

Aspects of Breeding Performance of Scopoli's Shearwater (*Calonectris diomedea*): The Case of the Largest Colony in Greece

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Table S1. Breeding performance of Scopoli's Shearwater on Stamfani colony during different reproductive stages (sampling period: 2008-2012).

	2008	2009	2010	2011	2012
Hatching success (%)	82.22	71.96	85.29	72.63	71.79
Fledging success (%)	83.78	85.71	96.55	75.36	91.07
Breeding success (%)	68.89	61.68	82.35	54.73	65.38

Table S2. Egg measurements of Scopoli's Shearwater colony on Stamfani Island (sampling period: 2-5 June 2011).

	Mean	Stdv	Minimum	Maximum
Egg length (cm)	6.75	0.19	6.31	7.14
Egg width (cm)	4.55	0.14	4.05	4.83
Egg weight (g)	76.40	4.69	67.78	87.06

Table S3. Comparison of egg measurements and egg volume index between nest sites with different breeding performance (success-failure) on Stamfani Island (one-way ANOVA). * $p < 0.05$

	df	F	p
Egg length	1, 28	4.400	0.045*
Egg width	1, 28	0.896	0.352
Egg weight	1, 28	1.979	0.170
Egg volume index	1, 28	2.604	0.118

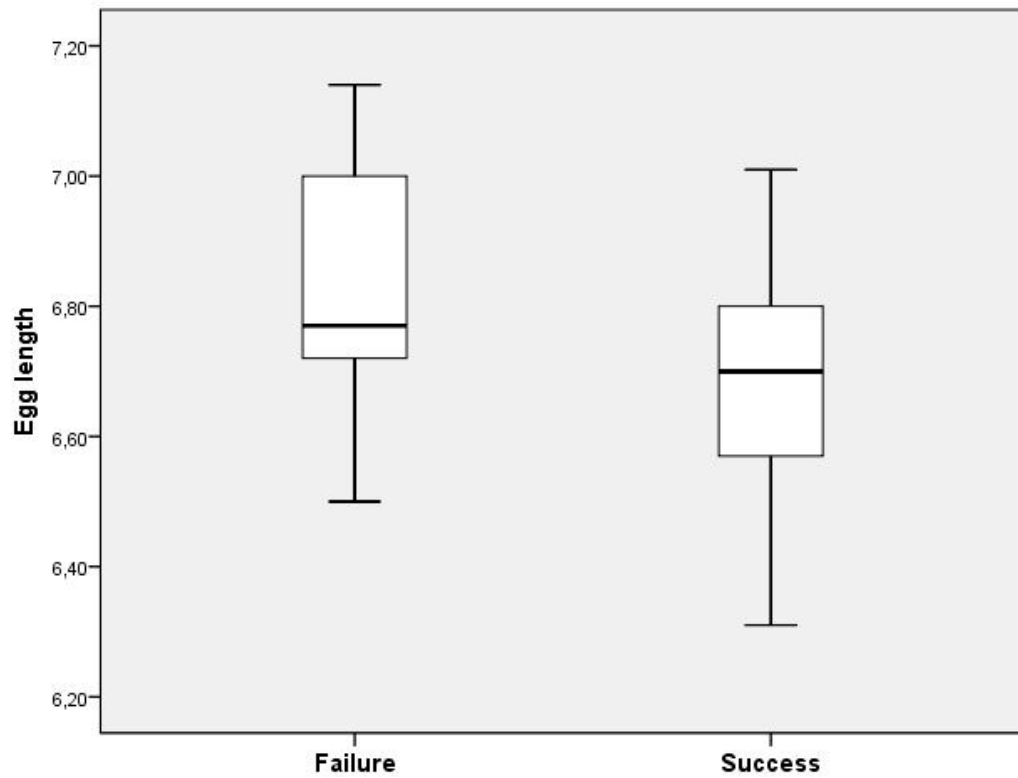


Figure S1. Box plot showing median, interquartile range, and range referring to the egg length of Scopoli's Shearwater nest sites revealed breeding failure and breeding success (breeding season 2011, N = 30 nests).


