DETERMINING THE MINIMAL BACKGROUND AREA FOR SPECIES DISTRIBUTION MODELS: MinBAR PACKAGE. SUPPLEMENTARY MATERIAL

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1 Introduction

This is the Supplementary Material to the article "Determining the minimal background area for MaxEnt species distribution models: MinBAR package" (https://CRAN.R-project.org/package=MinBAR)

2 Supplementary Material S1

Table S1: Example of an output of MinBAR. Buffer in km. (continued below)

Species	Buffer	BoyceIndex_part	BoyceIndex_tot	SD_part	SD_tot
Prunus spinosa	126.8	0.968	0.954	NA	NA
Prunus spinosa	228.1	0.982	0.185	NA	NA
Prunus spinosa	304.2	0.995	0.946	NA	NA
Prunus spinosa	384.3	0.989	0.992	0.01162	0.39
Prunus spinosa	476.3	0.993	0.996	0.005737	0.3971
Prunus spinosa	591.5	0.997	0.992	0.003416	0.02374
Prunus spinosa	746.1	1	1	0.004787	0.00383
Prunus spinosa	878.2	0.999	1	0.003096	0.00383
Prunus spinosa	1068	0.996	0.994	0.001826	0.004123
Prunus spinosa	3668	1	0.999	0.001893	0.002872

18 *Table continues below*

Execution Time	rankBI _part	rankBI _tot	rankTime	rankFinal NoTime	rankFinal WithTime
0.7504	10	8	1	9	8
0.9735	9	10	2	10	10
1.257	6	9	3	8	6
1.417	8	6	4	7	7
1.519	7	4	5	5	4
1.753	4	7	6	6	5
2.226	1	1	7	1	1
2.63	3	2	8	2	2
2.66	5	5	9	4	9
8.862	2	3	10	3	3

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3 Supplementary Material S2

21 *Table S2.1: List of species used in case study 1*

Case.Study.1	Abbreviation1
Pinus sylvestris L.	pin_syl
Quercus ilex L.	que_ile
Fagus sylvatica L.	fag_syl
Fraxinus excelsior L.	fra_exc
Quercus petraea (Matt.) Liebl.	que_pet
Quercus robur L.	que_rob
Quercus pyrenaica Willd.	que_pyr
Quercus suber L.	que_sub
Abies alba Mill.	abi_alb
Acer platanoides L.	ace_pla
Alnus glutinosa (L.) Gaertn.	aln_glu
Juniperus oxycedrus L.	jun_oxy

Arbutus unedo L.	arb_une
Crataegus monogyna Jacq.	cra_mon
Prunus spinosa L.	pru_spi
Buxus sempervirens L.	bux_sem
Cotoneaster tomentosus Lindl.	cot_tom
Viola mirabilis L.	vio_mir
Diplotaxis erucoides DC.	dip_eru
Centaurea alba L.	cen_alb
Geranium lucidum L.	ger_luc
Linaria alpina Mill.	lin_alp
Pistacia terebinthus L.	pis_ter
Muscari comosum (L.) Mill.	leo_com
Lotus edulis L.	lot_edu

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23   The occurrences were downloaded from GBIF using *PreSPickR* (Rotllan-Puig, 2018)

24

25   *Table S2.2: Citations of the data sets downloaded from GBIF and used in case study 1*

species	source	DOI	date_downloaded
ABIES ALBA MILL.	GBIF	10.15468/dl.eo0lqe	2018-03-04T17:37:26.441+0000
ACER PLATANOID ES L.	GBIF	10.15468/dl.idbrjq	2018-03-04T17:43:00.642+0000
ALNUS GLUTINOSA (L.) GAERTN.	GBIF	10.15468/dl.6stmlq	2018-03-04T17:53:48.872+0000
ARBUTUS UNEDO L.	GBIF	10.15468/dl.mez7r0	2018-03-04T17:59:43.726+0000
BUXUS	GBIF	10.15468/dl.vitxba	2018-03-04T18:30:04.506+0000

SEMPERVIR

ENS L.

Species	Source	DOI	Date
CENTAUREA ALBA L.	GBIF	10.15468/dl.izlpzu	2018-03-07T22:20:10.052+0000
COTONEASTER TOMENTOSUS LINDL.	GBIF	10.15468/dl.51ud43	2018-07-12T14:53:51.438+0000
CRATAEGUS MONOGYNA JACQ.	GBIF	10.15468/dl.lshmvs	2018-03-04T18:10:29.057+0000
DIPLOTAXIS ERUCOIDES DC.	GBIF	10.15468/dl.djvzg0	2018-03-07T22:18:38.525+0000
FAGUS SYLVATICA L.	GBIF	10.15468/dl.u60ogx	2018-02-22T23:14:34.322+0000
FRAXINUS EXCELSIOR L.	GBIF	10.15468/dl.fxzzxv	2018-03-04T17:04:11.166+0000
GERANIUM LUCIDUM L.	GBIF	10.15468/dl.srgkdi	2018-03-07T22:22:17.220+0000
JUNIPERUS OXYCEDRUS L.	GBIF	10.15468/dl.lnykuh	2018-03-04T17:57:27.889+0000
LINARIA ALPINA	GBIF	10.15468/dl.phqgk3	2018-03-07T22:23:42.077+0000

MILL.

Species	Source	DOI	Date
LOTUS EDULIS L.	GBIF	10.15468/dl.gphxhp	2018-03-07T22:29:38.764+0000
MUSCARI COMOSUM (L.) MILL.	GBIF	10.15468/dl.ff8tqr	2018-03-07T22:28:23.186+0000
PINUS SYLVESTRIS L.	GBIF	10.15468/dl.lpqpm3	2018-02-22T23:00:00.299+0000
PISTACIA TEREBINTHUS L.	GBIF	10.15468/dl.g0zyyj	2018-03-07T22:25:47.461+0000
PRUNUS SPINOSA L.	GBIF	10.15468/dl.dzldah	2018-03-04T18:25:37.314+0000
QUERCUS ILEX L.	GBIF	10.15468/dl.yfpx0f	2018-02-22T23:03:47.122+0000
QUERCUS PETRAEA (MATT.) LIEBL.	GBIF	10.15468/dl.1htw8l	2018-03-04T17:15:52.716+0000
QUERCUS PYRENAICA WILLD.	GBIF	10.15468/dl.mpmnvw	2018-03-04T17:31:41.099+0000
QUERCUS ROBUR L.	GBIF	10.15468/dl.ihampz	2018-03-04T17:28:03.035+0000
QUERCUS SUBER L.	GBIF	10.15468/dl.uzpt1x	2018-03-04T17:33:45.764+0000

VIOLA   GBIF   10.15468/dl.6vyew0   2018-03-07T22:16:25.766+0000
MIRABILIS

L.

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4   Supplementary Material S3

28   Figures S3.1 - S3.25: Evolution of Boyce Index Total (green) and Partial (blue), and the

29   execution time in minutes (pink), for all the species in case study 1. The origin of the x-

30   axis corresponds to the geographical centre of the species distribution (mean location for

31   longitude/latitude coordinates dealing with angularity). The x-axis increases (in

32   kilometres) with buffers 1 to 10, respectively the closest and the most distant to the centre

33   of species distribution

Boyce Index (mean of 3 models) – *Pinus sylvestris*

34
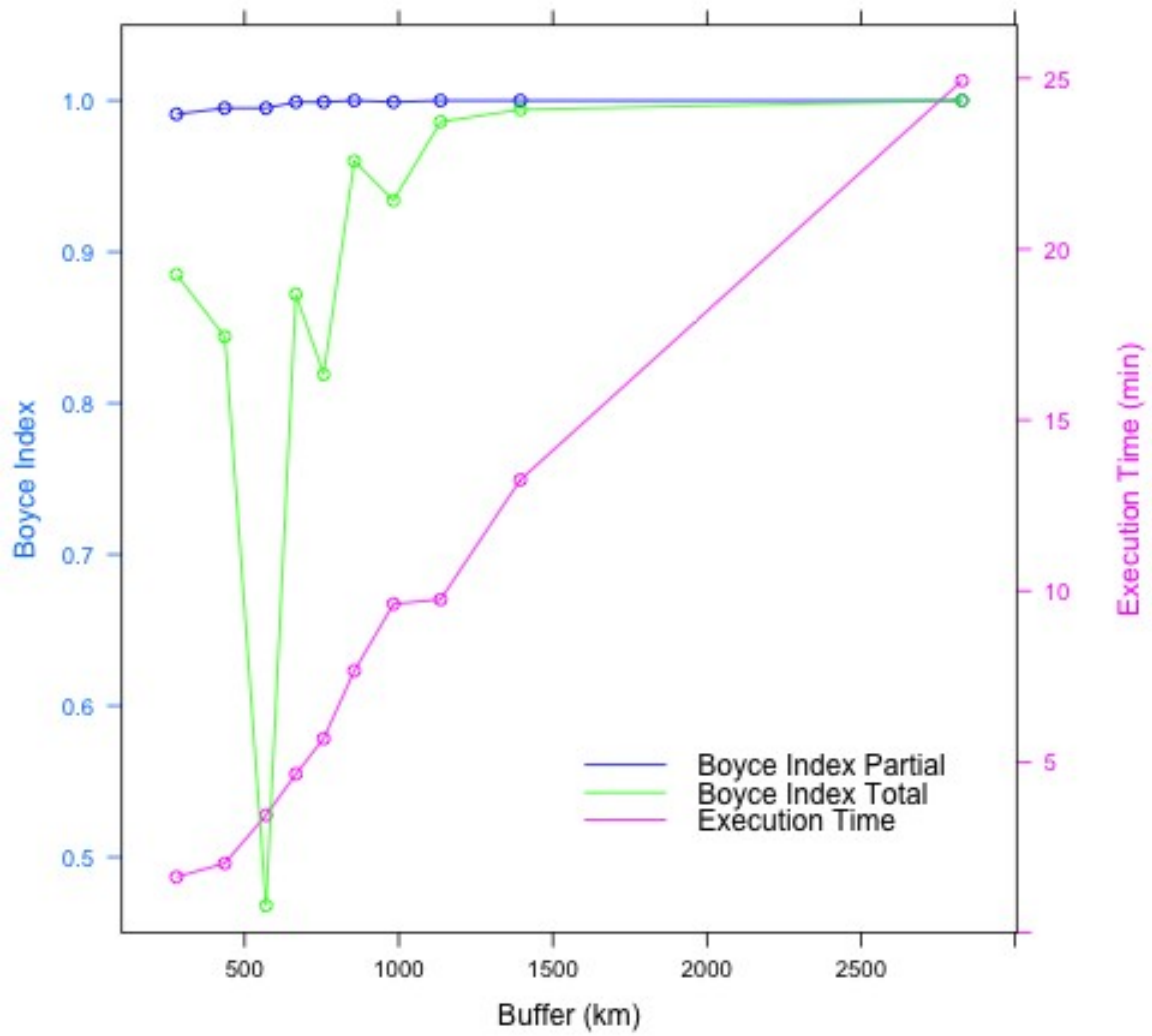
Boyce Index (mean of 3 models) – *Quercus ilex*

35
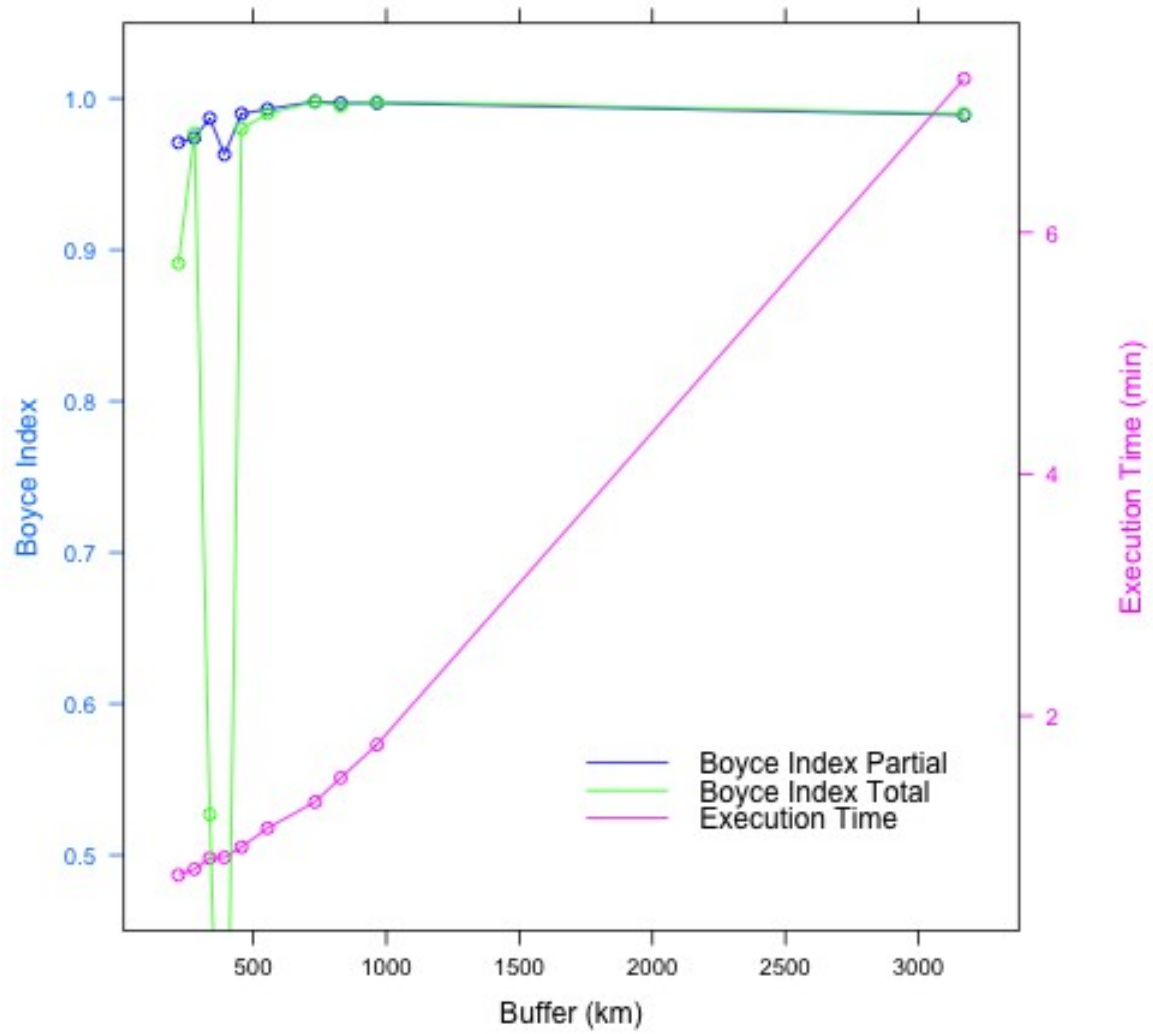
Boyce Index (mean of 3 models) – *Fagus sylvatica*

36
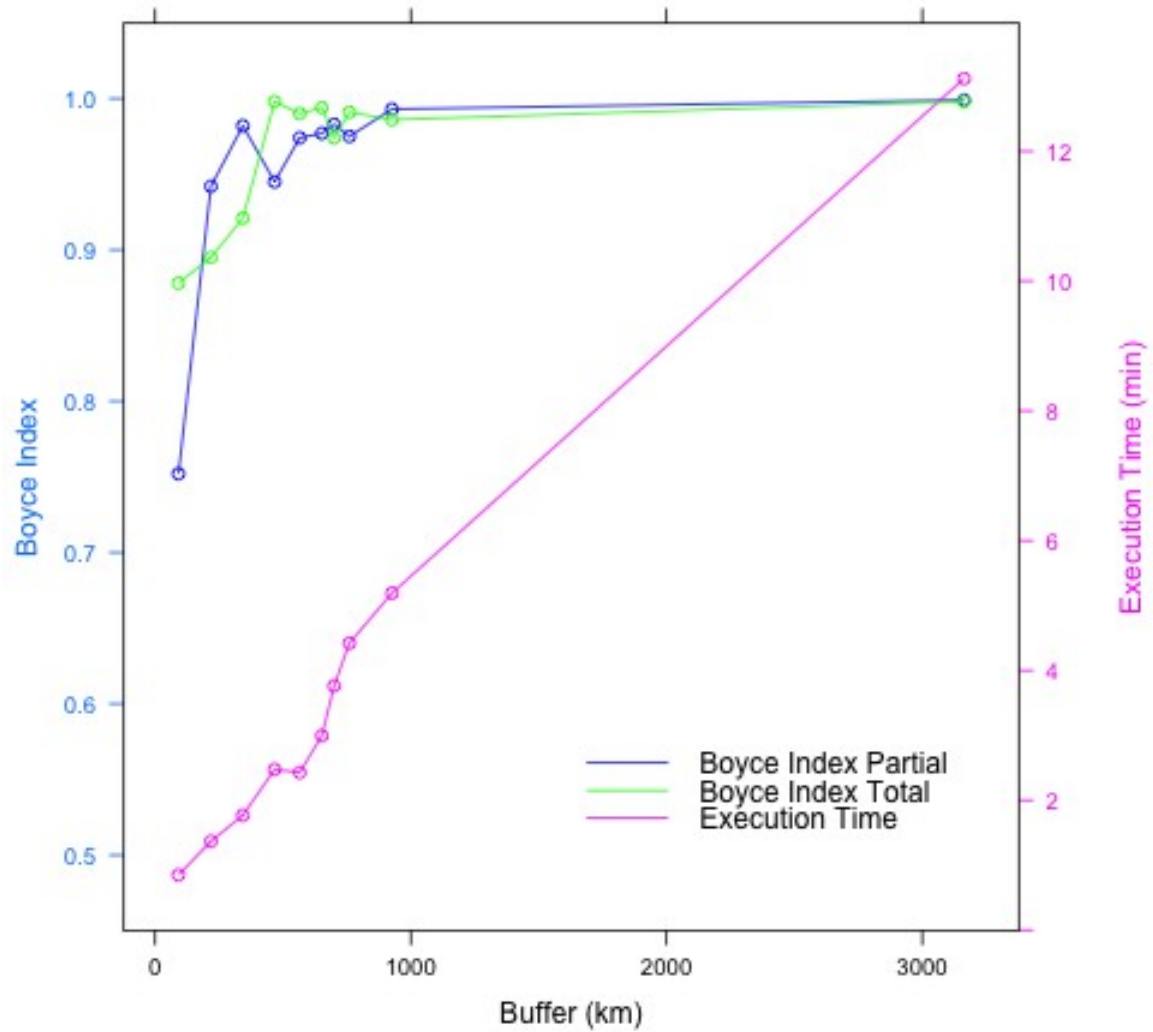
Boyce Index (mean of 3 models) – *Fraxinus excelsior*

