

Popravki imen nekaterih rastlinskih združb v luči novega kodeksa

Revision to the names of some plant communities in the light of the new codex

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Izvleček: Po kodeksu fitocenološke nomenklature smo naredili korekcijo imen naslednjih rastlinskih združb: *Lonicero caeruleae-Piceetum*, *Hacquetio-Piceetum*, *Stellario-Piceetum*, *Melampyro vulgati-Quercetum petraeae*, *Knautio drymeiae-Fagetum* in *Bruckenthalio-Juniperetum sibiricae*.

Abstract: In accordance with the codex of phytocoenological nomenclature, we have corrected the names of the following plant communities: *Lonicero caeruleae-Piceetum*, *Hacquetio-Piceetum*, *Stellario-Piceetum*, *Melampyro vulgati-Quercetum petraeae*, *Knautio drymeiae-Fagetum* and *Bruckenthalio-Juniperetum sibiricae*.

1. Uvod

Na osnovi novega kodeksa fitocenološke nomenklature (Barkmann & al. 1986) je naša dolžnost, da uskladimo imena rastlinskih združb, ki niso v skladu s tem kodeksom. V našem primeru gre za rastlinske združbe, ki imajo v imenu poleg floristične še fitogeografsko oznako ali pa so bile objavljene samo v sintetičnih tabelah. V tem prispevku želimo to popraviti in zadostiti načelom Kodeksa, zlasti členoma 34 in 39. Korekcije imen rastlinskih združb se nanašajo na gozdne in grmiščno združbo, katerih avtor je Zupančič oziroma v enem primeru s soavtorstvom Puncerja. Te so: *Lonicero caeruleae-Piceetum*, *Hacquetio-Piceetum*, *Stellario-Piceetum*, *Melampyro vulgati-Quercetum petraeae*, *Knautio drymeiae-Fagetum* in *Bruckenthalio-Juniperetum sibiricae*. Hkrati smo izvedli še korekcijo značilnic in

razlikovalnic v asociacijah oziroma v geografskih variantah *Melampyro vulgati-Quercetum petraeae* in *Knautio drymeiae-Fagetum*. Pri korekciji imen rastlinskih združb smo se opirali na deli Marinček & al. 1992 in Mucina & al. 1993.

Zahvaljujem se gospe prof. Mariji Horvat, ki je prijazno dovolila objavo treh fitocenoloških popisov prof. dr. I. Horvata.

1. Introduction

On the basis of the new codex of phytocoenological nomenclature (Barkmann & al. 1986), we have an obligation to revise the names of plant communities which have in addition to floral also a phytogeographic character, or have only been published in synthetic tables. We wish to correct the situation with this contribution, and to satisfy the principles of

the Codex, in particular articles 34 and 39. The corrections to names of plant communities relate to forest and shrub associations, of which the author is Zupančič or, in one case, co-author with Puncer. These are: *Lonicero caeruleae-Piceetum*, *Hacquetio-Piceetum*, *Stellario-Piceetum*, *Melampyro vulgati-Quercetum petraeae*, *Knautio drymeiae-Fagetum* and *Bruckenthalio-Juniperetum sibiricae*. At the same time, we have introduced additional corrections to the characteristic and differential species in the associations and in the geographic variants of *Melampyro vulgati-Quercetum petraeae* and *Knautio drymeiae-Fagetum*. In the corrections to the names of plant communities, we have relied on sections of Marinček & al. 1992 and Mucina & al. 1993.

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2. Gozdne združbe - Forest associations

Lonicero caeruleae-Piceetum (Zupančič 1976) nom. nov. hoc loco

Syn.: *Piceetum subalpinum dinaricum* Zupančič 1976 (Art. 34), *Piceetum subalpinum dinaricum* M. Wraber 1960 (Art. 2b).

Nomenclationis typus: Zupančič (1980: tabela - table 1, popis - relevé 34), neotypus hoc loco.