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CODE

##### _REPRODUCTIVE SUCCESS - ORDINAL REGRESSION #####

## library load for reading Excel file
library(readxl)

## 1. reading the relevant sheet in Excel
data.model <- read_xlsx("data.xlsx", sheet="data_model", col_names = TRUE)

## 2. Change file type
## 2.1. change the numerical values of the reproduction stages to ordinal
categories
## for the 3 classes (0-1, 2-3, 4-5)

## hatching
data.model$hatch3c1 <- as.ordered(data.model$hatch3c1)
## breeding
data.model$breed3c1 <- as.ordered(data.model$breed3c1)

## summary of nests by frequency of recording years
summary(data.model$hatch3c1)
summary(data.model$breed3c1)

## 2.2 change the fields of categorical values from character to factors
data.model$type <- as.factor(data.model$type)
data.model$aspect <- as.factor(data.model$aspect)
data.model$sector <- as.factor(data.model$sector)

## 2.3 definition of the reference category for the dummy variables
## the criterion was the lowest frequency of occurrence
data.model$type = relevel(data.model$type, ref="Shrub")
data.model$aspect = relevel(data.model$aspect, ref="North")
data.model$sector = relevel(data.model$sector, ref="SecEast")

## 3. Creation of models
library(MASS) # modern applied statistics for "glm" (ordinal regression)

## 3.1 Breeding model
## 3.1.1 Individual models
# nest type - method = probit for ordinal data
model.breed.type <- polr(data.model$breed3c1~data.model$type, data.model,
method="probit", Hess = TRUE)
summary(model.breed.type)

## calculate p-values - combine in table
ptable.model.breed.type <- coefficients(summary(model.breed.type))
ptable.model.breed.type
p.b.t <- pnorm(abs(ptable.model.breed.type[, "t value"]), lower.tail=FALSE) * 2
p.b.t
ptable.model.breed.type <- cbind(ptable.model.breed.type, "p-value" = p.b.t)
ptable.model.breed.type
ptable.model.breed.type <- as.data.frame(ptable.model.breed.type)
ptable.model.breed.type

# exponentiation of coefficients
exp(coef(model.breed.type))
exp(cbind(coef(model.breed.type), confint(model.breed.type)))
# exponentiation of intercept
exp(model.breed.type$zeta)

library(DescTools) ## for the PseudoR2
PseudoR2(model.breed.type, "all")

library(generalhoslem) ## for Goodness of Fit
# Pukstenis-Robinson goodness of fit tests
pulkrob.chisq(model.breed.type, "data.model$type")
pulkrob.deviance(model.breed.type, "data.model$type")
# Deviance of the model
deviance(model.breed.type) ## library (stats)

```

Figure S2. R code developed for Ordered Logistic Regression (OLR) analysis used to model the probability of each Scopoli's Shearwater nest site being in a particular quality class (low, medium, or high).

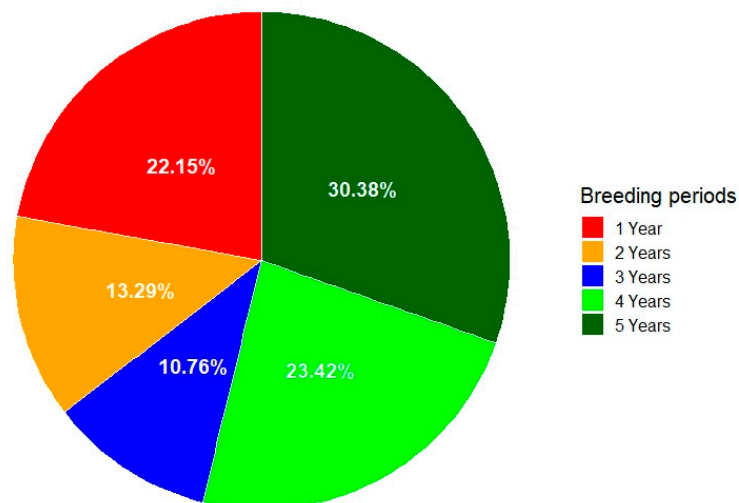


Figure S3. Classification of the Scopoli's Shearwater nests that were monitored on Stamfani Island per occupation rate during 2008-2012.