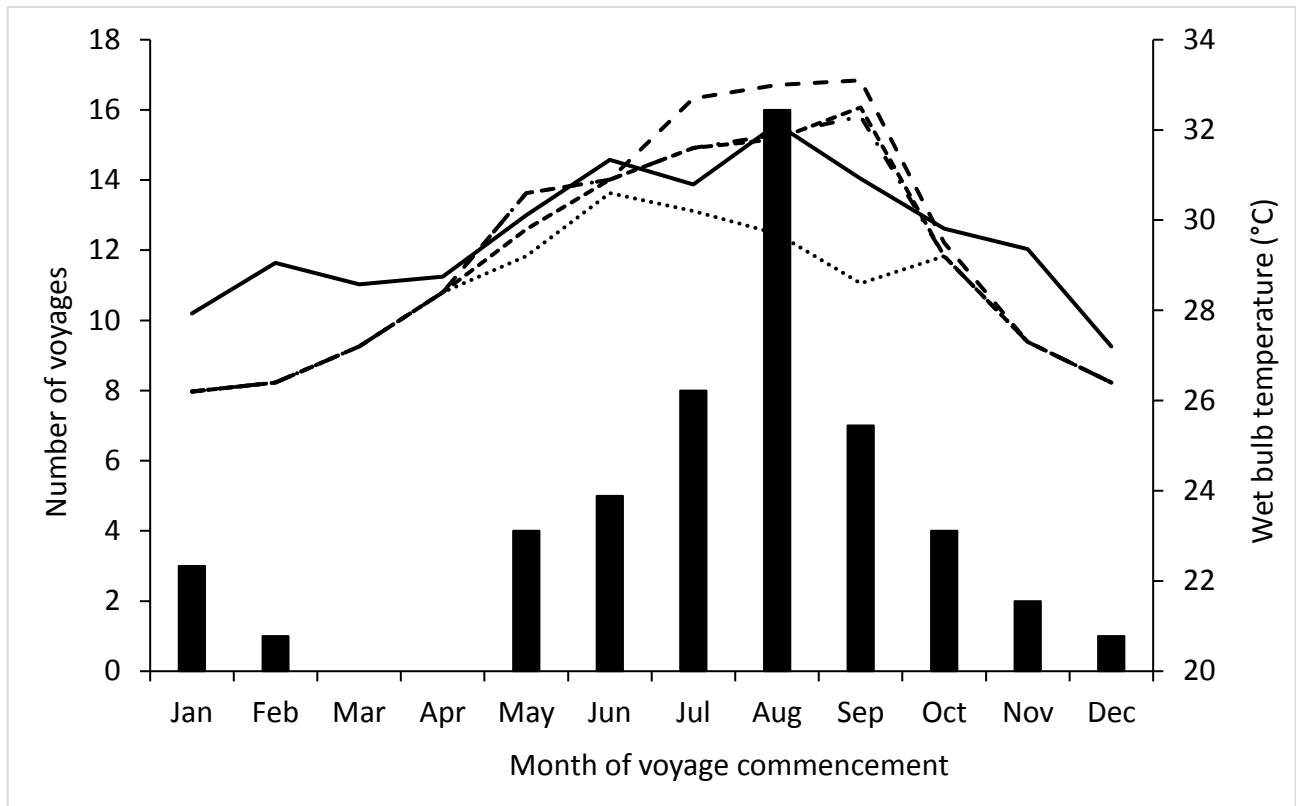


Figure 1. Number of voyages (n=51), by **month of voyage commencement**, when there were > 15,000 sheep on the ship from Australia to the Middle East between 2005 and 2017 and total sheep mortality rates were $\geq 1.5\%$ and voyage weather 98th percentile wet bulb temperatures for Kuwait (— • —), Doha Qatar (— — —), Dubai UAE (- - - -), Muscat Oman (••••) and Aqaba Jordan (—). (Source: <https://www.ava.com.au/policy-advocacy/advocacy/improving-animal-welfare/> and Stacey 2017b).