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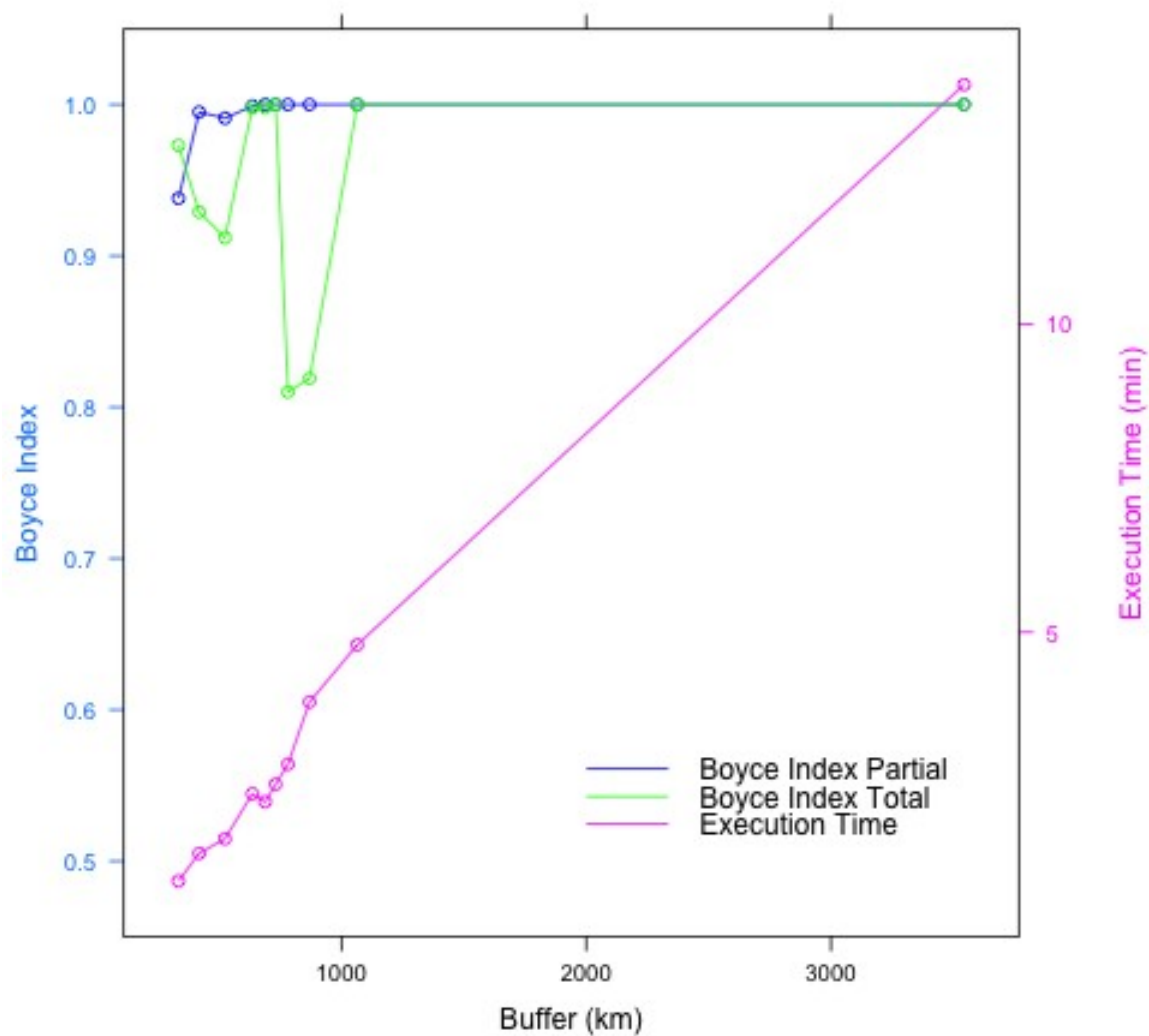
Boyce Index (mean of 3 models) – *Quercus petraea*

38
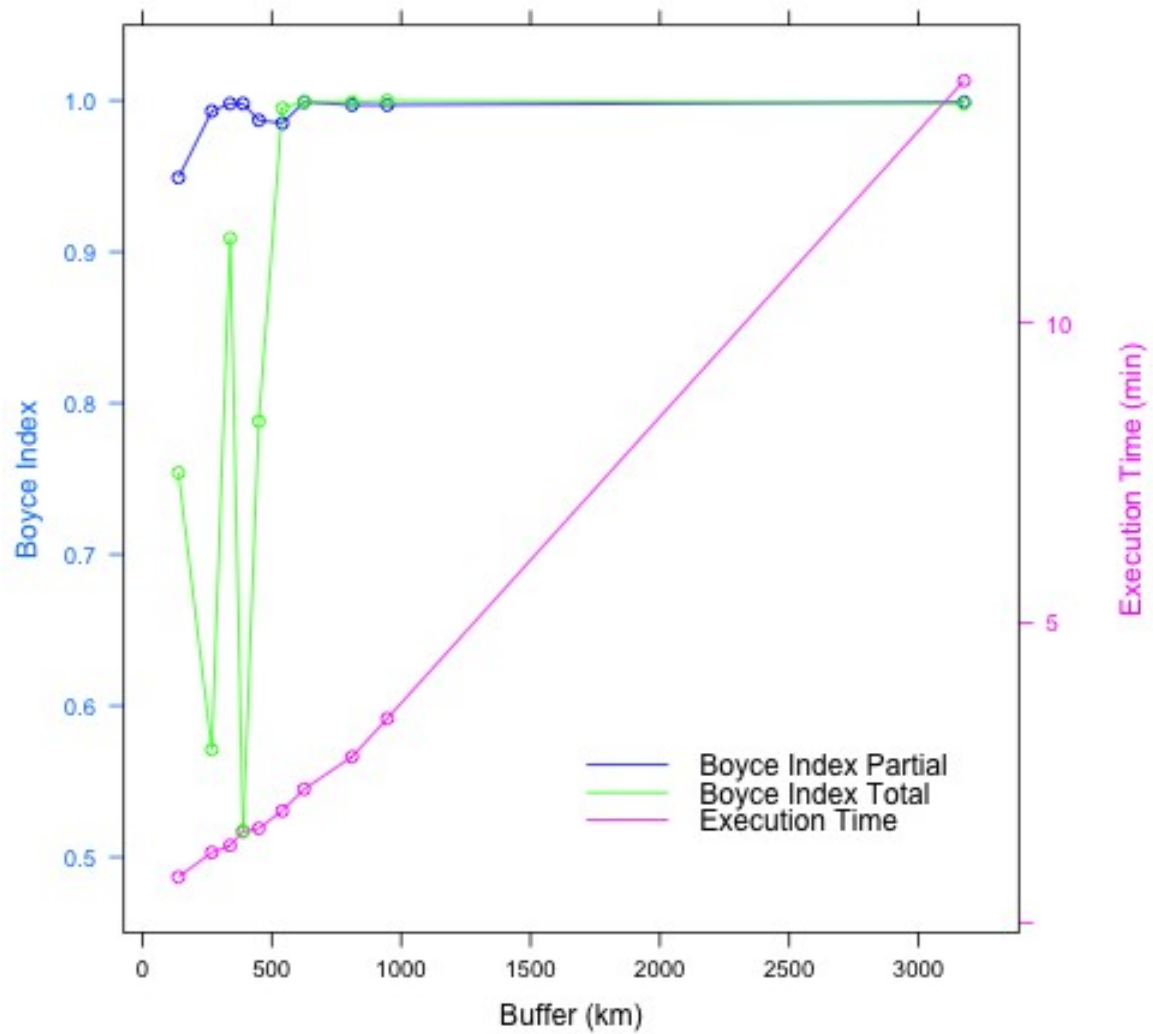
Boyce Index (mean of 3 models) – *Quercus robur*

39
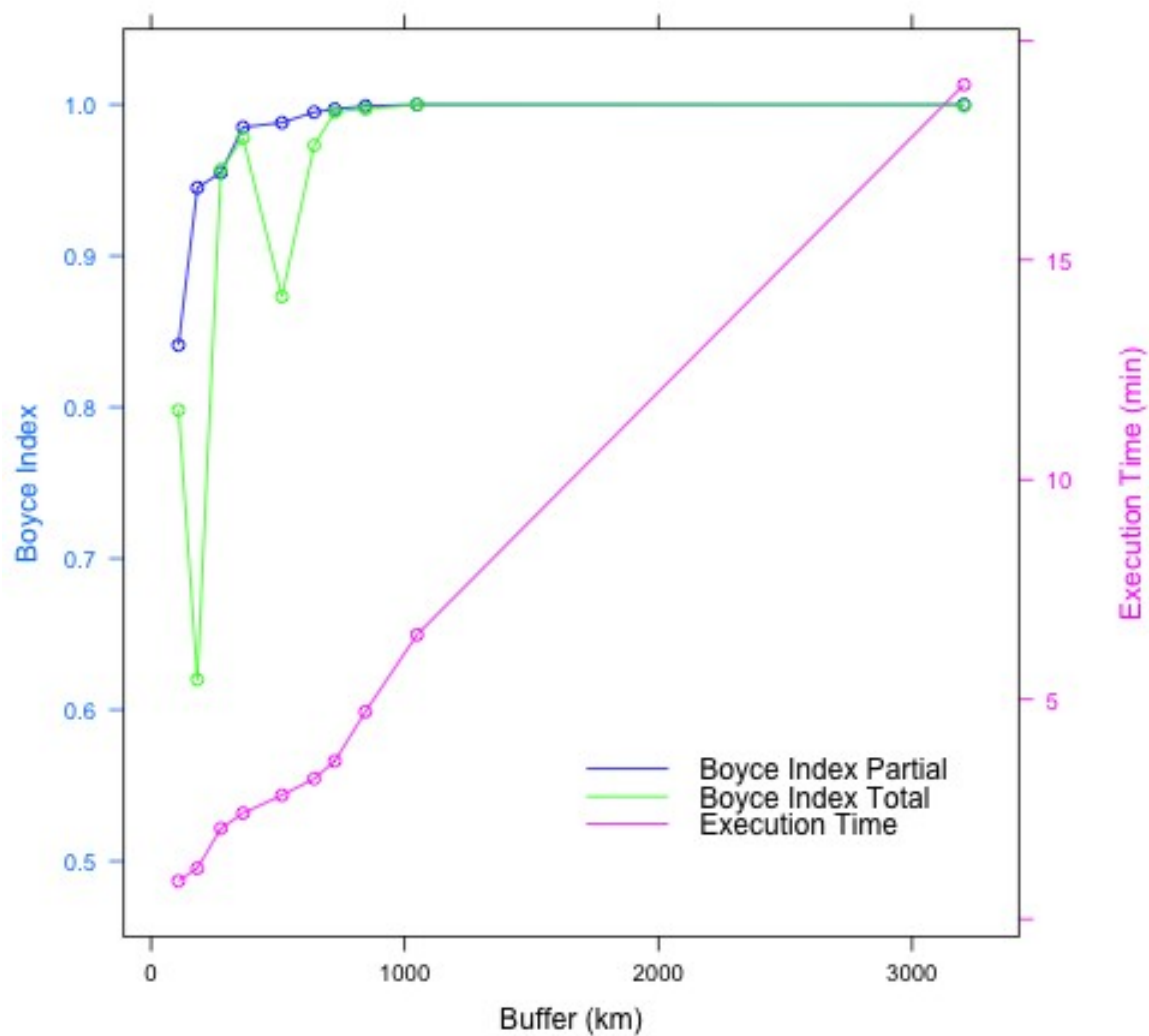
Boyce Index (mean of 3 models) – *Quercus pyrenaica*

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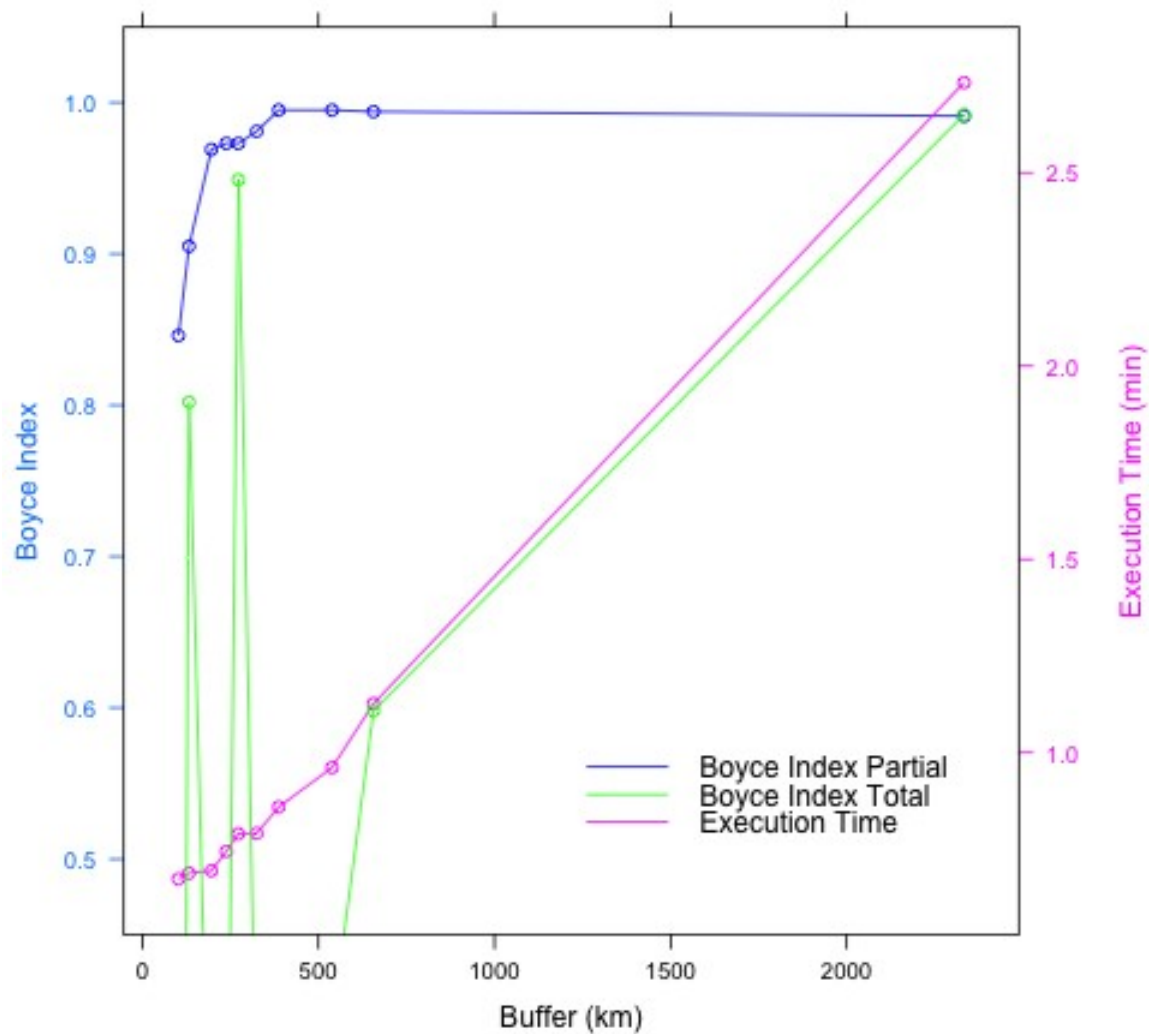
Boyce Index (mean of 3 models) – *Quercus suber*
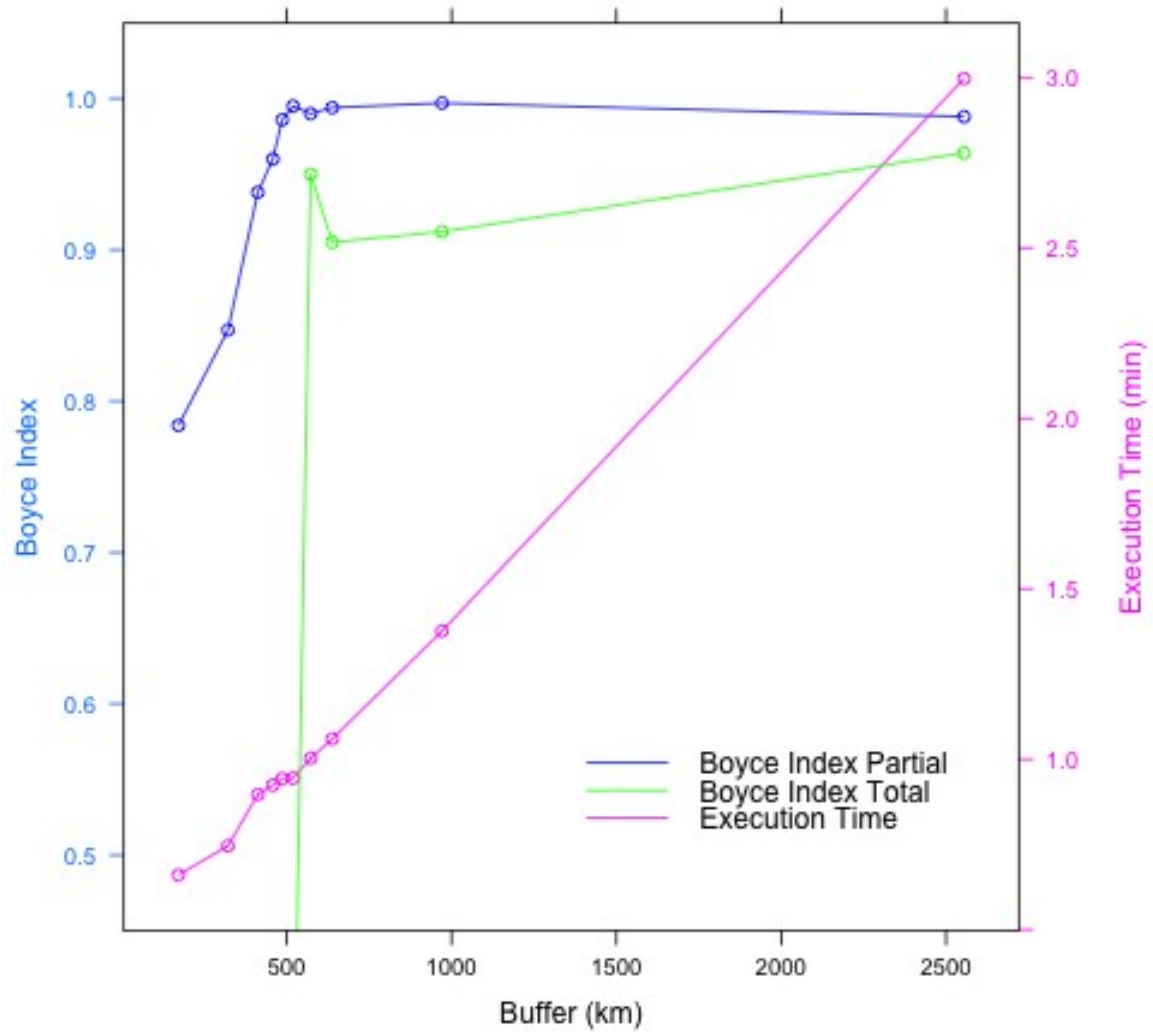
Boyce Index (mean of 3 models) – *Abies alba*

