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Engineering Design Services



ED3478 Marine Terrace Timber Jetty Repairs

Starling Mitigation Plan

03/09/2018

Report Prepared for:-

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Council*

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Prepared By JP

ED3478 Marine Terrace Timber Jetty Repairs

Starling Mitigation Plan

	Name	Signature	Position	Date of Issue	Version
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Approved					

Record of Previous Issue and Amendments

Version	Revision date	Summary of Changes

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Introduction

Ceredigion County Council is planning to repair a wooden jetty on Aberystwyth North beach (between SN 58255 81881 and SN 58201 81926) which has become infested and in places severely damaged by shipworm. It is also affected by scouring of the supports through tidal and wave action. The works are planned for winter 2018/19.

The work area is approximately 130m to the north-east of Aberystwyth pier, which hosts a large winter roost of common starling (*Sturnus vulgaris* subsp. *vulgaris*) underneath. The UK and European starling populations are declining; consequently, the UK conservation status is red and it is protected under the Wildlife and Countryside Act 1981 (as amended). The common starling is also on the Environment (Wales) Act Section 7 list of species of principal importance for biodiversity conservation in Wales. This roost is probably the second largest roost in the county (Liz Probert pers comm).

The proposed works will need to be carried out in a way that minimises disturbance when the starlings are preparing to roost or are roosting to ensure the starlings' continued use of the roost and avoid effects on their winter survival and future breeding.

Starling mitigation method statement

- No flood lighting will be used at any time as part of the works. All works will be carried out during daylight hours.
- Pile driving shall only be carried out between 9am or 30 minutes after sunrise (whichever is the earlier) and 3.30pm or 1 hour before sunset (whichever is the later). Pile driving operations may be extended beyond this window, provided the scheme ecologist is present on site and has confirmed acceptability of a time extension based on the day's weather condition and starling behaviour.

NB: The timing restrictions on pile driving have been based on the findings of observational studies of starlings at winter roosts: Wynne-Edwards (1929); Bray et al. (1975) and Brown (1946). Brown (1946) clearly found that dispersal times from the roost in the morning and assembly times at the roost in the afternoon in relation to sunrise and sunset times are not fixed in relation to sunrise and sunset times. Instead, starlings assemble later and disperse earlier (relatively) in mid-winter to extend the period of time available for foraging each day. The earliest assembly observed, relative to sunset, was 52 minutes before sunset in late February. The latest dispersal observed, relative to sunrise, was 21 minutes after sunrise.

Table 1. *Beginning and completion of assembly, relative to sunset, and duration*

	November			December				January		February			March	
	4	11	25	2	9	16	23	6	13	3	10	24	3	10
Beginning (min.)	-26	-16	-12	-8	-2	Sunset	-2	+1	-24	-25	-28	-52	-44	-34
Completion (min.)	+12	+6	+6	+16	+15	+17	+15	+18	+1	+10	+10	+7	+16	+18
Duration (min.)	38	22	18	24	17	17	17	17	25	35	38	59	60	52

- = before sunset; + = after sunset.

Table 2. *Duration of communal flight*

	November			December				January		February			March	
	4	11	25	2	9	16	23	6	13	3	10	24	3	10
Duration (min.)	19	12	7	10	8	5	2	3	11	3	4	18	22	32

Table 3. *Beginning and completion of dispersal, relative to sunrise and duration*

	25 Nov.	23 Dec.	20 Jan.	3 Feb.	3 Mar.	10 Mar.
Beginning (min.)	-17	-2	-12	-19	-8	-10
Completion (min.)	-1	+12	+11	+7	+19	+21
Duration (min.)	16	14	23	26	27	31

- = before sunrise; + = after sunrise.