Hacquetio-Piceetum (Zupančič 1976) nom. nov. hoc loco

Syn.: *Piceetum montanum dinaricum* Zupančič 1976 (Art. 34).

Nomenclationis typus: Zupančič (1980: tabela - table 3, popis - relevé 10), neotypus hoc loco.

Stellario montani-Piceetum (Zupančič 1976) nom. nov. hoc loco

Syn.: *Luzulo albidae-Piceetum* Zupančič 1976 (Art. 34), *Calamagrostido-Piceetum* M. Wraber 1960 (Art. 2b).

Non: *Luzulo nemorosae-Piceetum* (Schmid & Gaisberg 1936) Br.-Bl. & Sissing in Br.-Bl. & al. 1939.

Nomenclationis typus: Zupančič (1980: tabela - table 2, popis - relevé 1), neotypus hoc loco.

Melampyro vulgati-Quercetum *petraeae* Puncer & Zupančič 1979

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum praedinarium*, popis - relevé 1), holotypus (Izbrano iz originalne literature - Selected from original literature).

Nomenklaturna pripomba: Iz primerjalne tabeli (Puncer & Zupančič 1979: sintetična tabela) so razvidne floristične razlike med asociacijama *Melampyro-Quercetum* Puncer & Zupančič 1979 in *Luzulo-Quercetum* Noirfalise & Sougnez 1956, kar nam potrjuje tudi izračunani Sørensenov indeks podobnosti cenoz, ki je 38.

Note to nomenclature: From the appropriate table (Puncer & Zupančič 1979: synthetic table), the floral differences between the *Melampyro-Quercetum* Puncer & Zupančič 1979 and *Luzulo-Quercetum* Noirfalise & Sougnez 1956 associations are clearly

evident, as also confirmed by calculation of Sörensen's index of analogies of coenosis which is 38.

Melampyro vulgati-Quercetum petraeae var. geogr. *Fraxinus ornus* (Puncer & Zupančič 1979) nom. nov. hoc loco

Syn.: *Melampyro vulgati-Quercetum petraeae submediterraneum* Puncer & Zupančič 1979 (Art. 34), *Luzulo albidae-Quercetum petraeae* Puncer & Zupančič 1977 (Art. 2b).

Non: *Luzulo albidae-Quercetum petraeae* Noirfalise & Sougnez 1956.

Nomenclationis typus: Puncer & Zupančič (1979; tabula - table *Melampyro-Quercetum submediterraneum*, popis - relevé 1), neotypus hoc loco.

Nomenklatura pripomba: Razlikovalnice geografske variante so: *Fraxinus ornus*, *Quercus cerris*, *Orobanche nana*, *Avenella flexuosa*.

Note to nomenclature: The differential specieses of the geographic variant are: *Fraxinus ornus*, *Quercus cerris*, *Orobanche nana*, *Avenella flexuosa*.

Geografska varianta se členi na subasociacijo in tri faciese:

The geographic variant is divided to the subassociation and three facies:

- *Melampyro-Quercetum* var. geogr. *Fraxinus ornus luzuletosum albidae* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum submediterraneum luzuletosum albidae* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum submediterraneum*, popis - relevé 1), neotypus hoc loco.

- *Melampyro-Quercetum* var. geogr. *Fraxinus ornus luzuletosum vacciniosum myrtilli* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum submediterraneum mytilletosum* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum submediterraneum*, popis - relevé 8), neotypus hoc loco.

- *Melampyro-Quercetum* var. geogr. *Fraxinus ornus luzuletosum calamagrostiosum arundinaceae* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum submediterraneum calamagrostidetosum arundinaceae* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum submediterraneum*, popis - relevé 12), neotypus hoc loco.

- *Melampyro-Quercetum* var. geogr. *Fraxinus ornus luzuletosum callunosum vulgaris* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum submediterraneum callunetosum* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum submediterraneum*, popis - relevé 15), neotypus hoc loco.