42
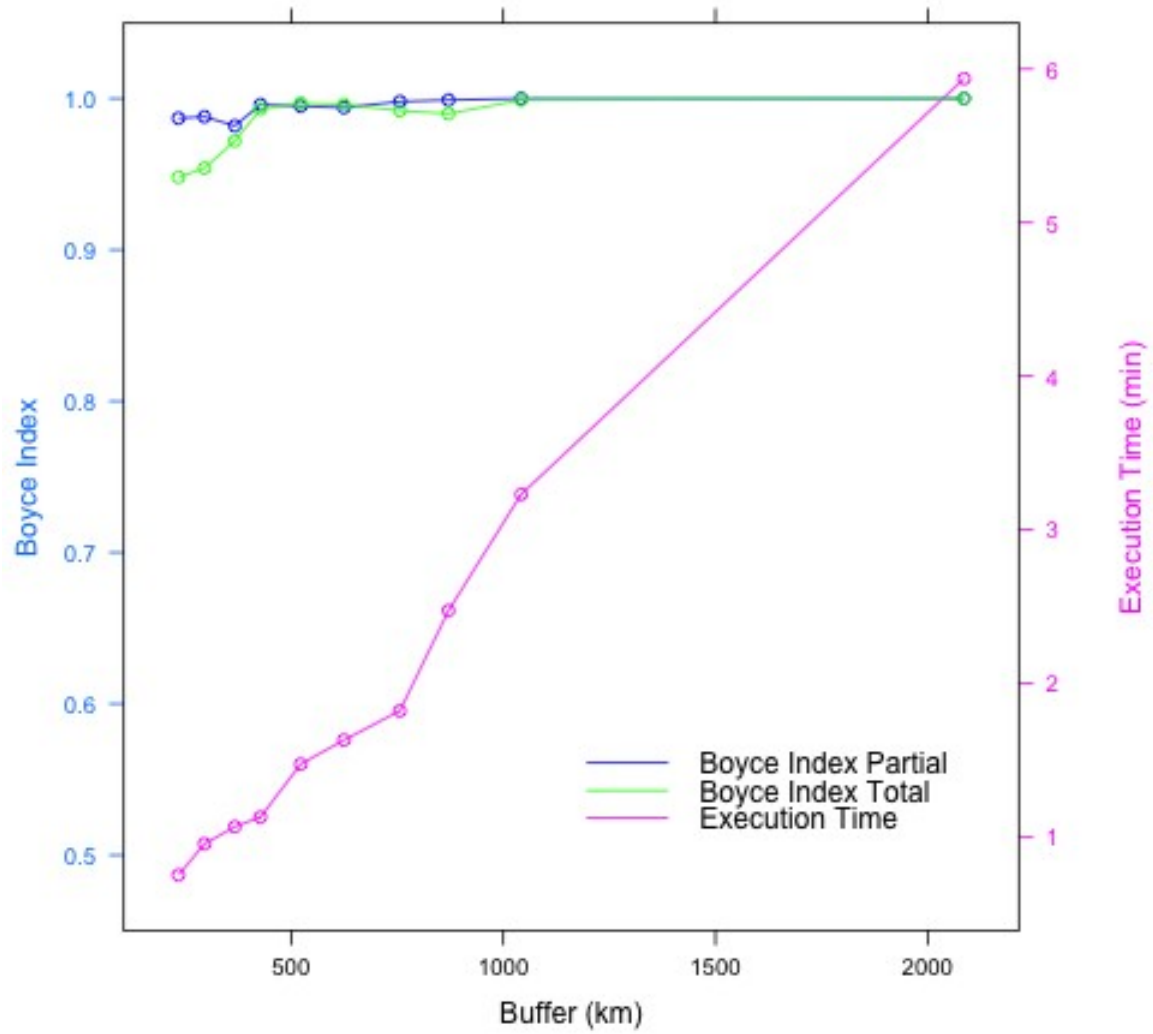
Boyce Index (mean of 3 models) – *Acer platanoides*

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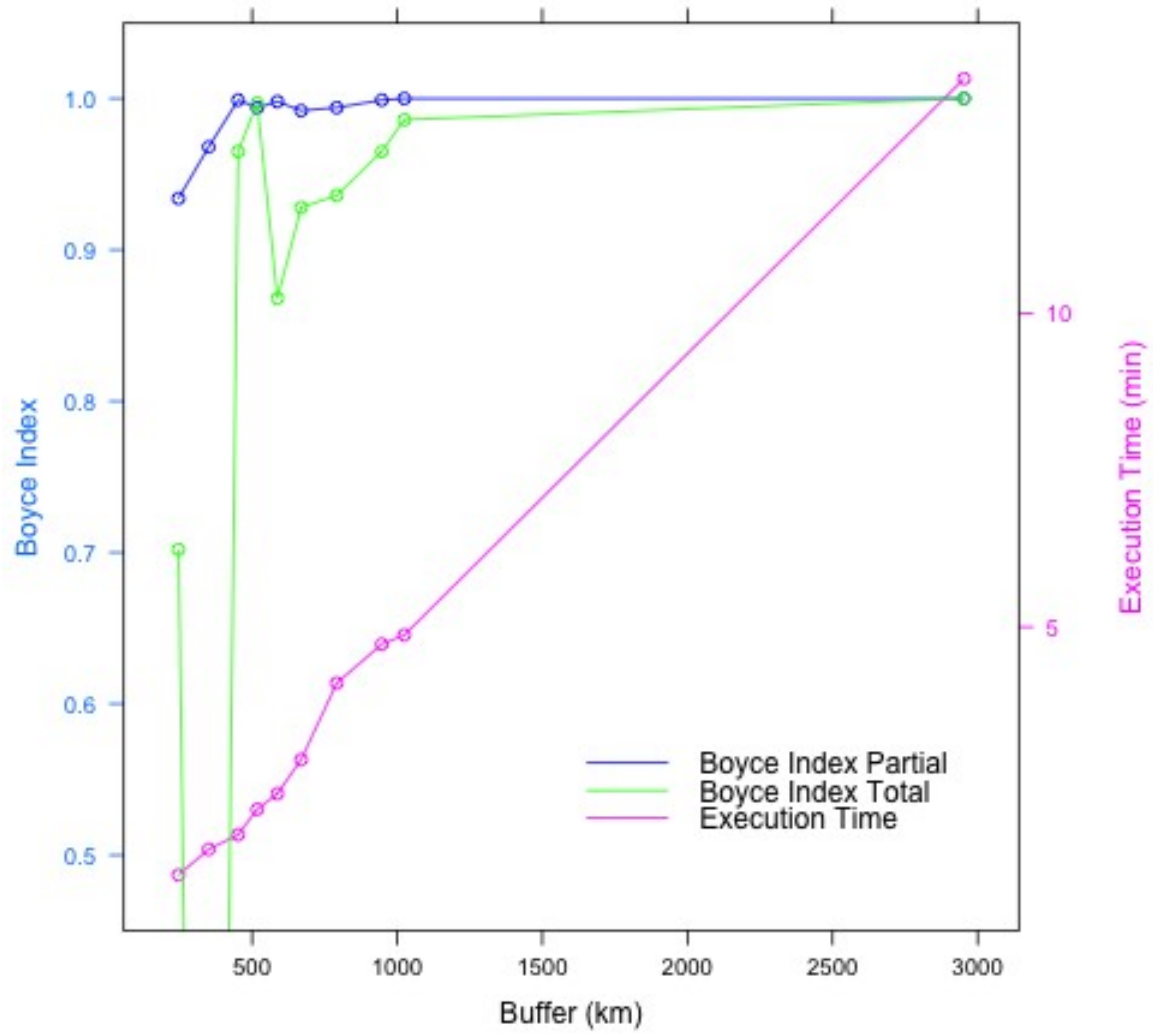
Boyce Index (mean of 3 models) – *Alnus glutinosa*

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Boyce Index (mean of 3 models) – *Juniperus oxycedrus*

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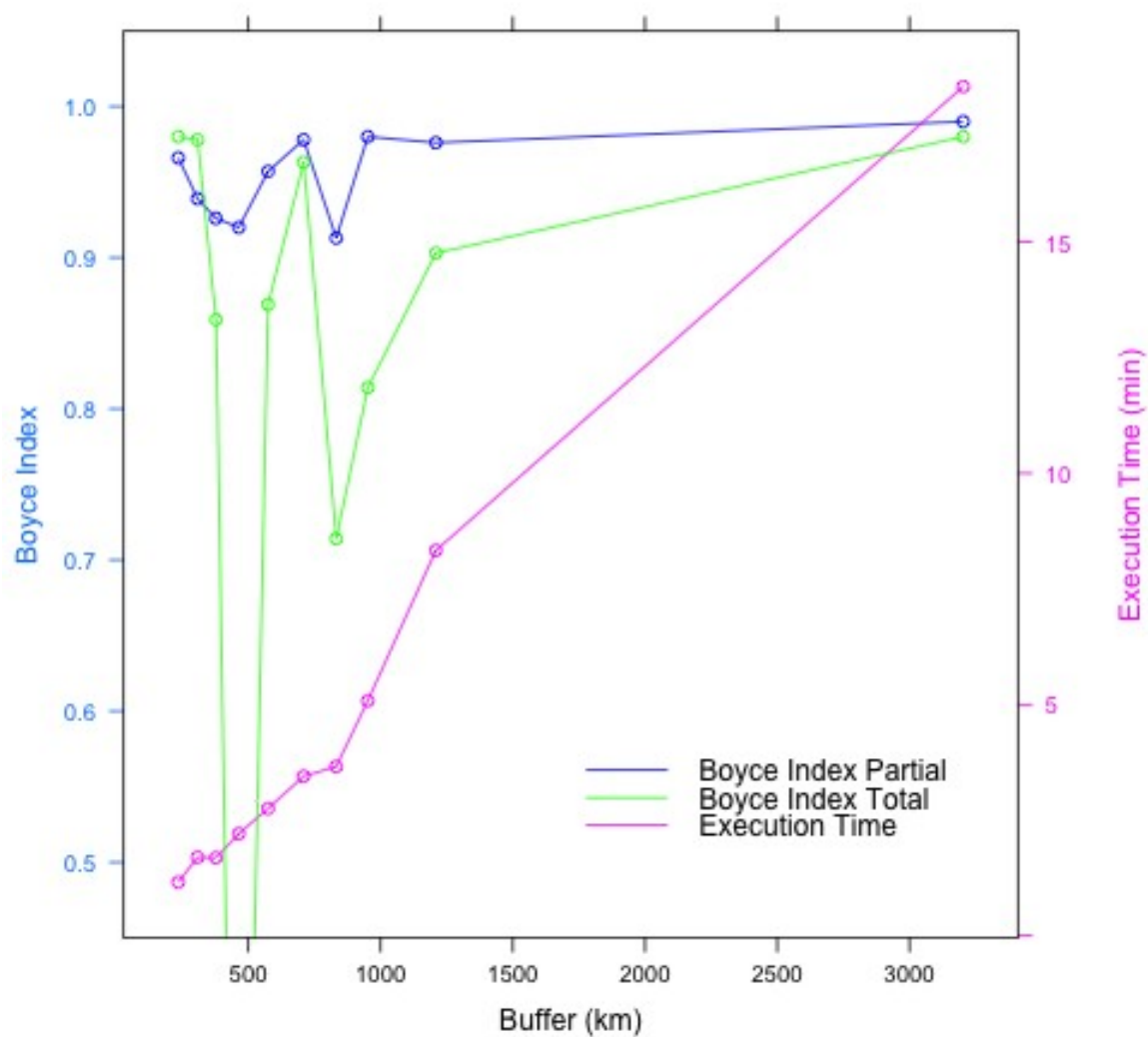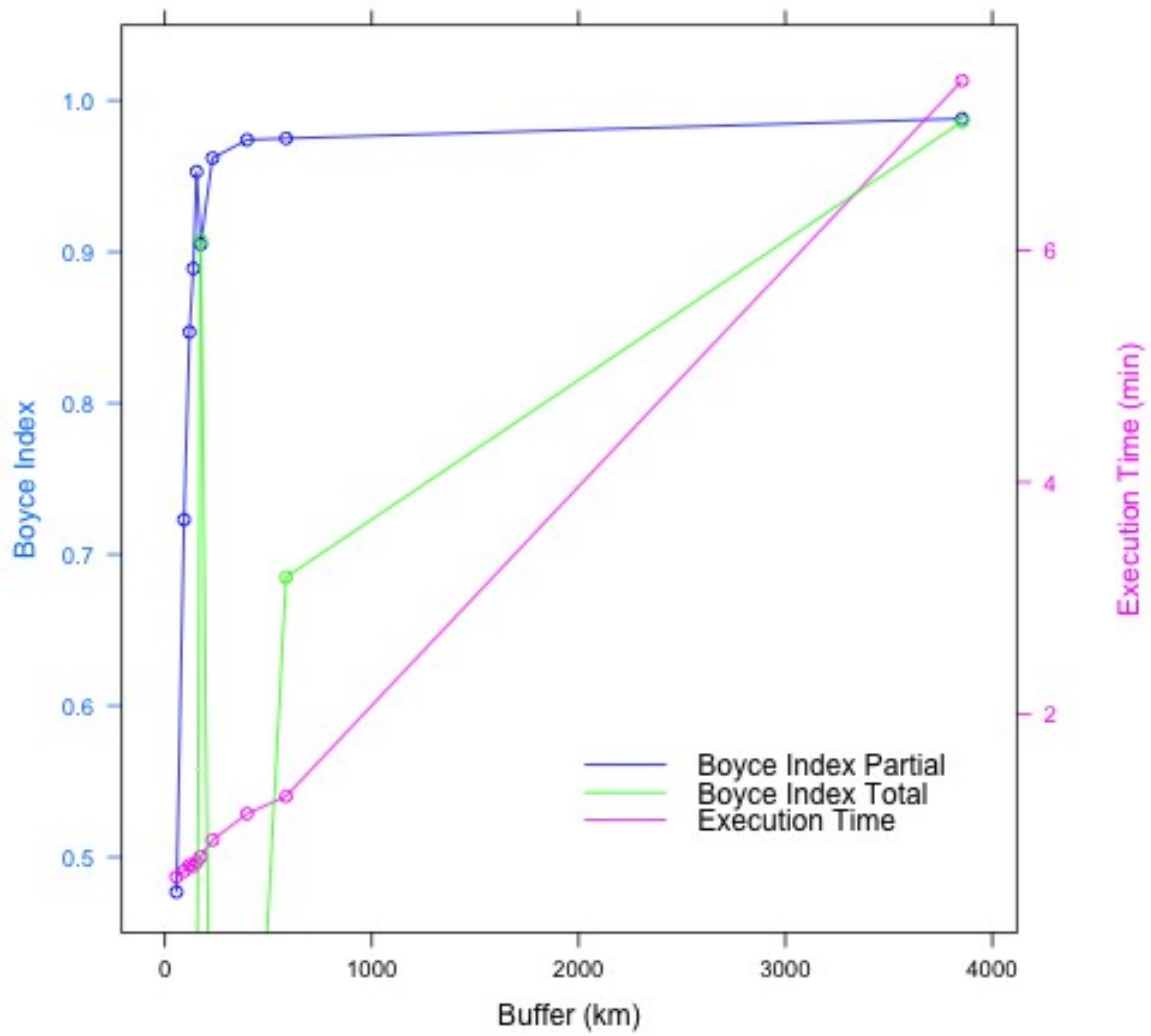
Boyce Index (mean of 3 models) – *Arbutus unedo*

