Global Reintroduction Perspectives: 2018

Case studies from around the globe

Edited by Pritpal S. Soorae

IUCN/SSC Reintroduction Specialist Group (RSG)

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Published by: IUCN/SSC Reintroduction Specialist Group & Environment Agency-Abu Dhabi

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Citation: Soorae, P. S. (ed.) (2018). *Global Reintroduction Perspectives: 2018. Case studies from around the globe*. IUCN/SSC Reintroduction Specialist Group, Gland, Switzerland and Environment Agency, Abu Dhabi, UAE. xiv + 286pp.

6th Edition

ISBN: 978-2-8317-1901-6 (PDF)
978-2-8317-1902-3 (print edition)

DOI: https://doi.org/10.2305/IUCN.CH.2018.08.en

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Printed by: Arafah Printing Press LLC, Abu Dhabi, UAE

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Supplementation of juniper on the Lizard Peninsula, Cornwall, UK

Katie Treseder[1], Emma Pearce[2], Lorna MacKinnon[3] & Fern Carroll-Smith[4]

[1] - Science and Nursery Team Manager, Eden Project, Bodelva, St Austell, Cornwall, UK PL24 2SG ktreseder@edenproject.com
[2] - Horticultural Scientist (Conservation), Eden Project, Bodelva, St Austell, Cornwall, UK PL24 2SG epearce@edenproject.com
[3] - Horticultural Scientist (Plant records), Eden Project, Bodelva, St Austell, Cornwall, UK PL24 2SG lmackinnon@edenproject.com
[4] - Horticultural Scientist (Seed Bank), Eden Project, Bodelva, St Austell, Cornwall, UK PL24 2SG fcarrollsmith@edenporoject.com

Introduction

Thirteen existing plants of *Juniperus communis* subsp. *hemisphaerica* remain on the Gew Graze Valley on the Lizard Peninsular in Cornwall in the south west of England. The sub species *hemisphaerica* is found in two locations on low maritime cliffs in the UK. The population in Cornwall was first recorded in 1871 where it grew in abundance; the status of the second population in Wales is unknown and unlocatable. The Cornish coastal habitat is identified as NVC: *Erica vagans - Ulex europaeus* Coastal Heath and *Erica vagans - Schoenus nigricans* Coastal Heath. The population in Cornwall has been greatly reduced and is now classified as critically endangered according to the IUCN Red Listing handbook and is also a BAP priority species. Four individuals of the Gew Graze population have been identified as female with six males and three plants unknown sex with no noted evidence of seed regeneration and seedling production on the studied sites.

Goals

- Goal 1: Maintain and monitor the 13 individual *Juniperus communis* subsp. *hemisphaerica* at Gew Graze Valley, Cornwall.
- Goal 2: Ascertain the fate of the previously introduced individuals of *Juniperus communis* subsp. *hemisphaerica* at Mullion Cliffs NNR.
- Goal 3: Establish an *ex situ* representative of each of the 13 surviving wild plants through propagation by cuttings.
- Goal 4: Produce a vegetative propagation protocol for *Juniperus communis* subsp. *hemisphaerica*.

Juniperus communis* subsp. *hemisphaerica

- Goal 5: Assess the feasibility of supplementing the existing population of *Juniperus communis* subsp. *hemisphaerica* on the Lizard Peninsula.

Monitoring juniper in the wild

Success Indicators

- Indicator 1: Presence of 13 individual *Juniperus communis* subsp. *hemisphaerica* at Gew Graze, annual reports on the health and growth of the plants.
- Indicator 2: Interview staff from the Lizard NNR and report findings.
- Indicator 3: Hold and maintain a representative *ex situ* population of the 13 plants from Gew Graze.
- Indicator 4: Produce and report propagation protocols for *Juniperus communis* subsp. *hemisphaerica.*
- Indicator 5: Identify a suitable planting site and propagate new plants from cuttings.

Project Summary

Feasibility: In 1874, the sub species of *Juniperus* was reported as widespread, but the population has been in severe decline. This is thought to have been due to wide spread fire and possible damage by grazing. The subsequent fragmentation of the male and female plants may have prevented natural regeneration, as well as an unfavorable habitat for regeneration. As the population ages the seed generation and viability reduces.

Implementation: Issues linked to supplementing the natural population include spread of plant diseases; *Phytophthora* is present in other wild populations of native species of *Juniperus* in Cornwall. Transplanting shock could be possible due to the change in growing medium from the peat free growing medium on the nursery to the acid heath land soil on the Lizard. Soils on the Lizards Peninsula are based on serpentine rock with low calcium and high magnesium levels. Grazing of newly planted small plants could be fatal; clearing of scrub may be needed to allow the *Juniperus* to establish. Management of accidental wild fires on the site will be needed, in the form of fire breaks. Maintaining an *ex situ* population of *Juniperus communis* subsp. *hemisphaerica* will also be needed to safeguard the taxon.

Post-planting monitoring: Mapping of the existing individual plants with GPS co-ordinates has taken place, these plants also have physical tags in the plants with accession numbers allocated to them and their position and health

Overview of juniper habitat

recorded on BG Base, the Eden Project's plant database. All the young 195 plants which were planted in to a new enclosure have also been accessioned and their parent plant information recorded.

The *in situ* population will be inspected twice a year, and the general health and size of the plants will be recorded. The general management of the heathland around the junipers will be discussed with the NNR staff and adjusted where needed. The newly planted young plants are fenced off to protect them from grazing, this will be removed once the plants have established.

The fruit production of the *in situ* and *ex situ* plants is recorded on an annual basis and a record of the number of seeds per fruit is also being kept. Germination tests are also being carried out on seeds that are collected, although as previously mentioned the germination time of this genus is known to be long. Once a sufficient number of seeds has been collected a representative sample of the population will be sent to the Millennium Seed Bank as part of the UK National Tree Seed Project.

Major difficulties faced

- Access to the *in situ* plants is difficult and not possible by vehicle.
- The small population has led to a genetic bottleneck.
- Germination time of the seeds of this genus is known to be two years.
- The seed viability appears to be very low, and has complex dormancy requirements.
- The limited resources of the project make locating any possible additional population on the Lizard Peninsula very difficult.

Major lessons learned

- Protection against fire is needed.
- Identification of genetically different plants is difficult in the field; propagation by cuttings alone has not increased genetic diversity.
- The number of seeds produced within each fruit is low, the complex dormancy and long germination periods mean seed regeneration is slow and has not yet been successful.
- Staff turnover has made detailed record keeping essential.
- Propagation by cuttings, following the propagation protocol, has been successful.

Success of project

Highly Successful	**Successful**	Partially Successful	Failure
	√		

Reason(s) for success/failure:

- Propagation protocols have been produced.
- The existing population has been maintained.
- The existing population have been supplemented with younger potentially more fertile plants.
- The fencing around the *in situ* population has helped to maintain the population and the newly planted areas.
- The genetically diversity of the population has not been increased so far due to the reliance on vegetative propagation.

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WORLD HEADQUARTERS
Rue Mauverney 28
1196 Gland, Switzerland
Tel +41 22 999 0000
Fax +41 22 999 0002
www.iucn.org