Melampyro vulgati-Quercetum petraeae var. geogr. *Epimedium alpinum* (Puncer & Zupančič 1979) nom. nov. hoc loco

Syn.: *Melampyro vulgati-Quercetum petraeae praedinaricum* Puncer & Zupančič 1979 (Art. 34), *Luzulo albidae-Quercetum petraeae* Puncer & Zupančič 1977 (Art. 2b).

Non: *Luzulo albidae-Quercetum petraeae* Noirfalsé & Sougnez 1956.

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum praedinaricum*, popis - relevé 10), neotypus hoc loco.

Nomenklaturna pripomba: Razlikovalnice geografske variante so: *Epimedium alpinum*, *Castanea sativa*, *Teucrium scorodonia*, *Picea abies*.

Note to nomenclature: The differential species of the geographic variant are: *Epimedium alpinum*, *Castanea sativa*, *Teucrium scorodonia*, *Picea abies*.

Geografska varianta se členi na subasociacijo in facies:

The geographic variant is divided to a subassociation and two facies:

- *Melampyro-Quercetum* var. geogr. *Epimedium alpinum vaccinietosum myrtilli* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum praedina-*

ricum myrtilletosum Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum praedinaricum*, popis - relevé 4), neotypus hoc loco.

- *Melampyro-Quercetum* var. geogr. *Epimedium alpinum vaccinietosum luzulosum albidae* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum praedinaricum luzuletosum albidae* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum praedinaricum*, popis - relevé 1), neotypus hoc loco.

- *Melampyro-Quercetum* var. geogr. *Epimedium alpinum vaccinietosum callunosum vulgaris* (Puncer & Zupančič 1979) nom. nov. hoc loco.

Syn.: *Melampyro-Quercetum praedinaricum callunetosum vulgaris* Puncer & Zupančič 1979 (Art. 34).

Nomenclationis typus: Puncer & Zupančič (1979: tabela - table *Melampyro-Quercetum praedinaricum*, popis - relevé 10), neotypus hoc loco.

Knautio drymeiae-Fagetum (Zupančič 1969) nom. nov. hoc loco.

Basionim: *Aceri-Fagetum pohoricum* Zupančič 1969 (Art. 34).

Pseudonim: *Aceri-Fagetum* sensu M. Wraber 1960.

Non: *Aceri pseudoplatani-Fagetum* Bar-

tsch & Bartsch 1940.

Nomenclationis typus (neotypus hoc loco): Slovenija, Pohorje (Črni vrh), 1320 m nad morjem - above sea level, ekspozicija - exposition: NE-E, nagib - inclination: 20-25°, pokrovnost - covering rate: E₃: 70-80 %, E₂: 0 %, E₁: 95%, E₀: 0 %, datum - date: 18.8.1955, M. Wraber:

E₃: *Acer pseudoplatanus* 3.1*, *Fagus sylvatica* 3.1, *Picea abies* 2.1, *Abies alba* +.

E₂: *Fagus sylvatica* +, *Picea abies* +, *Rubus idaeus* +.

E₁: *Galium odoratum* 4.4, *Athyrium filix-femina* 2.2, *Dentaria trifolia* 2.2*, *Sympyrum tuberosum* subsp. *nodosum* 2.2, *Oxalis acetosella* 1.3, *Adoxa moschatellina* 1.2, *Dryopteris filix-mas* 1.2, *Milium effusum* 1.2°, *Acer pseudoplatanus* 1.1*, *Actaea spicata* 1.1, *Doronicum austriacum* 1.1, *Lamium galeobdolon* 1.1, *Cardamine trifolia* +, *Impatiens noli-tangere* +.3°, *Calamagrostis arundinacea* +.2, *Deschampsia caespitosa* +.2*, *Hypericum maculatum* +.2, *Stellaria nemorum* +.2, *Urtica dioica* +.2, *Adenostyles glabra* +, *Epilobium montanum* +, *Fagus sylvatica* +, *Galeopsis speciosa* +, *Gentiana asclepiadea* +, *Knautia drymeia* subsp. *drymeia* +*, *Lamium maculatum* +, *Luzula pilosa* +*, *Luzula sylvatica* subsp. *sylvatica* +*, *Melampyrum sylvaticum* subsp. *sylvaticum* +, *Melandrium rubrum* +, *Paris quadrifolia* +, *Phyteuma spicatum* +, *Prenanthes purpurea* +, *Scrophularia nodosa* +, *Senecio nemorensis* subsp. *fuchsii* +,

Solidago virgaurea +, *Veratrum album* subsp. *album* +, *Polygonatum verticillatum* +.0, *Thalictrum aquilegifolium* +.0.

