

# 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).

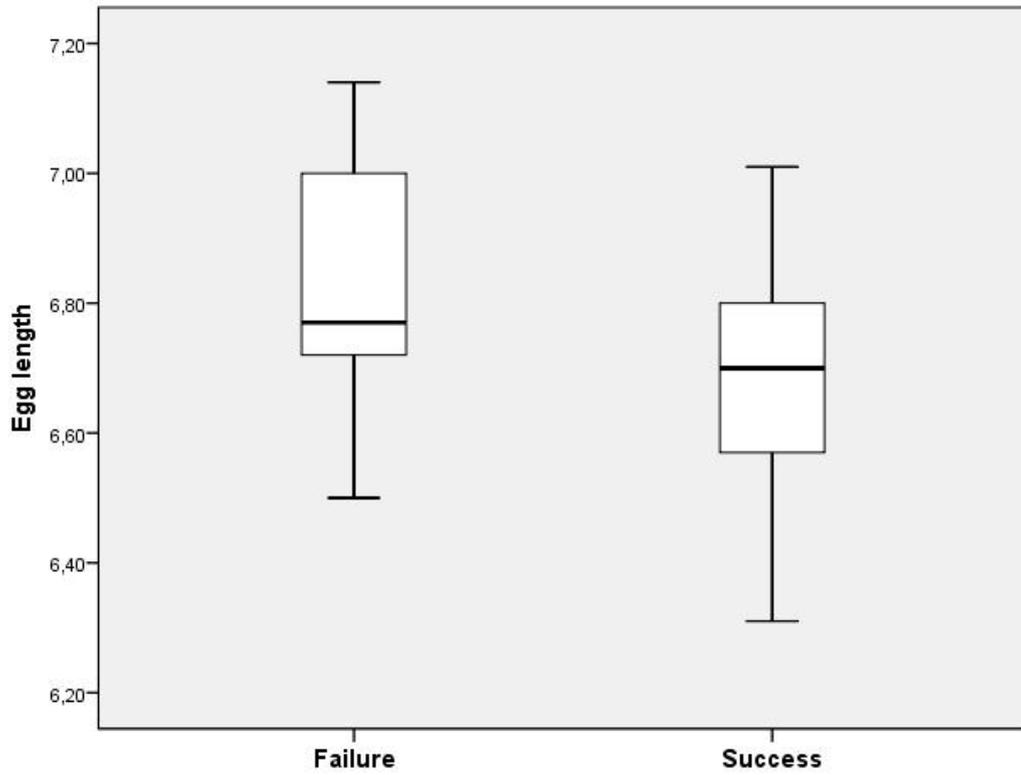
	2008	2009	2010	2011	2012
Hatching success (%)	82.22	71.96	85.29	72.63	71.79
Fledging success (%)	83.78	85.71	96.55	75.36	91.07
Breeding success (%)	68.89	61.68	82.35	54.73	65.38

**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 "plm" (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
etable.model.breed.type <- coefficients(summary(model.breed.type))
etable.model.breed.type
p.b.t <- pnorm(abs(etable.model.breed.type[, "t value"]), lower.tail=FALSE) *2
p.b.t
etable.model.breed.type <- cbind(etable.model.breed.type, "p-value" =p.b.t)
etable.model.breed.type
etable.model.breed.type <- as.data.frame(etable.model.breed.type)
etable.model.breed.type

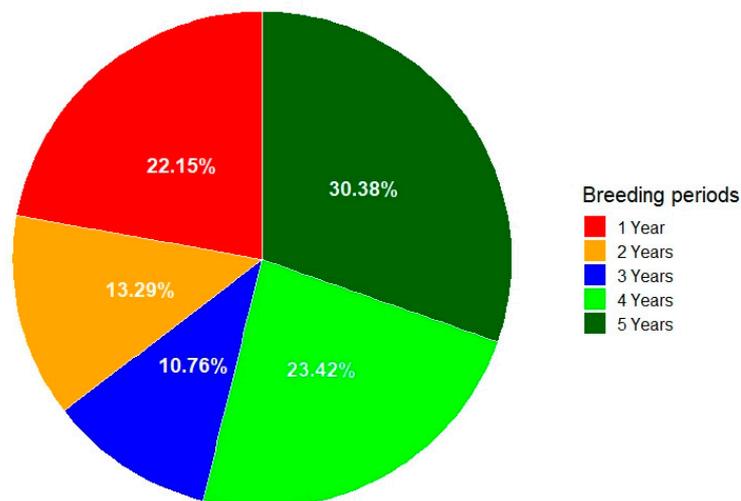
# exponentiation of coefficients
exp(coef(model.breed.type))
exp(cbind(coef(model.breed.type), confint(model.breed.type)))
# exponentiation of intercept
exp(model.breed.type$zeta)

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

library(generalhoslem) ## for Goodness of Fit
# Pukstenia-Robinson goodness of fit tests
multkrob.chisq(model.breed.type, "data.model$type")
multkrob.deviance(model.breed.type, "data.model$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.