46
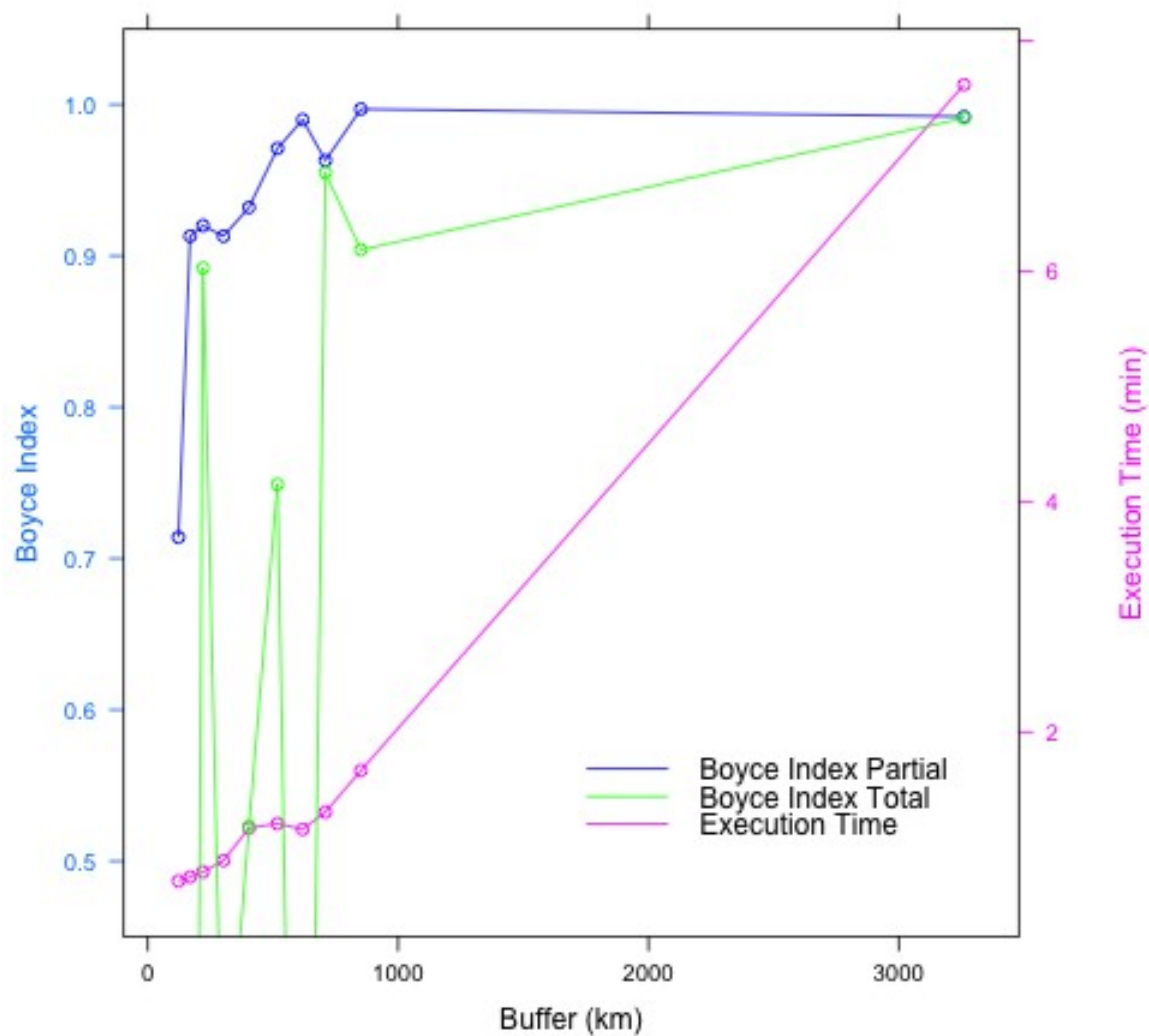
Boyce Index (mean of 3 models) – *Crataegus monogyna*

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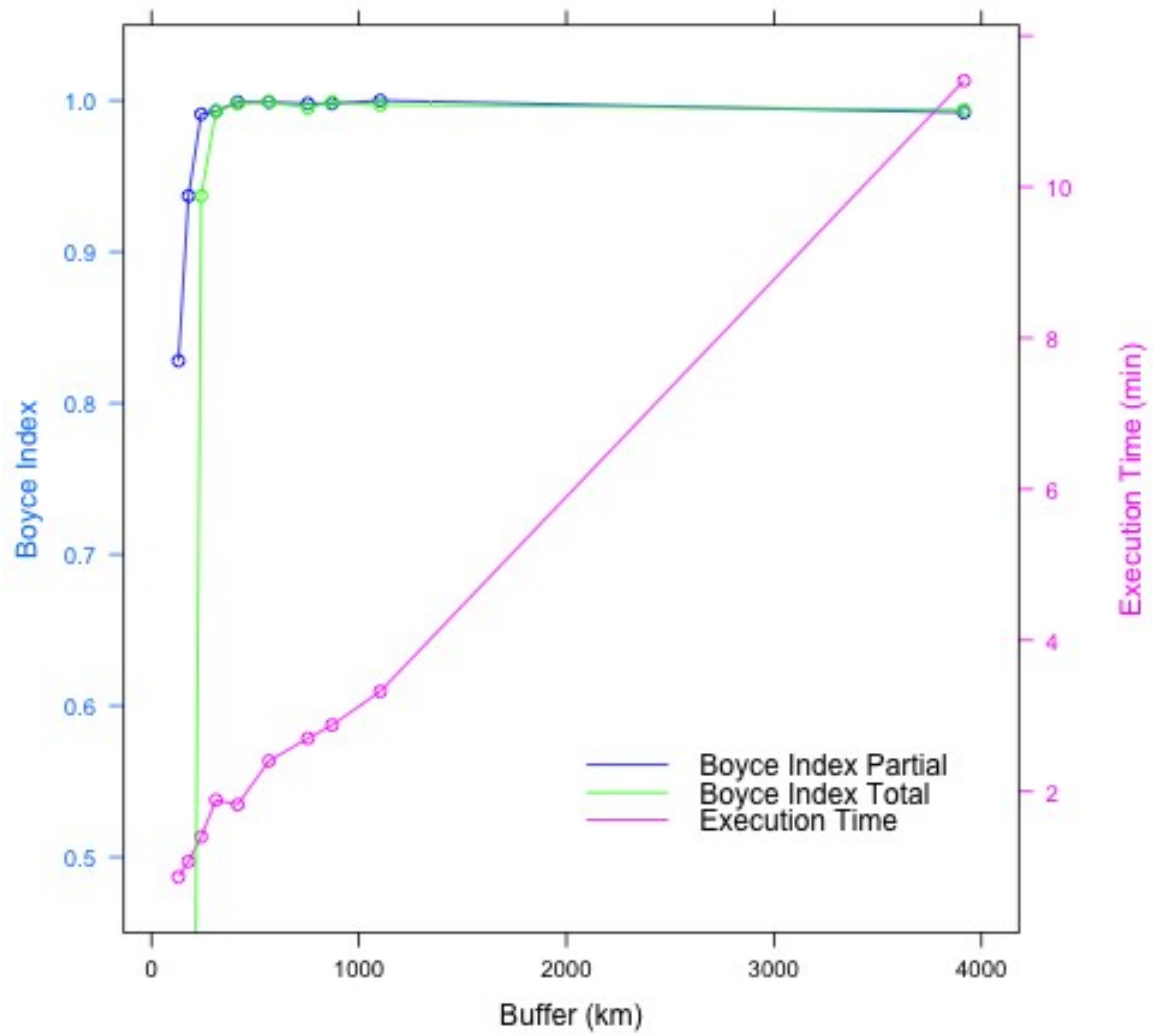
Boyce Index (mean of 3 models) – *Prunus spinosa*

48
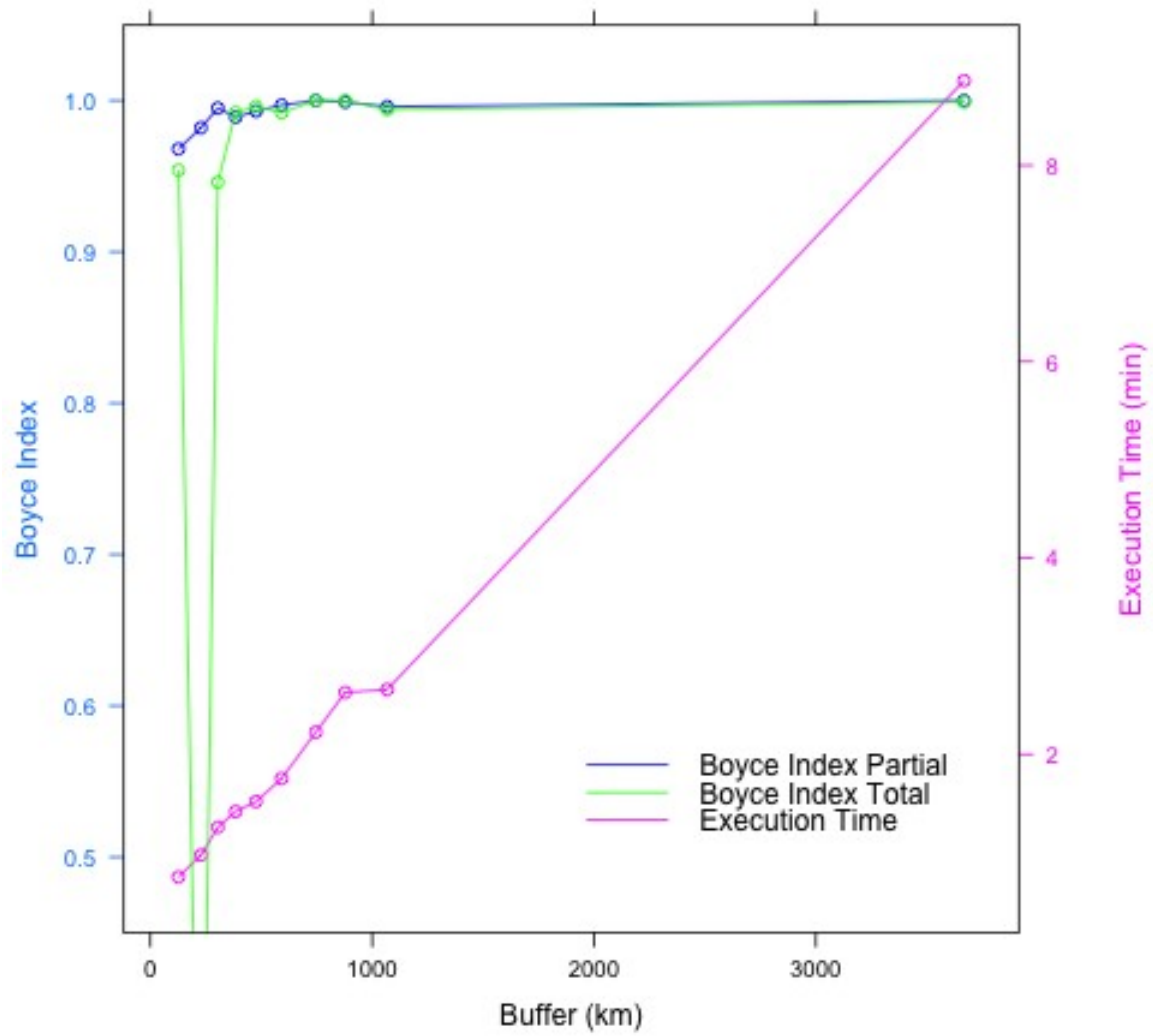
Boyce Index (mean of 3 models) – *Buxus sempervirens*

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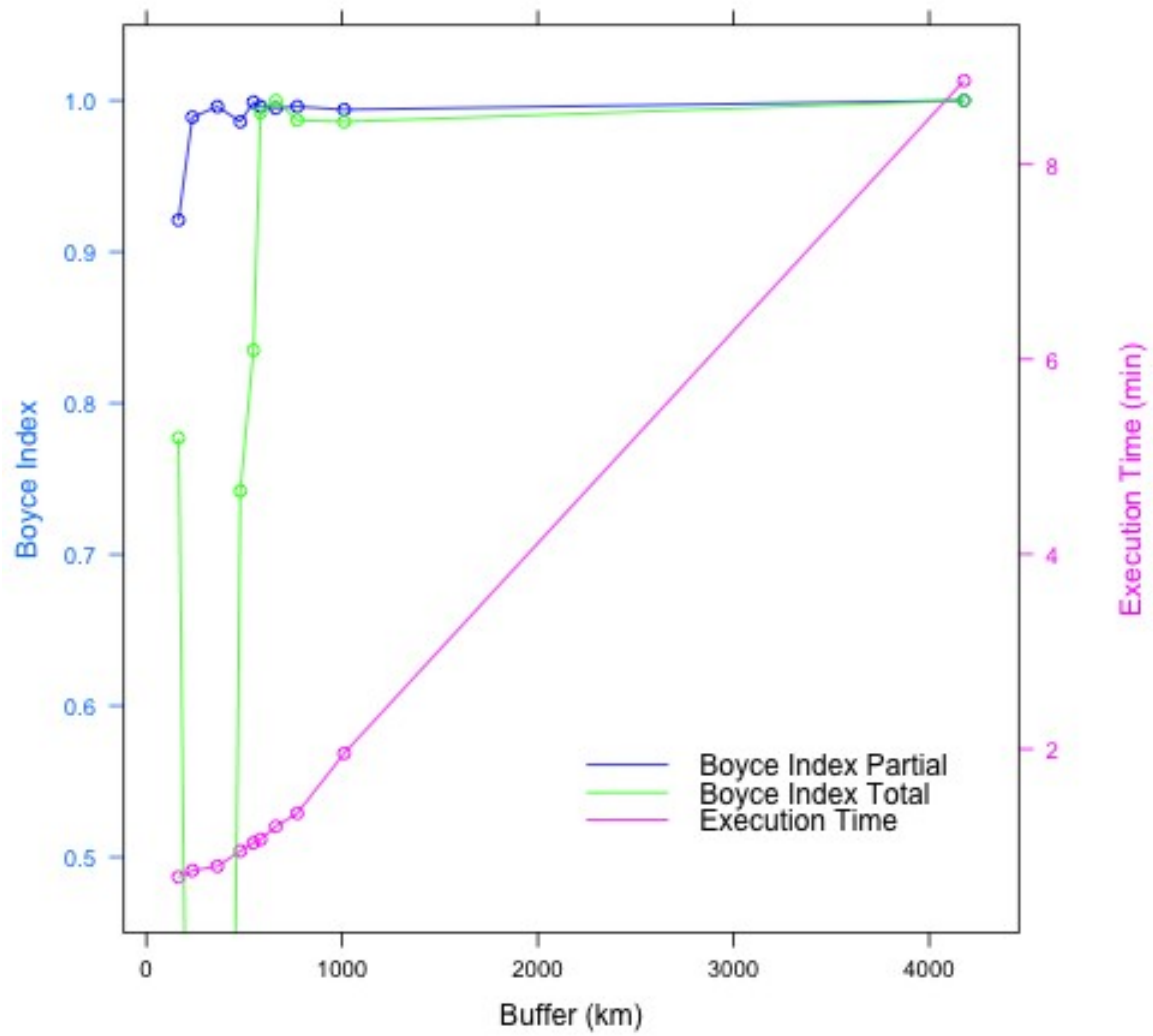
Boyce Index (mean of 3 models) – *Cotoneaster tomentosus*

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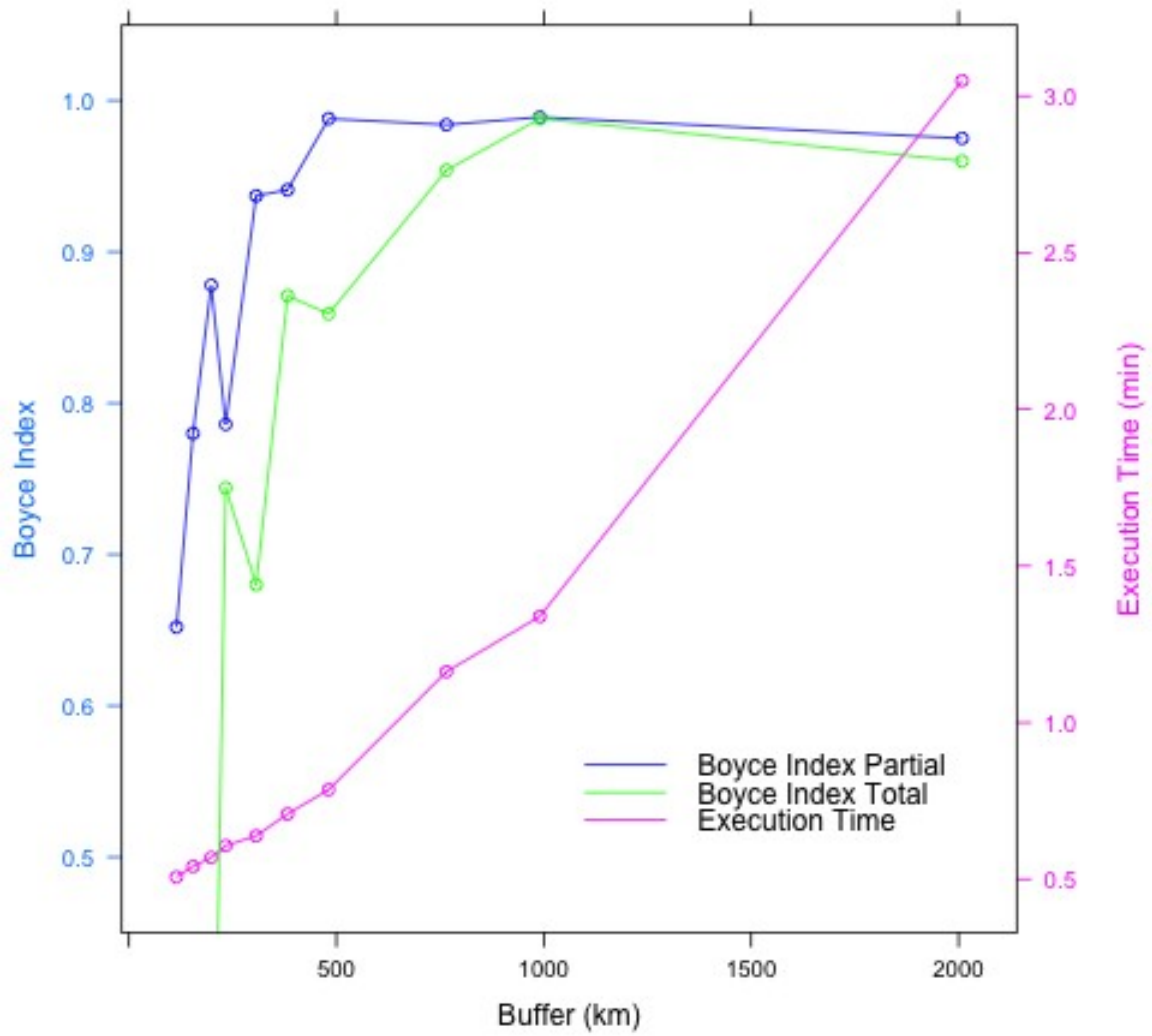
Boyce Index (mean of 3 models) – *Viola mirabilis*