Pripomba k popisu: Značilnice in razlikovalnice asociacije so označene z zvezdico (*).

Note to the relevé: The characteristic and differential species of the association are marked with an asterisk (*).

Iz primerjalne tabele (Zupančič 1969: Synthetische Tabelle des *Aceri-Fagetum*) so razvidne floristične razlike med asociacijama *Knautio drymeiae-Fagetum* in *Aceri-Fagetum* Bartsch & Bartsch 1940. Razlike nam potrjuje tudi izračunani Sörensenov indeks podobnosti cenoz med našo in J. in M. Bartschevo asociacijo, ki je 57, ter med našo asociacijo in asociacijo *Aceri-Fagetum*, ki sta jo opisala Oberdorfer (1952, Schwarzwald) in Moor (1952, Švicarska Jura), kjer je indeks tudi 57.

The floristic differences between the associations *Knautio drymeiae-Fagetum* and *Aceri-Fagetum* Bartsch & Bartsch 1940 are clear from the appropriate table (Zupančič 1969: Synthetische Tabelle des *Aceri-Fagetum*). The differences are also confirmed by the calculation of the Sörensen index of analogies of coenosis, between our and J. and M. Bartsch's association which is 57; and between our association and tables of Oberdorfer (1952, Schwarzwald) and Moore (1952, The Swiss Jurassic), whereby the index is also 57.

3. Grmiščna združba - Shrub association

Bruckenthalio-Juniperetum sibiricae
Ht. ex Zupančič 1992

Basionim: *Bruckenthalio-Juniperetum sibiricae* Ht. 1938 (Art. 5).

Pseudonim: *Junipereto-Bruckenthalietum*
Ht. 1938 (Art. 2b, 39).

Nomenclationis typus (neotypus hoc loco): Makedonija, Nidže, 1920 m nad morjem - above sea level, ekspozicija - exposition: N, nagib - inclination: 15-19°, pokrovnost - covering rate: $E_{2/10}$: 90 %, I. Horvat (popis - relevé XXII/14):

E₂: *Juniperus sibirica* 2.3.

E₁: *Bruckenthalia spiculifolia* 3.4, *Vacciniun myrtillus* 3.4, *Avenella flexuosa* 2.1, *Chamaecytisus capitatus* 1.3, *Vaccinium uliginosum* 1.3, *Genista depressa* 1.2, *Luzula albida* 1.2, *Thymus alpestris* 1.2, *Asperula aristata* subsp. *condensata* 1.1, *Campanula sibiriana* 1.1, *Hieracium rhodopeum* 1.1, *Pedicularis petiolaris* 1.1, *Primula columnae* 1.1, *Veronica teucrium* 1.1, *Viola elegantula* 1.1, *Antennaria dioica* +.3, *Poa violacea* +.2, *Alchillea millefolium* +, *Anthoxanthum odoratum* +, *Botrychium lunaria* +, *Centaurea variegata* +, *Cerastium alpinum* +, *Dianthus deltoides* +, *Festuca valesiaca* +, *Galium lucidum* +, *Geranium subcaulescens* +, *Hypericum barbatum* +, *Jasione orbicularis* +, *Myosotis alpina* +, *Peucedanum oligophyllum* +, *Ranunculus oreophilus* +, *Sedum alpestre* +, *Potentilla ternata* r.

E₀: *Cetraria islandica* +, *Rhytidadelphus triquetrus* 1.2, *Peltigera* sp. +, *Polytrichum pilosum* +.