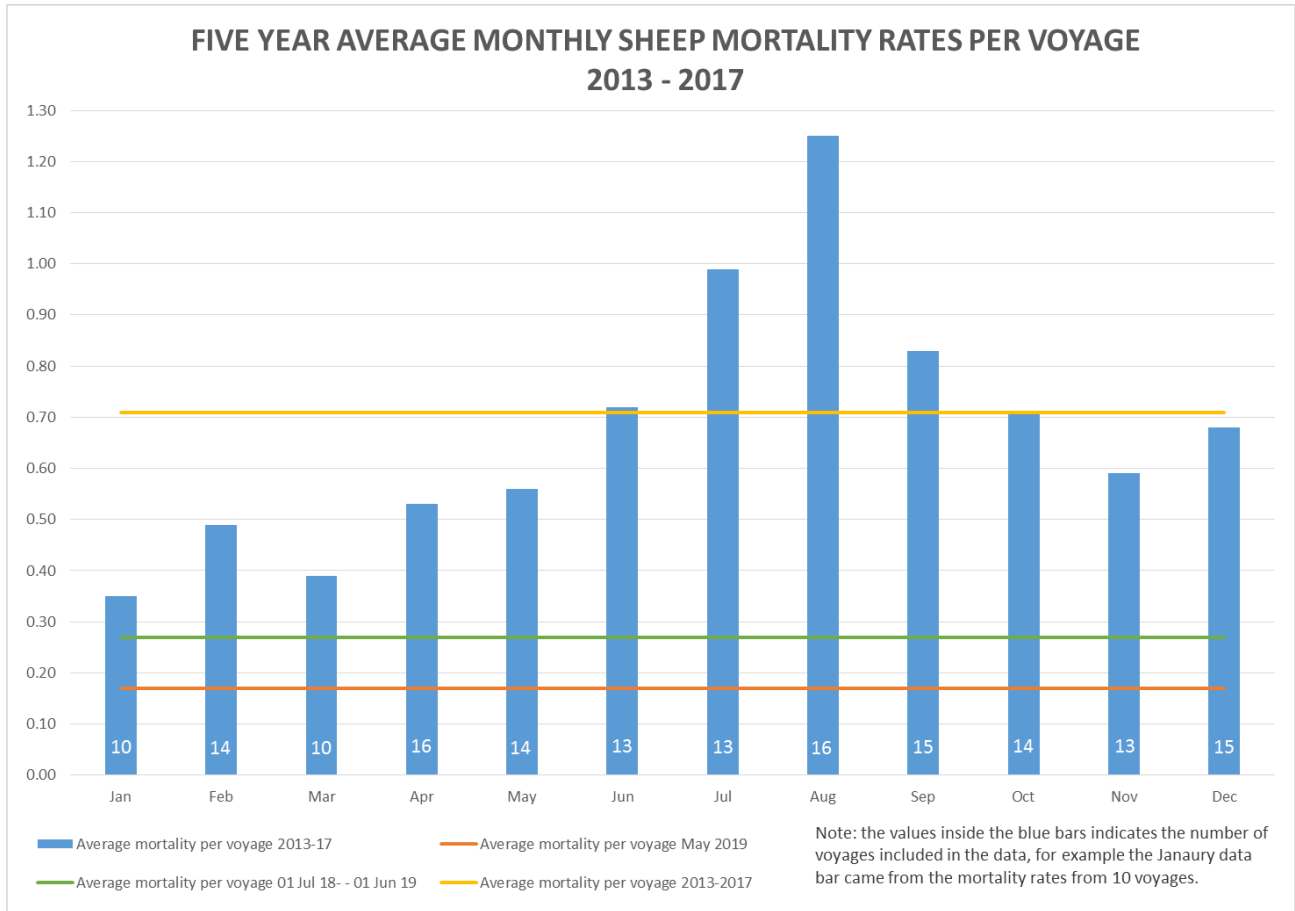


Figure 2. Five Year Average Monthly Sheep Mortality Rates Per Voyage. Data for the graph is drawn from the Reports to Parliament on Live Exports which reports *voyages by month of discharge* rather than date of departure. The graph represents 163 voyages from Australia to Middle-Eastern destinations as indicated by the values inside the blue bars.

(Source: DA Proposed Conditions for Live Sheep Exports to the Middle East during September and October 2019).

October

Based on available evidence, sheep should not be shipped to or through the Middle East in October.

1. **Mortalities:** In spite of wet bulb temperatures declining in October (Figure 1 and Figures 2-5 in DA paper), sheep mortality rates in October have historically been as high as the mortality rates for June (Figures 1 and 2).
2. **Morbidity:** the AVA refers the Department to an extract from our previous submission to the Heat Stress Risk Assessment Issues Paper in October 2018, reproduced below, which includes information on the heat stress risk during the October period. The full submission can be located at the following link:

<http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/export/live-animals/australian-veterinary-association.pdf>

Example: Voyage of the ship Al Shuwaikh, Fremantle to Kuwait, Qatar, UAE & Oman; 26 Sep-19 Oct 2017.