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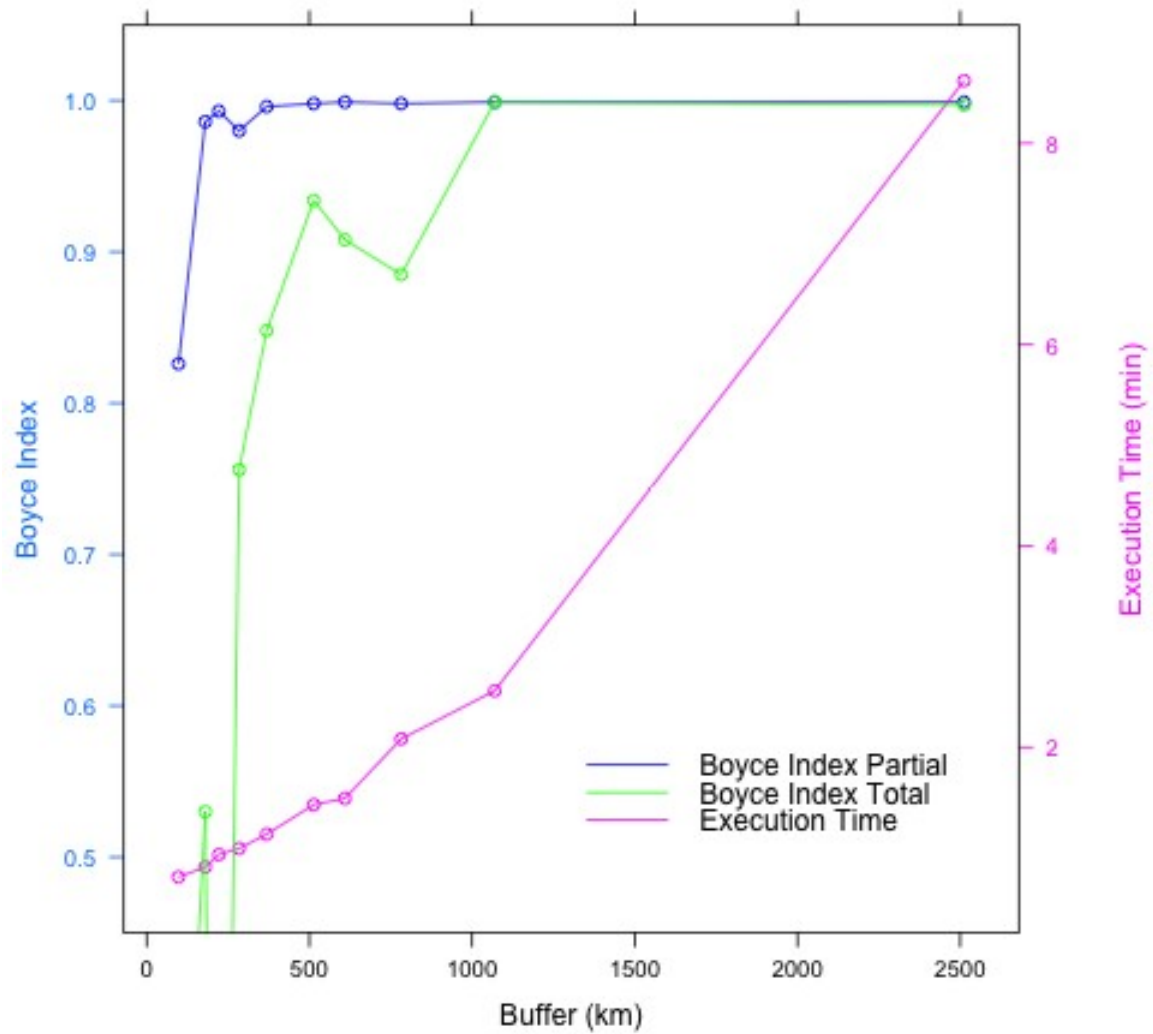
Boyce Index (mean of 3 models) – *Diplotaxis erucoides*
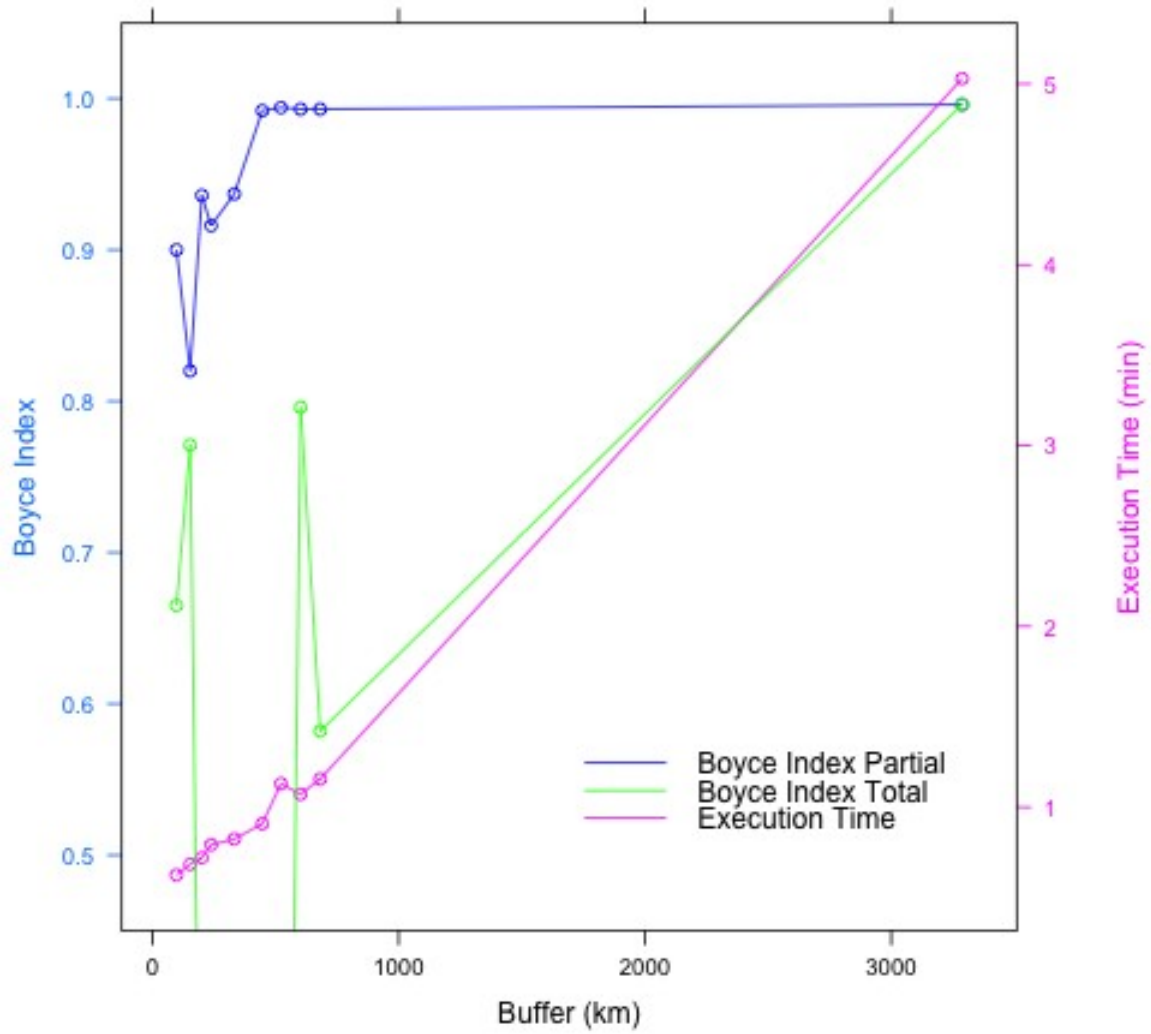
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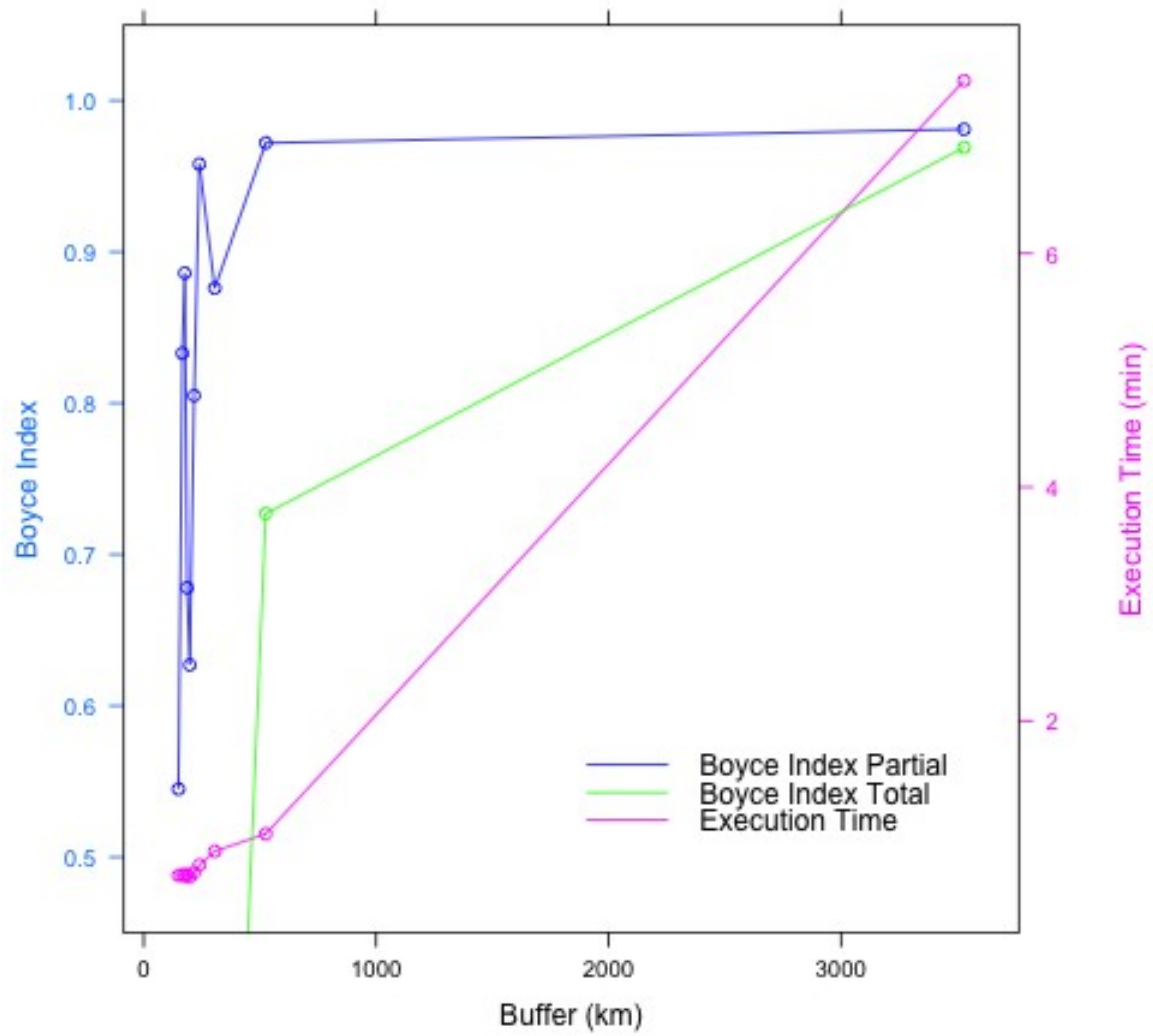
Boyce Index (mean of 3 models) – *Centaurea alba*
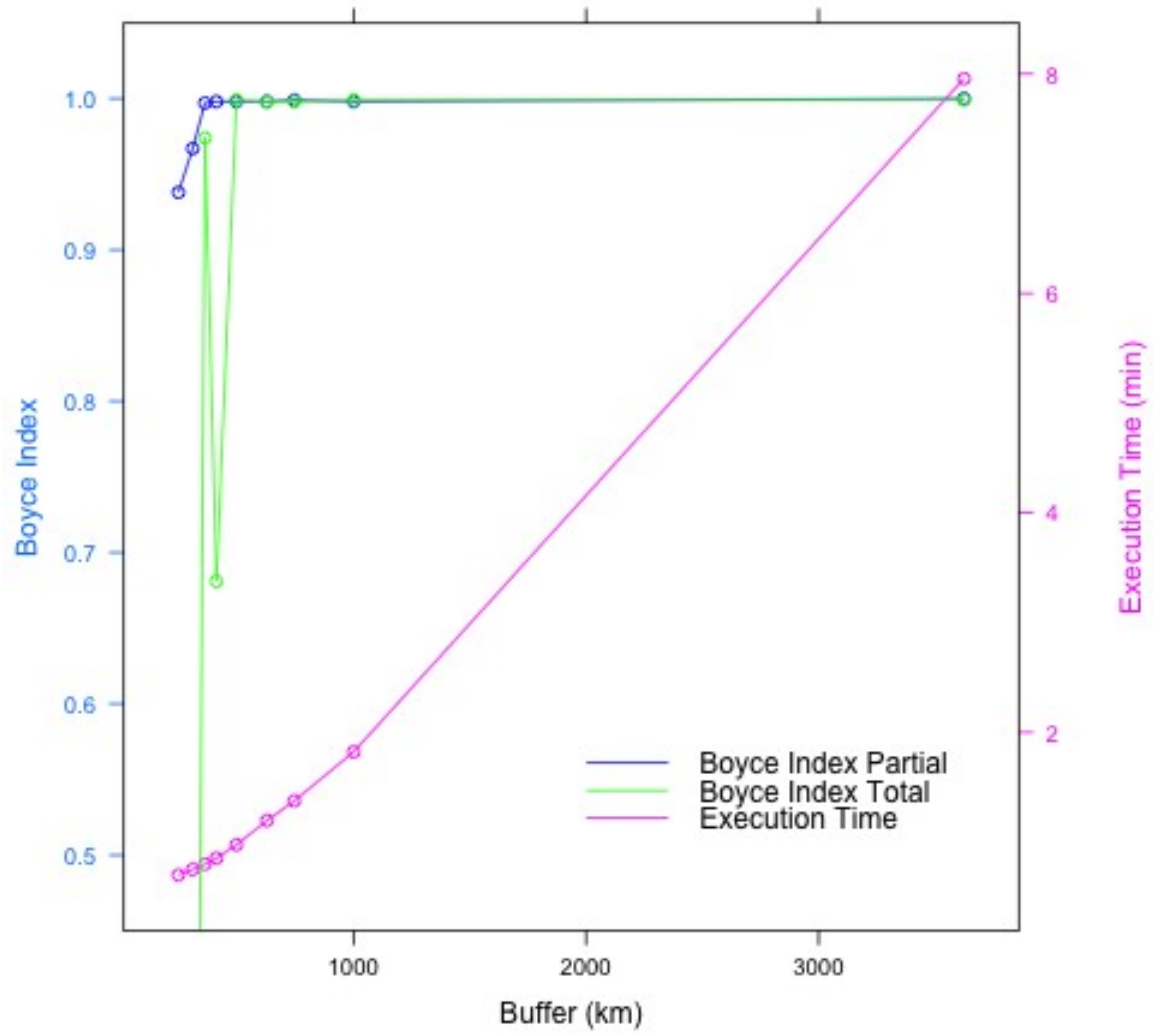
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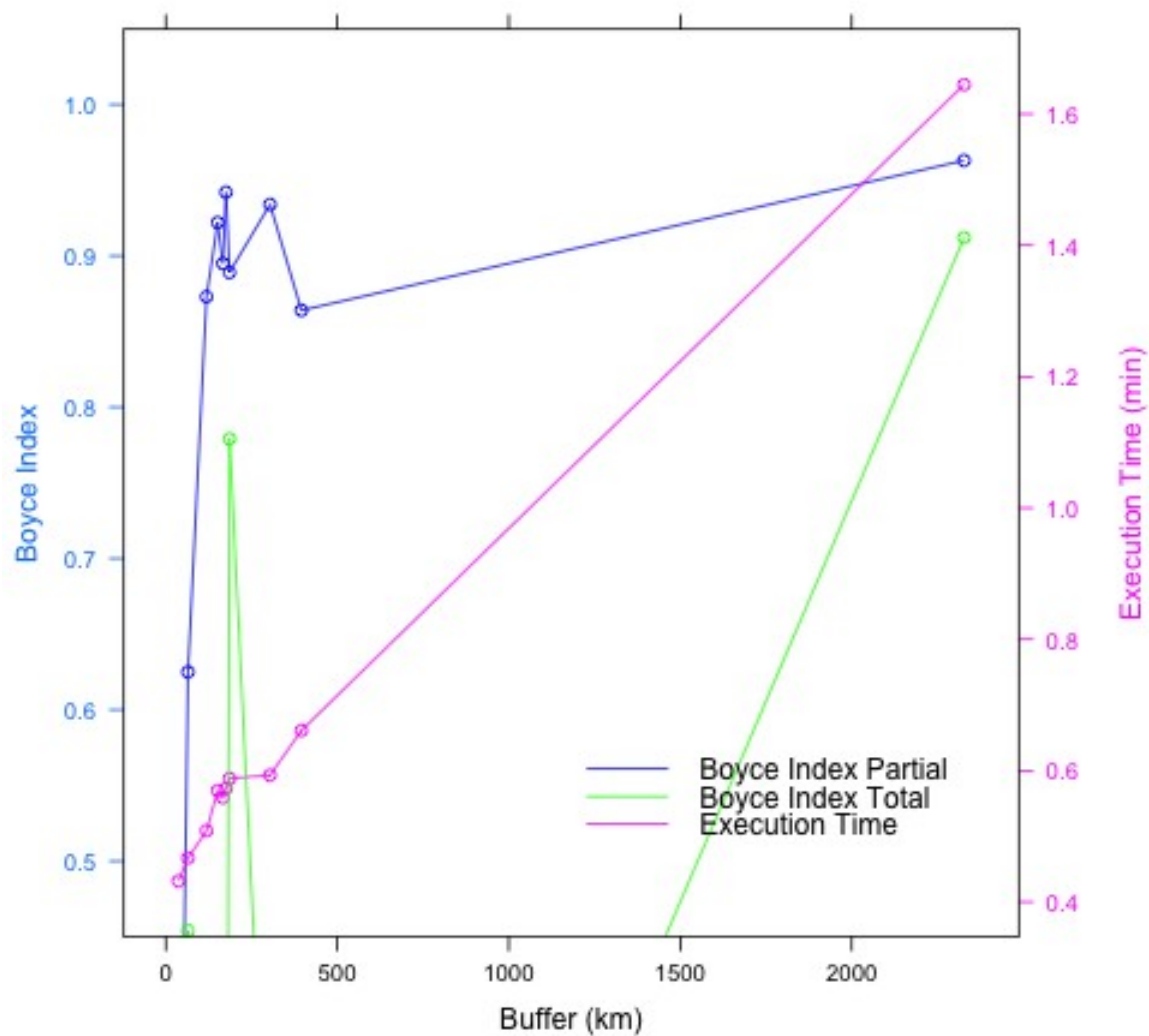
Boyce Index (mean of 3 models) – *Geranium lucidum*