- *Bruckenthalio-Juniperetum sibiricae poetosum violaceae* Ht. ex Zupančič 1992

Basionim: *Bruckenthalio-Juniperetum sibiricae* Ht. 1938 em. Zupančič 1992 (Art. 5).

Pseudonim: *Junipereto-Bruckenthalietum* var. *Poa violacea* Ht. 1938 (Art. 2b, 39).

Nomenclationis typus (neotypus hoc loco): Makedonija, Perister, 2140 m nad morjem - above sea level, ekspozicija - exposition: NNW, nagib - inclination: 26°, pokrovnost - covering rate: $E_{2/1}$: 100 %, I. Horvat (popis - relevé XXXVII/95):

E₂: *Juniperus sibirica* 3.3, *Rubus idaeus* +.

E₁: *Vaccinium myrtillus* 4.3, *Vaccinium uliginosum* 2.3, *Avenella flexuosa* 2.2, *Hieracium hoppeanum* 1.2, *Poa violacea* 1.2, *Centaurea variegata* 1.1, *Hypericum barbatum* 1.1, *Veronica teucrium* 1.1, *Bruckenthalia spiculifolia* +.3, *Festuca duriuscula* +.2, *Festuca varia* +.2, *Knautia magnifica* +.2°, *Anthoxanthum odoratum* +, *Botrychium lunaria* +, *Campanula sibiriana* +, *Crepis biennis* +, *Cuscuta* sp. +, *Doronicum columnae* +, *Euphrasia minima* +, *Festuca picta* +, *Genista depressa* +, *Geranium subcaulescens* +, *Hieracium echiooides* +, *Lamium* sp. +,

Lotus corniculatus +, *Luzula forsteri* +, *Peucedanum oligophyllum* +, *Pimpinella tragium* +, *Ranunculus oreophilus* +, *Rumex acetosa* +, *Scabiosa lucida* +, *Silene multicaulis* +, *Thlaspi alpinum* +, *Thymus alpestris* +, *Veratrum album* +, *Verbascum longifolium* +, *Viola elegans* +.

- ***Bruckenthalio-Juniperetum sibiricae seslerietosum comosae* Ht. ex Zupančič 1992**

Basionim: *Bruckenthalio-Juniperetum sibiricae* Ht. 1938 em. Zupančič 1992 (Art. 5).

Pseudonim: *Junipereto-Bruckenthalietum* var. *Sesleria comosa* Ht. 1938 (Art. 2b, 39).

Nomenclationis typus (neotypus hoc loco): Makedonija, Perister, 2160 m nad morjem - above sea level, ekspozicija - exposition: SE, nagib - inclination: 35°, pokrovnost - covering rate: E₂₁₀: 80 %, I. Horvat (popis - relevé XXXVII/75):

E₂: *Juniperus sibirica* 4.3.

E₁: *Bruckenthalia spiculifolia* 3.3, *Minuartia recurva* 2.3, *Festuca paniculata* 2.2, *Juncus trifidus* 2.2, *Sesleria comosa* 2.2, *Jasione orbicularis* 2.1, *Thymus alpestris* 1.3, *Poa trichophylla* 1.2, *Vaccinium myrtillus* 1.2, *Anthemis carpatica* 1.1, *Avenella flexuosa* 1.1, *Campanula scheuchzeri* 1.1, *Dianthus integer* 1.1, *Pimpinella tragium* 1.1, *Sempervivum macedonicum* +.3, *Vaccinium uliginosum* +.3, *Carex sempervirens* +.2, *Festuca kajmakcalensis* +.2, *Anthyllis vulneraria* +, *Asperula aristata*

subsp. *condensata* +, *Botrychium lunaria* +, *Campanula sibiriana* +, *Centaurea deusta* +, *Centaurea variegata* +, *Euphrasia minima* +, *Hieracium hoppeanum* +, *Hypericum barbatum* +, *Linum capitatum* +, *Lotus corniculatus* +, *Myosotis alpestris* +, *Pedicularis petiolaris* +, *Sedum alpestre* +, *Silene multicaulis* +, *Thlaspi alpinum* +, *Veronica teucrium* +.