Table 1 and **Figure 3** are provided as an example of a voyage which occurred in September-October 2017 (FOI documents 2017/18-60), but which did not trigger a reportable mortality event.

Table 1 shows the Heat Stress Thresholds (HSTs) for sheep typical of those that underwent the journey, and Figure 3 illustrates how WBTs relate to HST during the voyage. This voyage falls into a category that would have historically been regarded as a low mortality shipment (0.84%), however it can be seen that lambs experienced prolonged and consistent exposure to WBTs above their heat stress thresholds over periods of many days (from days 5-16 and 19-24) and certain decks reached 29°C on days 6-16, 19, 20, 22-24 thus could have exposed adult sheep to their heat stress threshold (FOI documents 2017/18-60).

Sheep are exceedingly stoic, and although fewer animals may have died in this example, this does not negate the fact that the surviving animals would have suffered prolonged effects of heat stress throughout the journey. The Australian Veterinary Association, in submissions into the ASEL and HotStuff reviews, has described this prolonged and unrelenting exposure of sheep to heat stress as unacceptable.²³

² Source: <http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/export/live-animals/australian-veterinary-association.pdf>

³ Source: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwiD-8vywr_jAhWg8HMBHXNIAooQFjAAegQIBRAC&url=https%3A%2F%2Fwww.ava.com.au%2Fsiteassets%2Fadvocacy%2Fava-comment-on-asel-reformatted-standard.pdf&usg=AOvVaw2-q3TpjPTiG5HquR2yqytX

Table 1. Adjusted heat stress threshold (HST) wet bulb temperatures (WBT, °C) for examples of sheep that could have travelled from Fremantle (Zone 3) to Kuwait, Qatar, UAE and Oman and in September-October 2017. Data was derived from Heat Stress Risk Assessments performed prior to the voyage (FOI2017/18-60 Document 48). (F = factor applied in HotStuff model calculations, std = standard).

Age of Merino sheep, month & destination	Weight (kg)	F wt	Core temp (°C)	Fat score	F fat	Fleece length	F coat	Zone	Zone temp (°C)	F zone	Base HST (°C)	Tcore-HST (°C)	Adjusted HST WBT (°C)
Standard adult Merino	40	1.00	40	3	1	shorn	1	std	15	1.00	30.6	9.40	30.60
Adult, September, UAE	60	1.08	40	3	1	shorn	1	3	12.96	1.05	30.6	10.71	29.29
Standard lamb Merino	40	1.00	40	3	1	shorn	1	std	15	1.00	26.7	13.30	26.70
Lamb, September, UAE	37	0.98	40	2	0.95	shorn	1	3	12.96	1.05	26.7	13.07	26.93