54
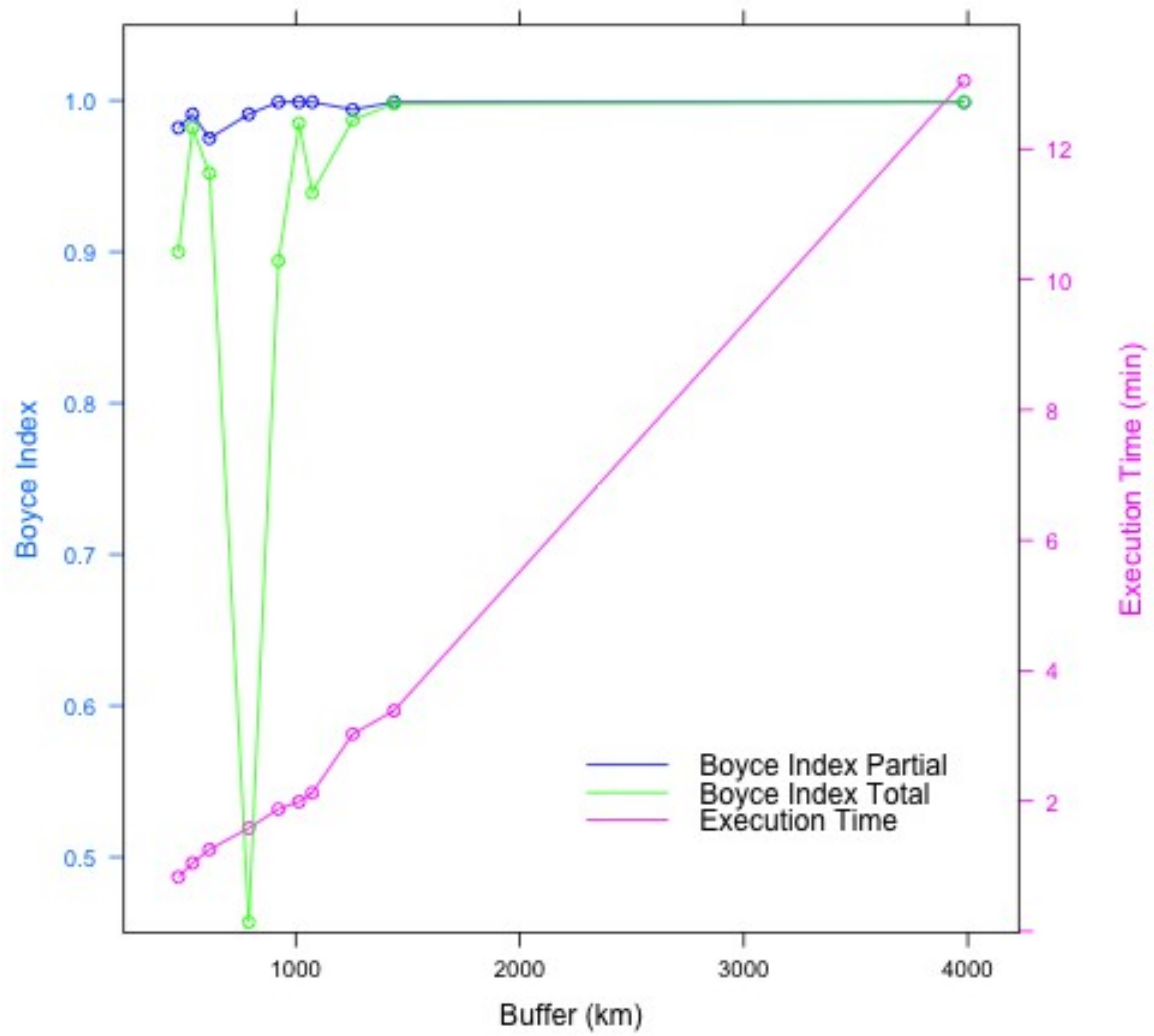
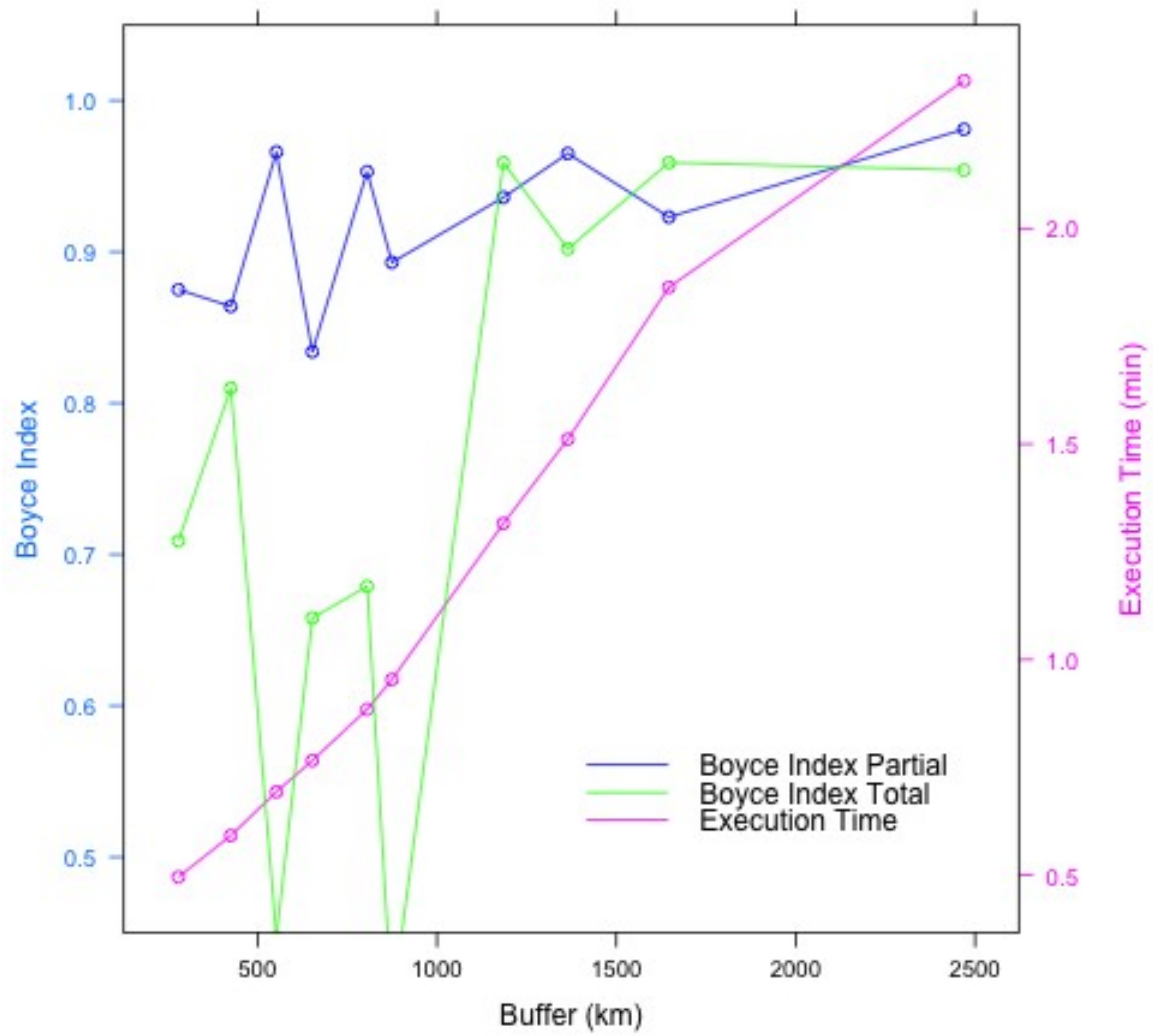Boyce Index (mean of 3 models) – *Linaria alpina*

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30
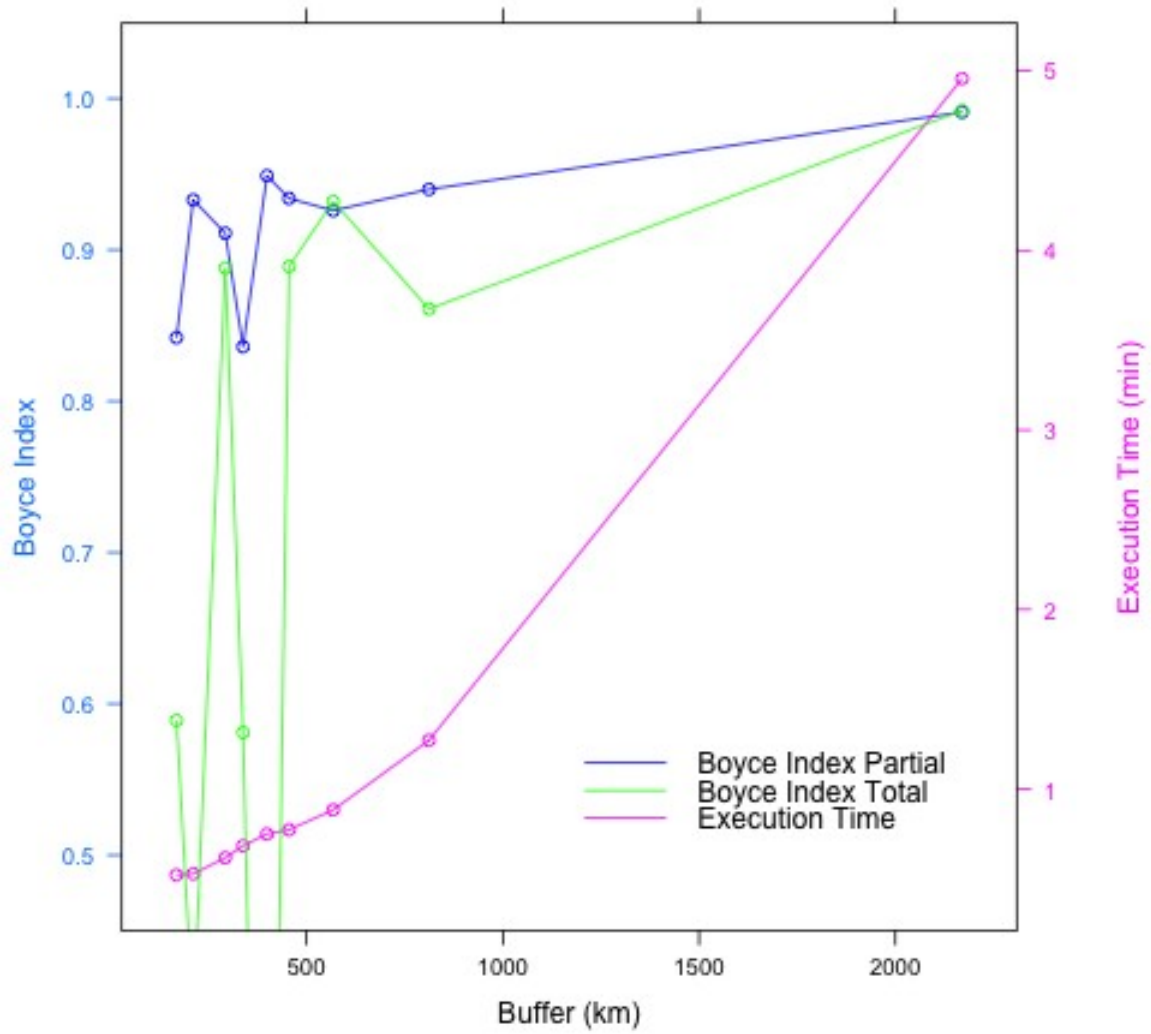
Boyce Index (mean of 3 models) – *Pistacia terebinthus*

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Boyce Index (mean of 3 models) – *Leopoldia comosa*

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Boyce Index (mean of 3 models) – *Lotus edulis*

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5   Supplementary Material S4

61   *Table S4.1: List of species used in case study 3 (Balearic Islands)*

| Case.Study.2	Abbreviation2
Arbutus unedo L.	arb_une
Asphodelus aestivus Rchb.	asp_aes
Chamaerops humilis L.	cha_hum
Ephedra fragilis subsp. fragilis Desf.	eph_fra
Helichrysum stoechas (L.) Moench	hel_sto
Juniperus oxycedrus subsp. oxycedrus L.	jun_oxy
Pistacia lentiscus L.	pis_len
Quercus coccifera L.	que_coc
Rhamnus alaternus L.	rha_ala
Viburnum tinus L.	vib_tin

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70   Figure S4.1: Frequencies of best buffer with and without taking into account execution

71   time in Case Study 3 (Balearic Islands)


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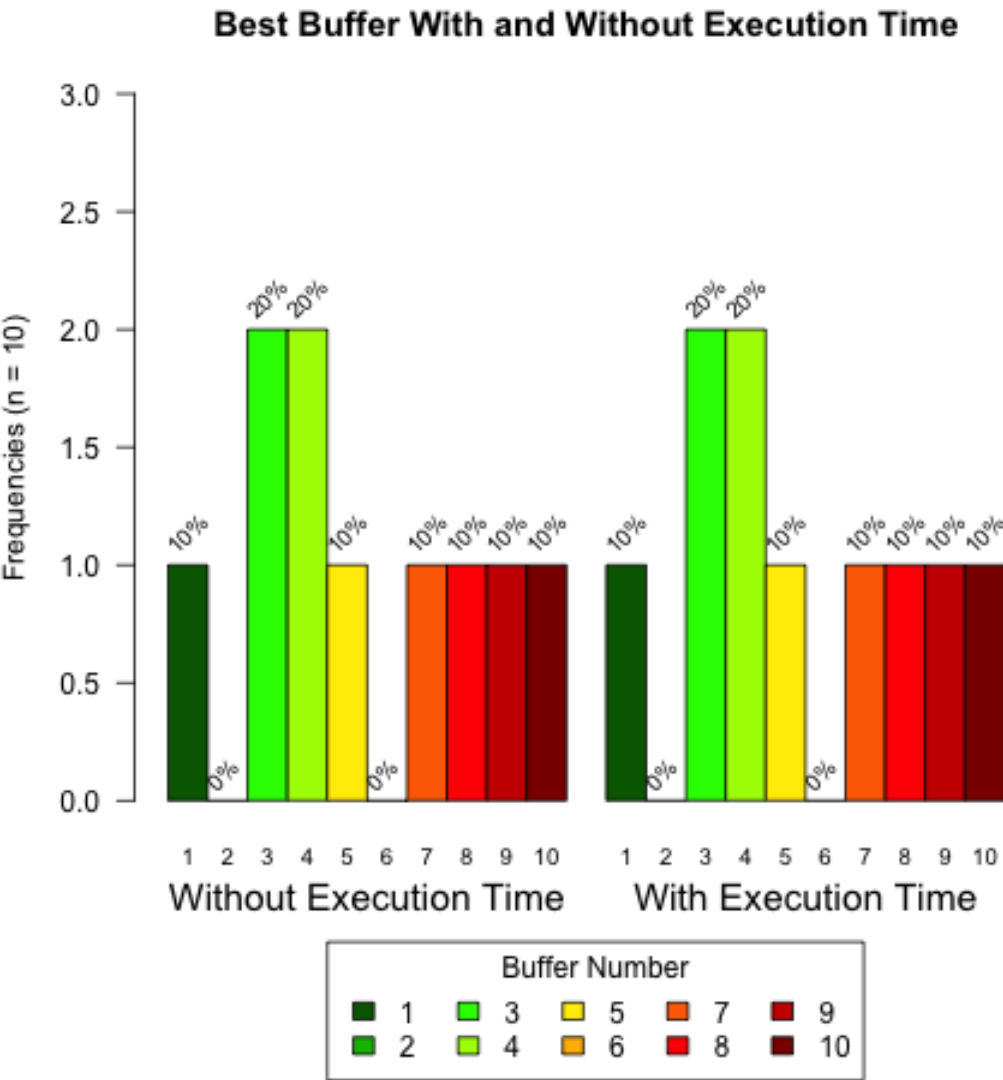
76   Figures S4.2 - S4.11: Evolution of Boyce Index Total (green) and Partial (blue), and the

77   execution time in minutes (pink), for all the species in Case Study 3 (Balearic Islands).