E₀: *Polytrichum pilosum* +.3.

- ***Bruckenthalio-Juniperetum sibiricae piceetosum* Zupančič & Em 1992**

Nomenclationis typus: Zupančič (1992: 244-248, tabela - table 1, popis - relevé 2), neotypus hoc loco.

- ***Bruckenthalio-Juniperetum sibiricae piceetosum betulosum* Zupančič & Em 1992**

Nomenclationis typus: Zupančič (1992: 244-248, tabela - table 1, popis - relevé 8), neotypus hoc loco.

- ***Bruckenthalio-Juniperetum campanuletosum abietinae* Zupančič 1992**

Basionim: *Bruckenthalio-Juniperetum sibiricae campanuletosum abietinae* Lj. Micevski 1986 em. Zupančič 1992.

Pseudonim: *Bruckenthalio-Juniperetum* sensu Ht. 1938.

Nomenclationis typus: Lj. Micevski (1986: 48-49, tabela - table, popis - relevé 1), neotypus hoc loco.

Literatura:

- BARKMAN, J. J., J. MORAVEC, S. RAUSCHERT, 1986: Code der Pflanzensoziologischen Nomenklatur. *Vegetatio*, 67(3): 159-173.
- HORVAT, I., 1934-1938: Istraživanje vegetacije planina Vardarske banovine (Untersuchungen der Vegetation der Gebirge der Vardarska banovina). Ljetopis Jugoslavenske akademije, I: 142-160; II: 211-227; III: 175-180; IV: 136-142; V: 145-148
- MARINČEK, L. & al. 1992: Nomenklatorische Revision der illyrischen Buchenwälder (Verband *Aremonio-Fagion*) *Studia geobotanica*. 12: 121-135, Trieste.
- MICEVSKI, L., 1986: Zaednicata *Bruckenthalio-Juniperetum* Ht. (1938) na planinskot masiv Jakupica - SR Makedonija (Die Assoziation *Bruckenthalio-Juniperetum* Ht. (1938) im Gebirgsmassiv Jakupica - SR Makedonien). - Šumarski pregled. 1-6, 45-50, Skopje.
- MUCINA, L., G. Grabher, S. Wallnöfer, 1993: Die Pflanzengesellschaften Österreichs. Teil III - Wälder und Gehölze. Jena - Stuttgart - New York.
- PUNCER, I., M. ZUPANČIČ, 1979: Novi združbi gradna v Sloveniji (*Melanpyro vulgati-Quercetum petraeae* ass. nova s. lat.). /Two new associations of durmast oak in Slovenia (*Melanpyro vulgati-Quercetum petraeae* ass. nova s. lat.)./ *Scopolia* 2: 1-47, Ljubljana.
- ZUPANČIČ, M., 1969: Vergleich der Bergahorn-Buchengesellschaften (*Aceri-Fagetum*) im alpinen und dinarischen Raume. *Mitt. ostalp.-din. Pflanzenoz.* Arbeitsgem. 9: 119-131 (mit Tabelle), Camerino.
- ZUPANČIČ, M., 1980: Smrekovi gozdovi v mražičih dinarskega gorstva Slovenije + Tabele. (Die Fichtenwälder der Frostlagen im dinarischen Gebiete Sloweniens + Tabellen) Dela IV. razr. SAZU, 24. Biol. inst. Jovana Hadžija 7, Ljubljana.
- ZUPANČIČ, M., 1992: Zur syntaxonomischen Problematik des Verbandes *Bruckenthalion spiculifoliae* Ht. 1949 (nom. nud.) und der Assoziation *Junipereto-Bruckenthalietum* Ht. 1938 (nom. nud.) auf der Balkanhalbinsel. *Feddes Repertorium*, 103(3-4): 243-268, Berlin.