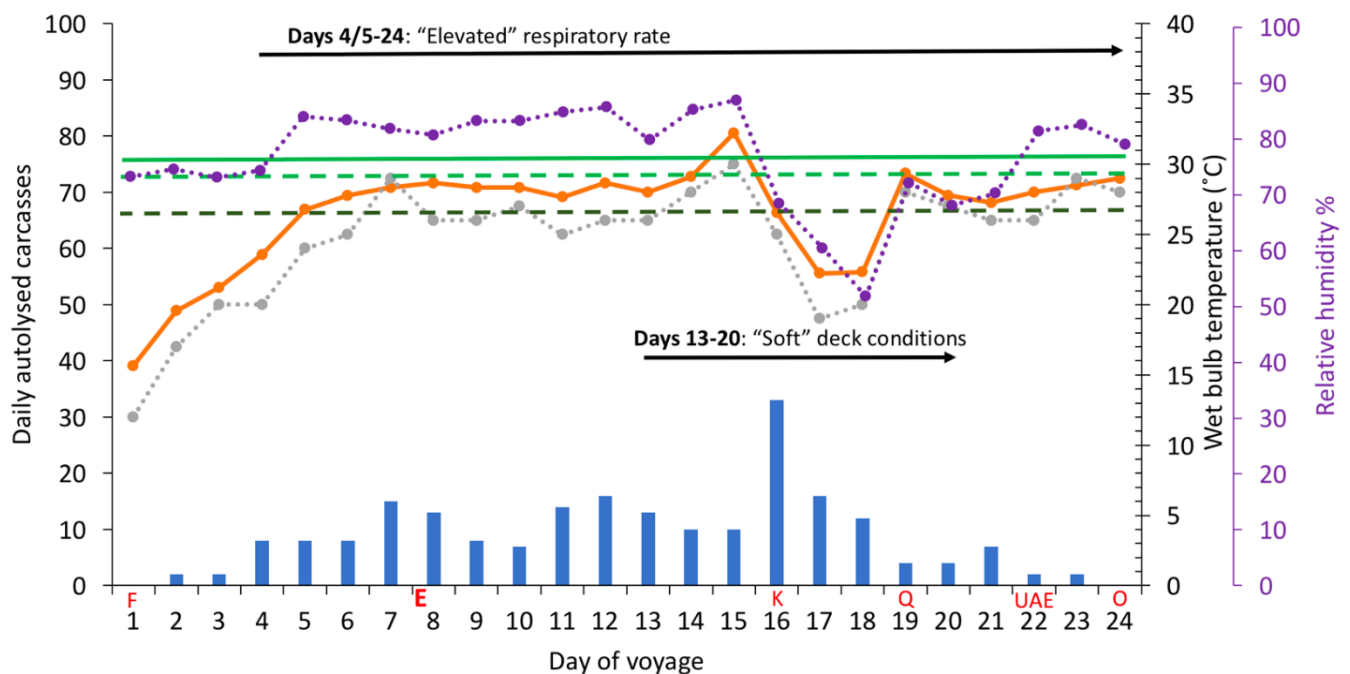


Figure 3. Mean mid-morning wet bulb temperature (WBT, °C) of all decks (solid orange line), ambient WBT (dotted grey line), mean deck relative humidity (dotted purple line) and daily sheep mortalities recorded as “autolysed” (blue columns) by day for a voyage on a ship with open and enclosed decks undertaken in September/October 2017 from Fremantle (F) to Kuwait (K), Qatar (Q), the United Arab Emirates (UAE) and Oman (O) where 659 (0.84%) of 78,057 sheep died, showing heat stress threshold (HST 30.6°C, solid green line) for a “standard” sheep (Stacey 2017b), and the heat stress thresholds for mature Merino sheep from Zone 3 (29.3°C; dashed green line) and Merino lambs from Zone 3 (26.9°C; dashed dark green line) according to assumptions described in Table . The ship crossed the Equator (E) on day 8. The horizontal black arrows and comments were obtained from the Shipboard Daily Reports of the voyage (FOI 2017/18-60 Documents 1-50). Any deaths occurring after 11 am are included in the following day’s mortalities.

In our March 2019 submission regarding proposals for the northern hemisphere summer⁴, the AVA proposed that observations made by veterinary Independent Observers (IOs) during May voyages could be used to assist in making a decision on the safety and welfare of sheep for transport to or through the Middle East in October, as the climatic conditions are similar in the months of May and October.

Data gathered during May 2018 voyages by veterinary IOs indicate that sheep suffered heat stress during this month, including reports of severe heat stress.⁵ These observations were made under the new conditions where space allocation had been increased by 17.5%.

The IO reports from voyages in May 2018 included frequent direct observations of objective indicators of moderate to severe heat stress, such as open-mouth panting, increased water intake and bogging of faecal pads, over consecutive days.

Open-mouthed panting is consistent with Heat Stress Threshold 3 according to the AVA and McCarthy categories of heat stress.

In our previous submissions, the AVA has recommended that sheep should never be exposed to HST 3, even for short periods.

An extract from the AVA [submission](#) into the HSRA Technical Panel Review appears below:

Until such time that there is peer-reviewed evidence to indicate otherwise, the AVA recommends that sheep should never be exposed to HST 3, even for short periods. Sheep should not be exposed to HST 2 for more than 3 consecutive days where there is inadequate diurnal temperature variation to allow for respiratory rates to return to resting range at night (thermoneutral zone). Otherwise, sheep can start dying within 3 days of being exposed to continuously hot, humid weather, as heat load is cumulative. This duration of permissible exposure should be further reduced in the presence of other welfare imposts and/or co-morbidities, as these will further reduce the animals' ability to cope.

One IO report indicated during a severe heat event, that even increasing space and zig-zagging the ship (to increase ventilation) had no effect on heat stress and mortalities.

The IO reports are in the public domain and can be found here:

<https://www.dropbox.com/sh/wpw09lh3hpi50cc/AACVs8ALDIMo4DYKhWIPssjla?dl=0>

No reports from the voyages undertaken in May 2019 have yet been made publicly available.

Given that climatic conditions in October are expected to be similar to May, the AVA's position remains that voyages during October cannot be recommended.

⁴ *Proposals and Conditions for Live Sheep Exports During the Northern Hemisphere Summer* submission to DAWR by the Australian Veterinary Association Ltd.

⁵ Source: <http://www.agriculture.gov.au/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/independent-observations-livestock-export-sea#2018>