78   The origin of the x-axis corresponds to the geographical centre of the species distribution

79   (mean location for longitude/latitude coordinates dealing with angularity). The x-axis

80   increases (in kilometres) with buffers 1 to 10, respectively the closest and the most

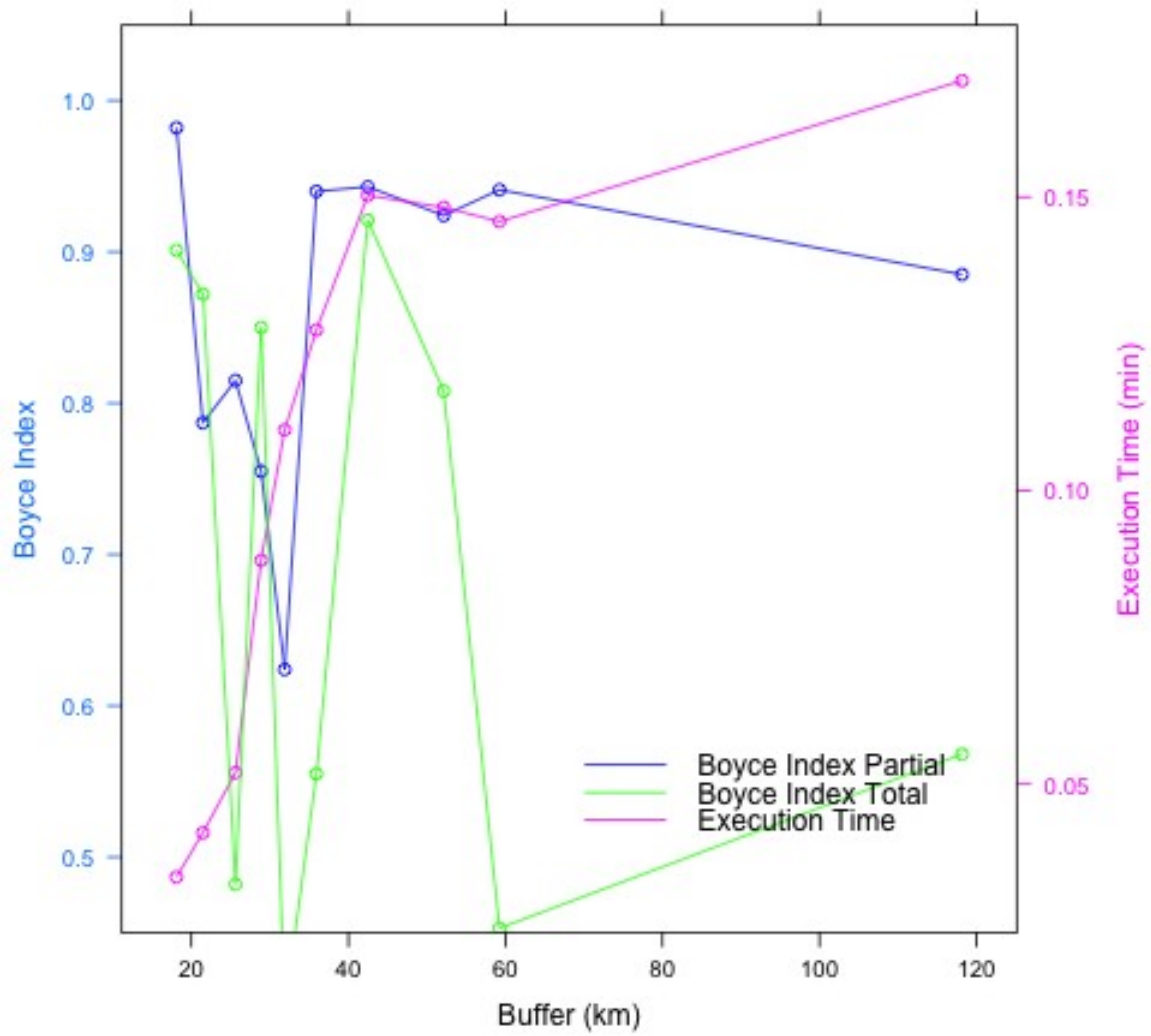81   distant to the centre of species distribution
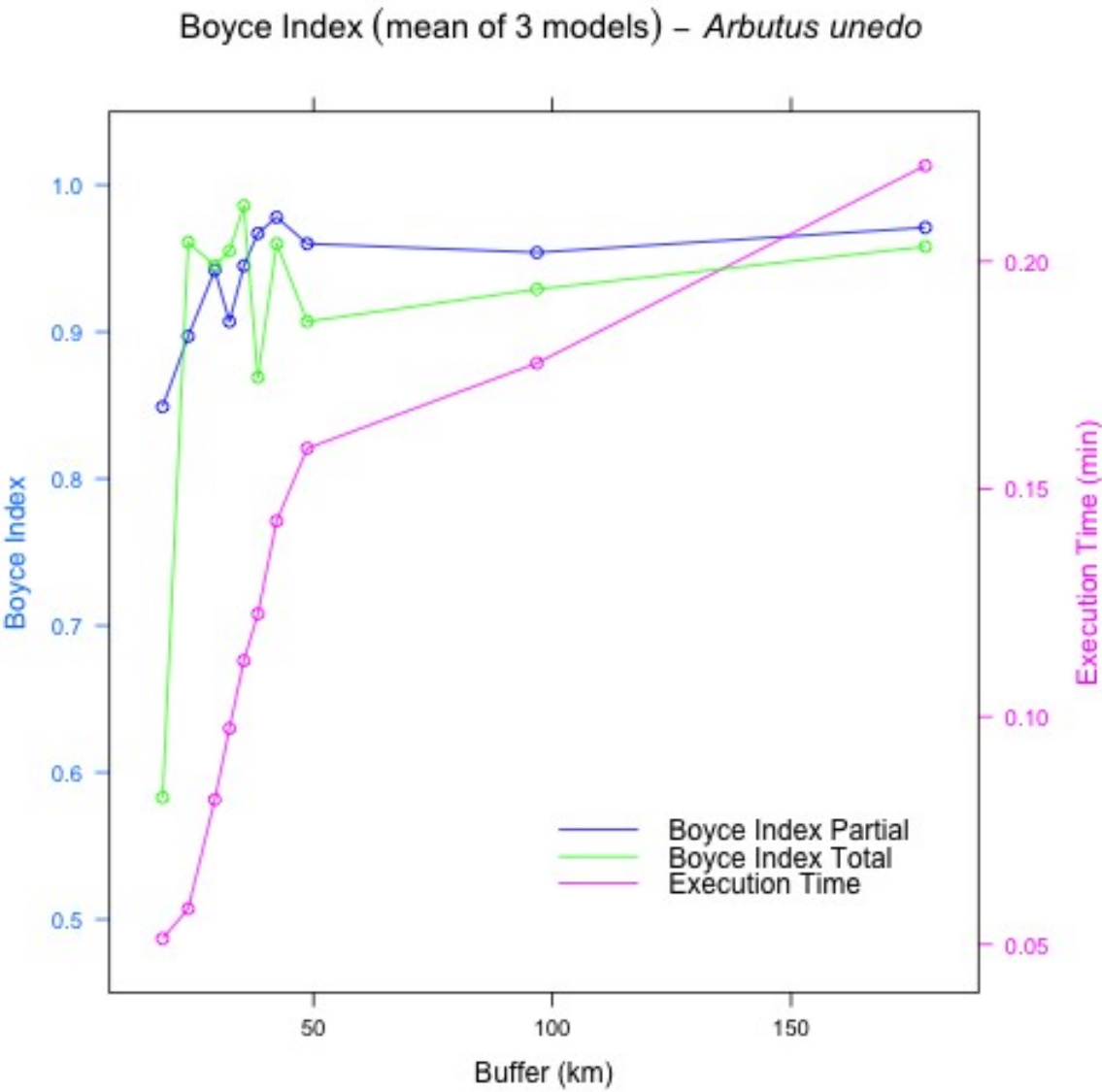
82

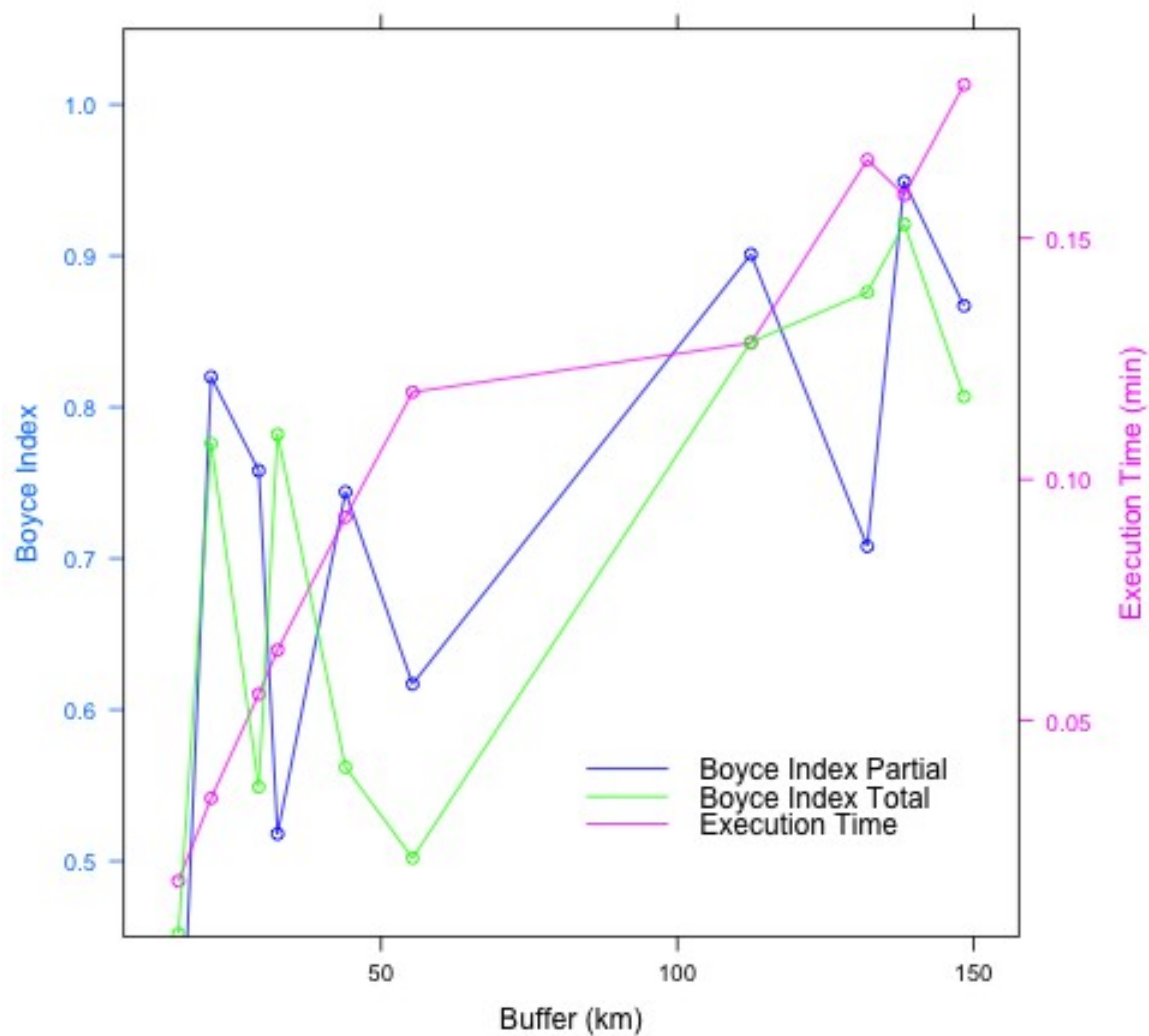Boyce Index (mean of 3 models) – *Asphodelus aestivus*

83
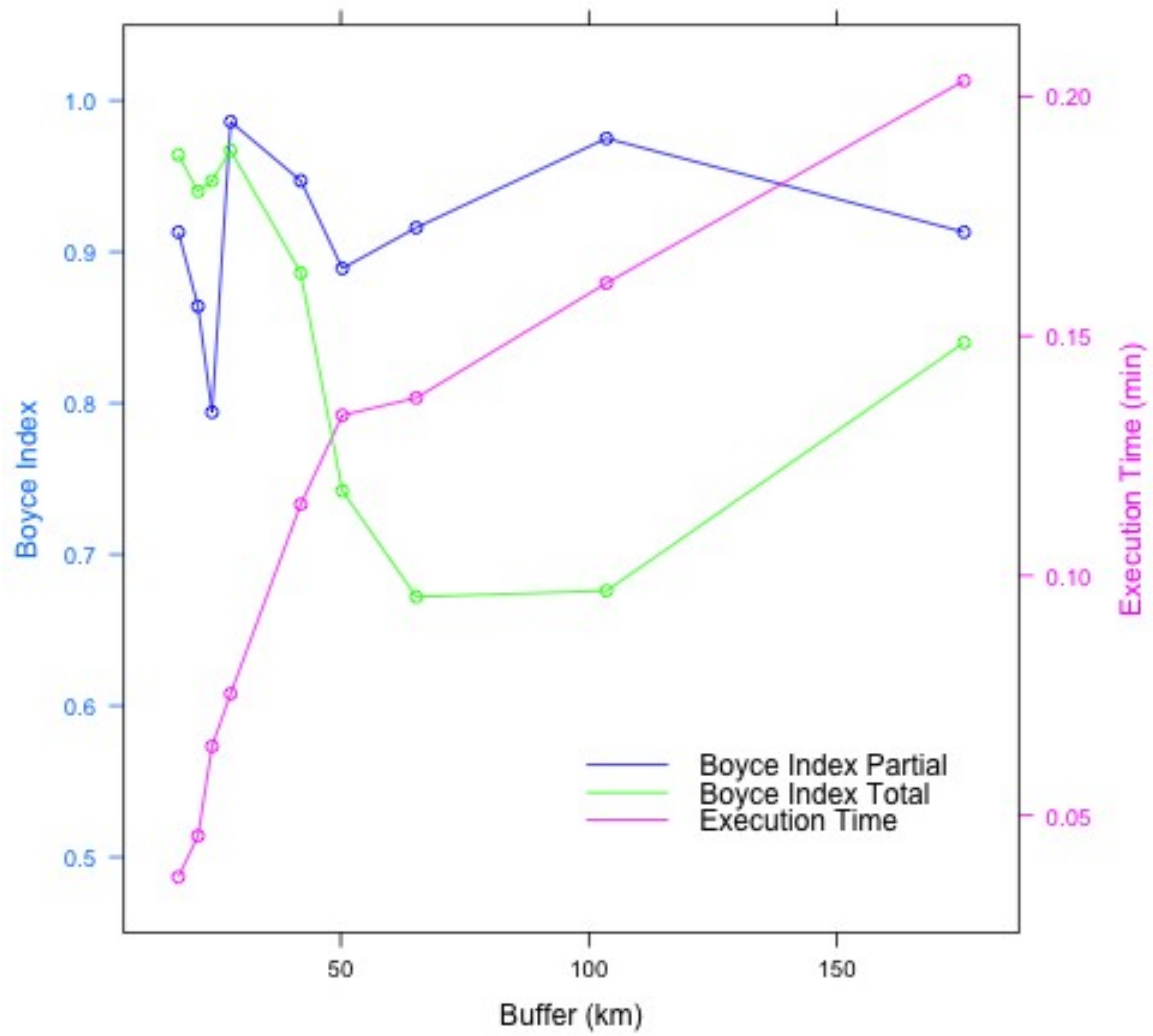
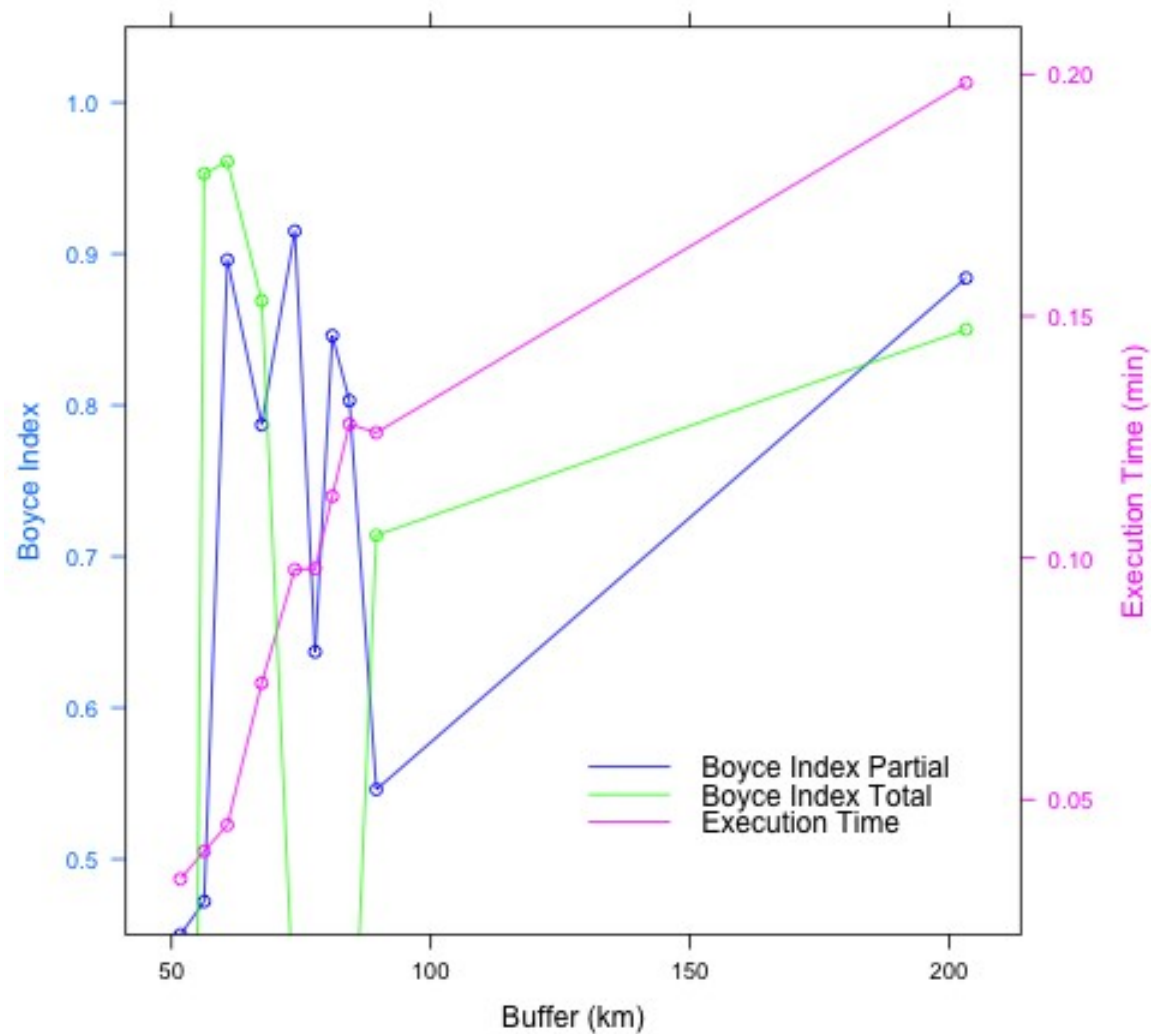Boyce Index (mean of 3 models) – *Chamaerops humilis*