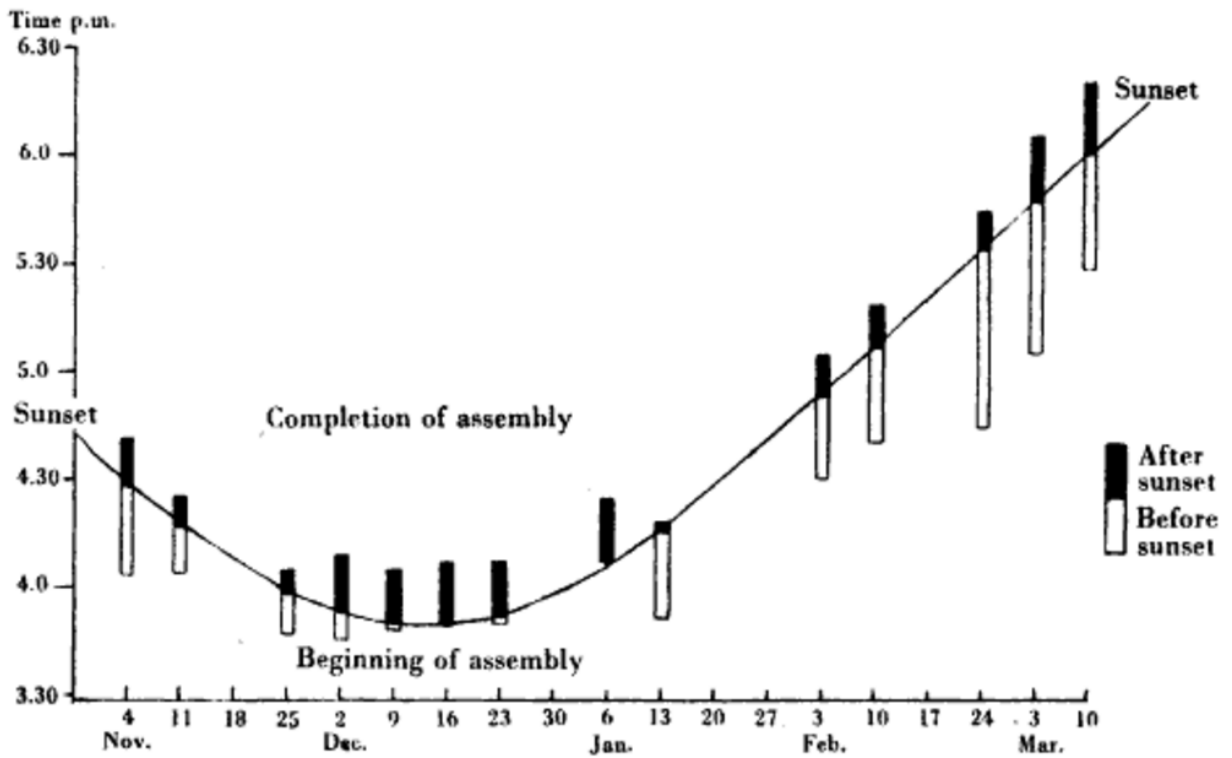


Fig. 2. Assembly.

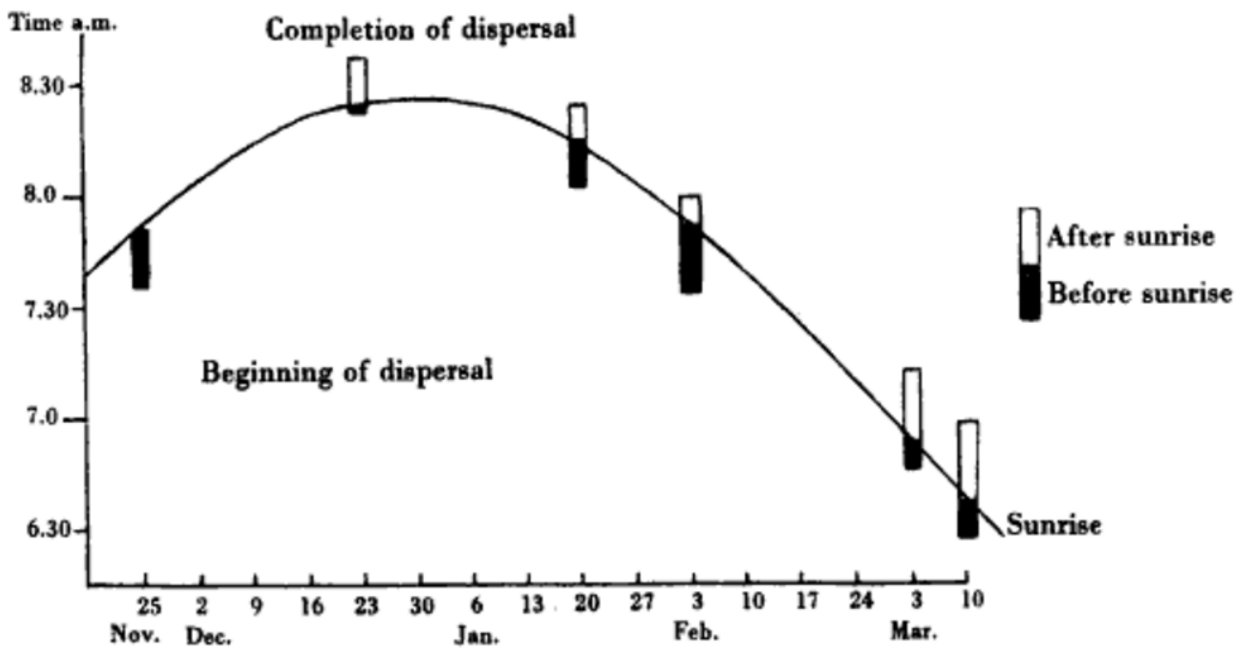


Fig. 3. Dispersal.

All figures and tables taken from Brown (1946).

References

Bray, O.E., Larsen, K.H. & Mott, D.F. (1975) Winter movements and activities of radio-equipped starlings. *Journal of Wildlife Management* 39, 795-801.

Brown, F.J. (1946) A Cheshire starling roost, 1944-45. *Journal of Animal Ecology* 15, 75-81.

Wynne-Edwards, V.C. (1929) The behaviour of starlings in winter. *British Birds* 23, 138-153; 170-180.