84
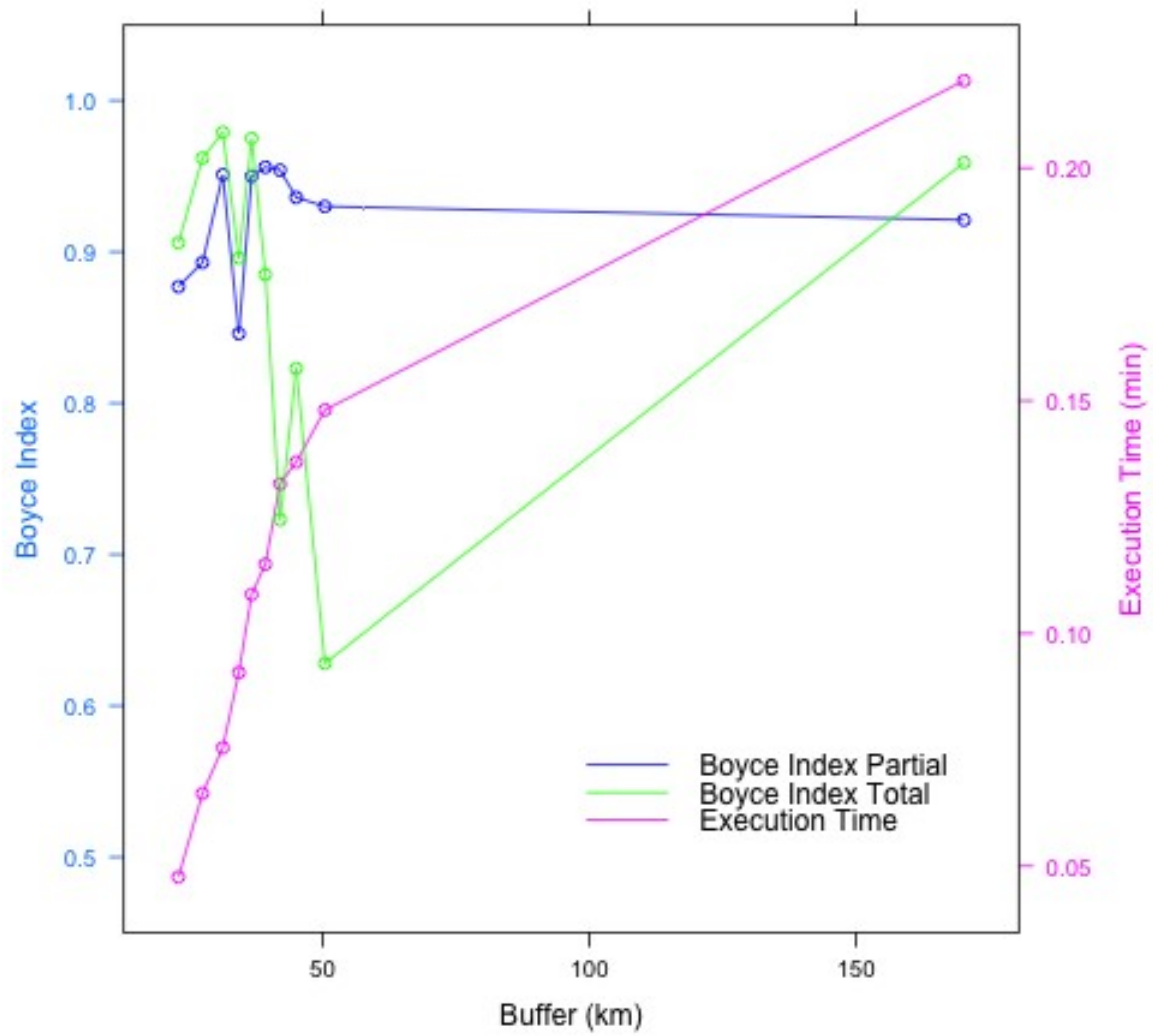
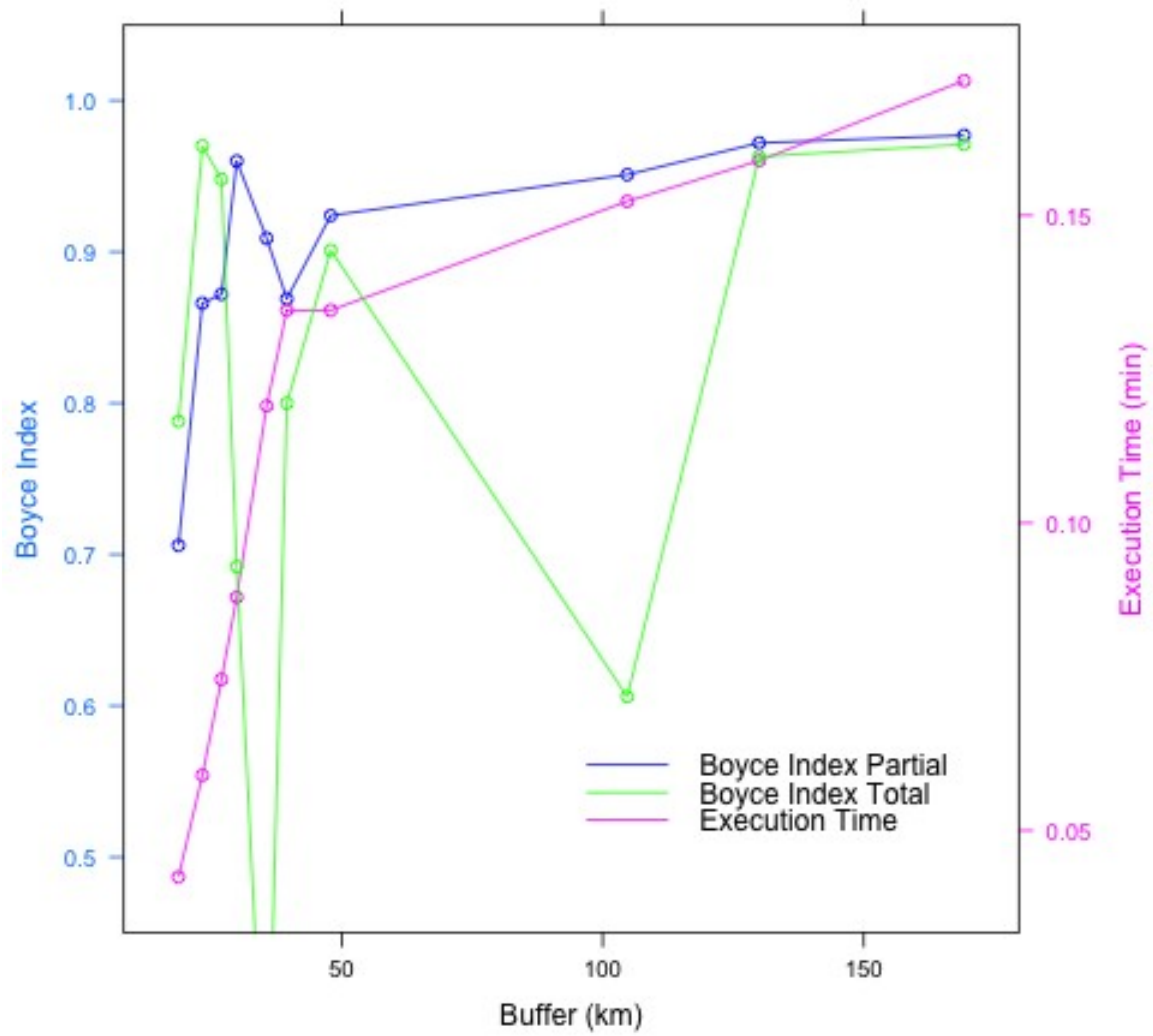Boyce Index (mean of 3 models) – *Ephedra fragilis subsp. fragilis*

85

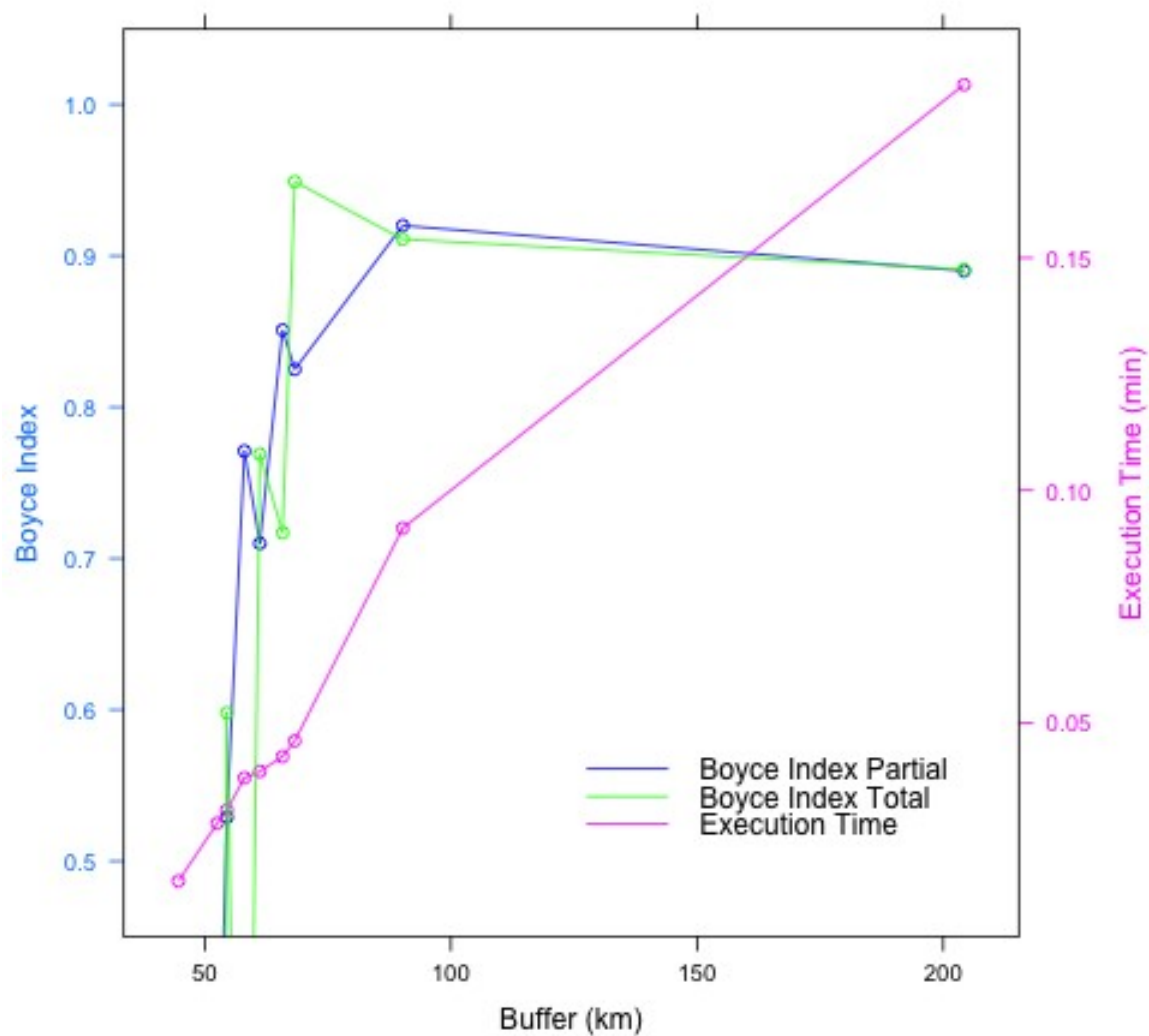Boyce Index (mean of 3 models) – *Helichrysum stoechas*

86

Boyce Index (mean of 3 models) – *Juniperus oxycedrus subsp. oxycedrus*
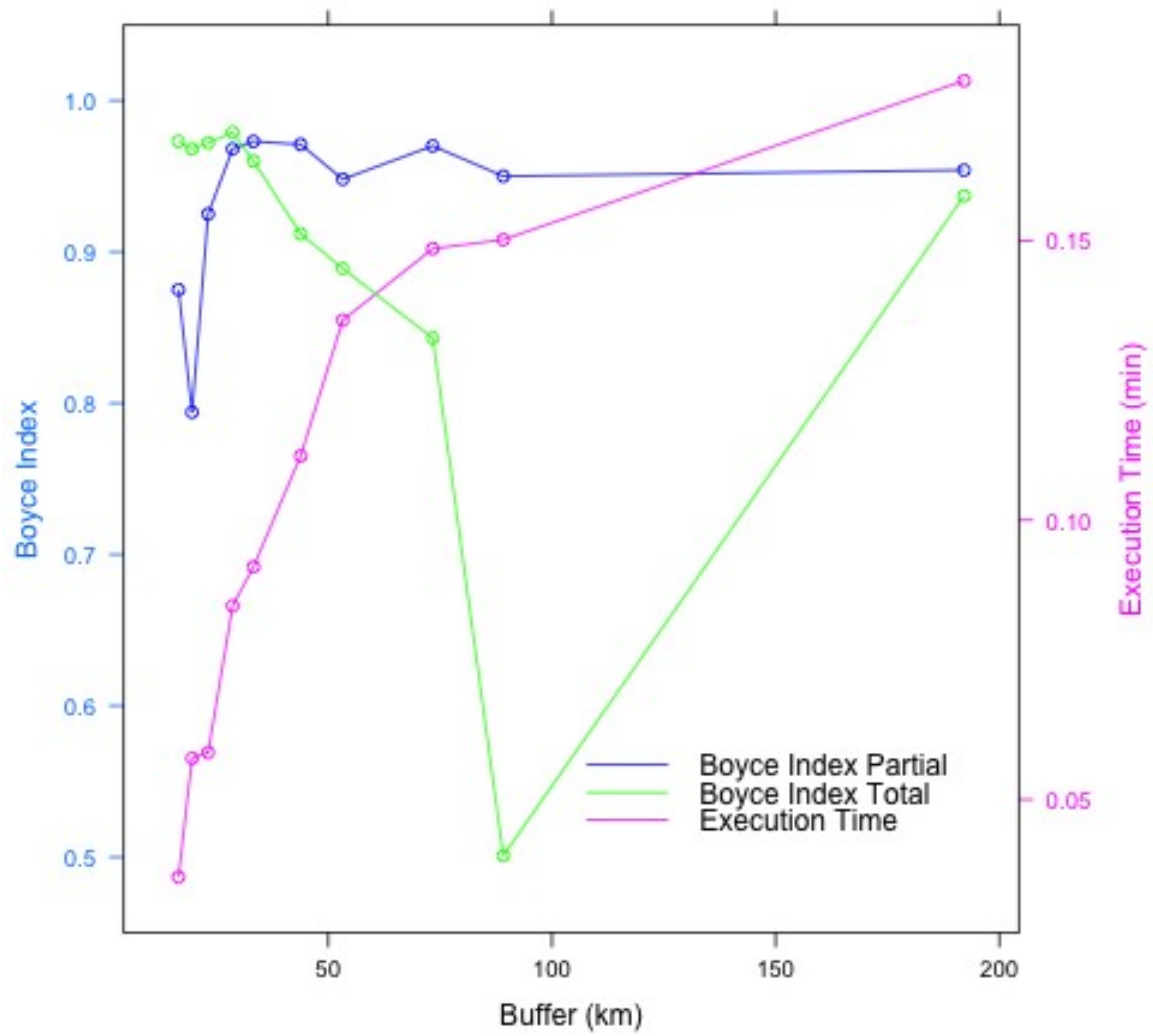

87

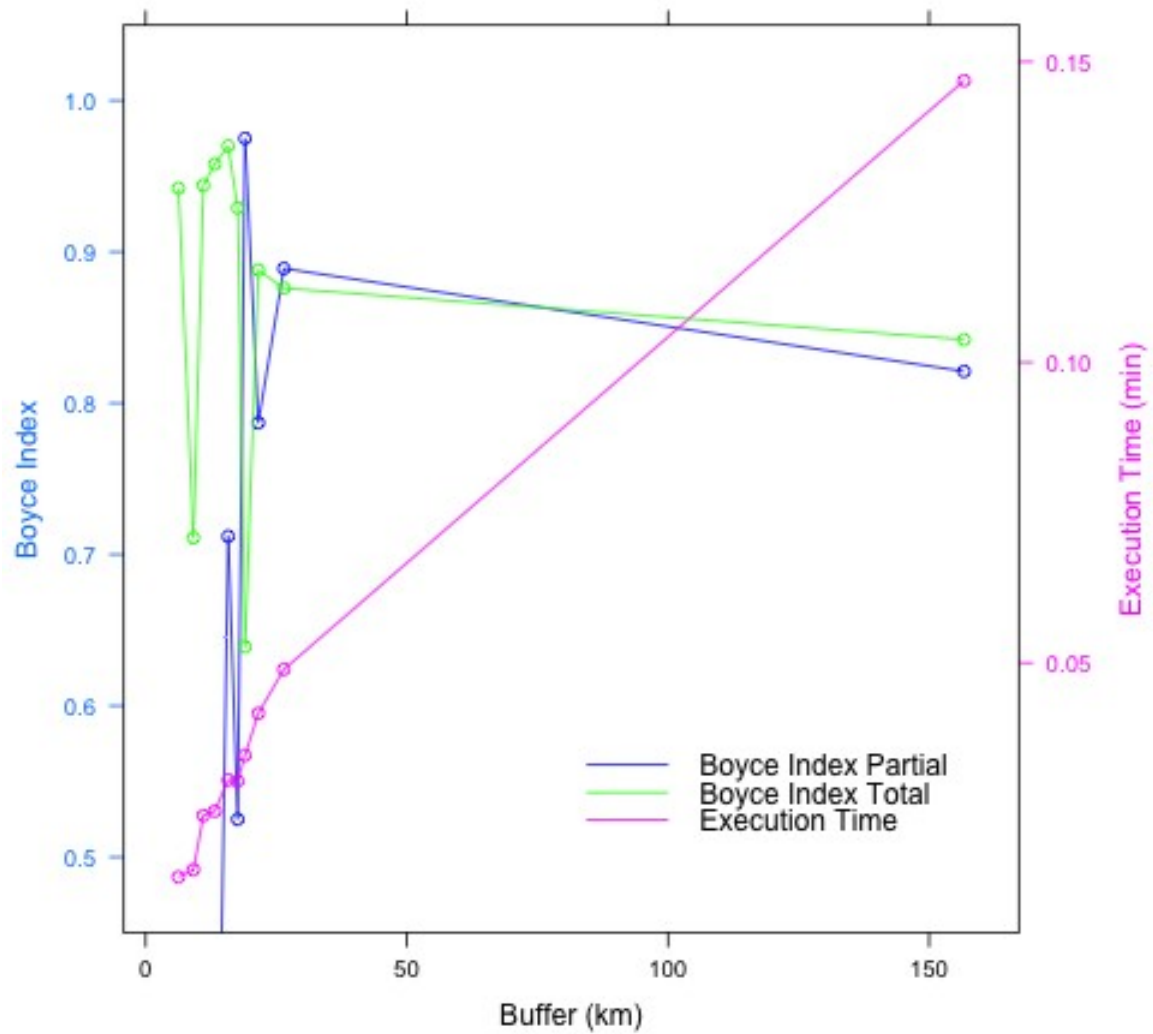# Boyce Index (mean of 3 models) – *Pistacia lentiscus*

88

Boyce Index (mean of 3 models) – *Quercus coccifera*

89

Boyce Index (mean of 3 models) – *Rhamnus alaternus*

Boyce Index (mean of 3 models) – *Viburnum tinus*

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92

6 References

94 Rotllan-Puig, X., 2018. PreSPickR: Downloading species presences (occurrences) from

95   public repositories. https://doi.org/10.13140/RG.2.2.10574.97607/1