



## NEW SPECIES OF THE GENUS *OENOTHERA* L. FROM COASTS OF THE ALBANIA AND MONTENEGRO

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### SYNOPSIS

#### Keywords:

genus *Oenothera*,  
native,  
introduced,  
coast,  
Albania,  
Montenegro.

Based on the study of specimens collected in the coasts of south-eastern part of the Adriatic Sea (Albania and Montenegro), 5 wild species of the genus *Oenothera* have been recorded. Three species, *O. suaveolens* Desf. ex Pers., *O. glazioviana* Micheli and *O. fallax* Renner em Rostanski, are reported and described for the first time for Montenegro.

A large area of the coasts, mainly on the belt between beach and pine or mixed forests in Velika Plaža (Ulcinj) and Divjaka (Lushnja) was occupied by plant species of *O. glaziovina* and *O. fallax*. The description, origin and their world distribution for the 5 *Oenothera* species found in Albania and Montenegro are given.

### INTRODUCTION

For a long time only one species - *Oenothera biennis* L., belonging to genus *Oenothera*, was mentioned in botanical literature covering present territories of both countries, Albania and Montenegro (PULEVIĆ, 1976; PAPANISTO et al., 1992). It seems evident that different species of the genus *Oenothera* have been present for a long time, but there were determined as *O. biennis* L.

The second species of the genus *Oenothera*, *O. parodiana* MUNZ subsp. *parodiana* was reported from the coast of Albania only two years ago (RAKAJ, 2006).

In this paper three species of the genus *Oenothera* are reported for the first time for the coast of Albania and Montenegro: *O. suaveolens* Desf. ex Pers., *O. glazioviana* Micheli and *O. fallax* Renner em Rostanški.

All five wild species of *Oenothera* that occurred in Albania and Montenegro belong to section **Oenothera**. Four of them: *O. biennis* L., *O. suaveolens* Desf. ex Pers., *O. glazioviana* Micheli and *O. fallax* Renner em Rostanški belong to subsection **Oenothera (=Euoenothera)**, while only *O. parodiana* MUNZ subsp. *parodiana* belong to subsection **Munzia**.

It can be distinguished four groups of *Oenothera* species defined by their origin:

1. The European species: *O. biennis* L. and *O. suaveolens* Desf. ex Pers., but the origin of them is a cause for discussion, since their occurring in America was not confirmed.

2. The epocophytes of North America origin: *O. glazioviana* Micheli introduced as an ornamental plant in Europe.

3. The species of hybridogenous origin: *O. fallax* Renner em Rostanški present in Europe as a cross between European and American newcomer species (*O. glazioviana* x *O. biennis*).

4. The South America origin: *O. parodiana* MUNZ subsp. *parodiana*.

## MATERIAL AND METHODS

The investigation of the genus *Oenothera* in Albania and Montenegro was based mainly on the personal observations in the field during the summers of 2007-2008 and partly on the material stored in National Herbarium of Albania, Tirana.

For each species the type, main synonyms, description, origin and distribution are given.

The distribution sites are arranged in the list and on the maps from Ulcinj to Divjake. A dot in the distribution map indicates that the species has been found in the certain square, however, it does not indicate the frequency of occurrences. This can be supposed, to a certain extent, by the number of specimens localities cited for the square.

The identification, distribution and origin of five species found in Albania and Montenegro is done according to European Flora (TUTIN et al., 1972) and main literature on the genus *Oenothera* L. (DIETRICH & WAGNER, 1988; MUNZ, 1965; RENNEN, 1956; ROSTANŃSKI et al., 1994, 2004).

## RESULTS AND DISCUSSIONS

### DESCRIPTION OF FOUR OENOTHERA SPECIES OCCURRING IN ALBANIA AND MONTENEGRO

#### I. *Oenothera* L. section *Oenothera* subsection *Oenothera*

##### Series OENOTHERA

##### A. THE GROUP OF SPECIES WITH STEMS RHACHIS AND OVARIES NOT PUNCTUATED RED:

##### 1. *Oenothera biennis* L., 1753, Sp. Pl.: 346

Type: "N 484" (LINN-484, lectotype [GATES, 1911]); (= *Oenothera biennis* L. subsp. *biennis* sensu MUNZ, 1965: 132). Given under this name in the European floristic literature enumerating *Oenothera biennis* L.

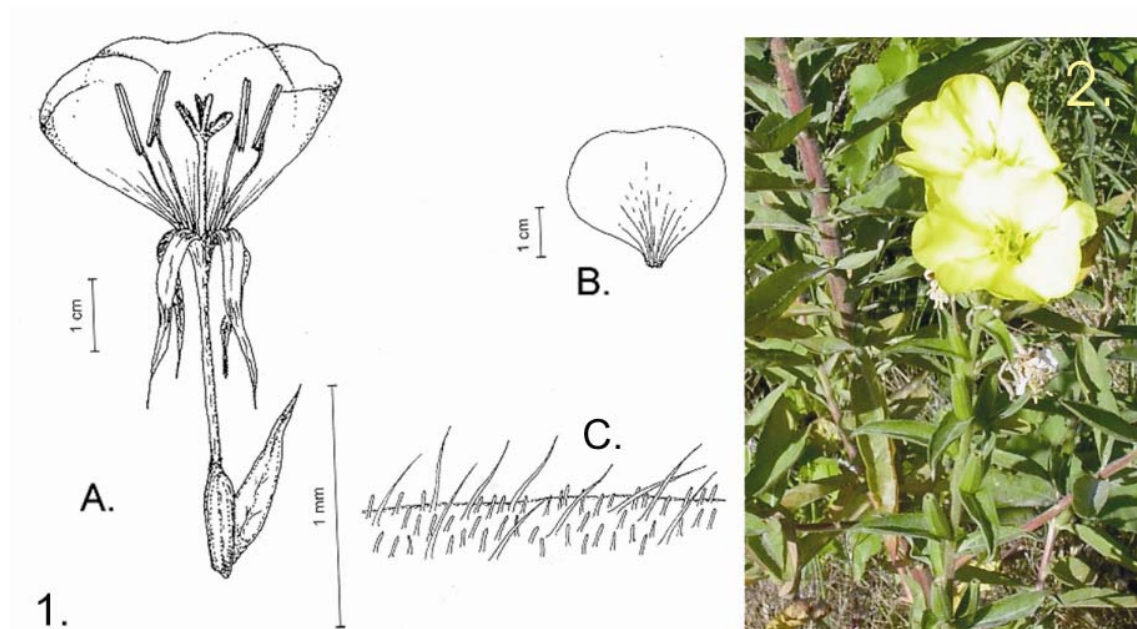


Figure 1: *Oenothera biennis*

1. A - flower, B - petal, C - enlarged part of the ovary (according K. Rostanski, 2004);

2. *Oenothera biennis* from the coastline of Ada Bojana.

*Description:* Stem till 100 cm high, simple or branched, green or with red splotches. Cauline leaves elliptic to elliptic-lanceolate, slightly denticulate on margins, with red midrib. Rhachis green at tip, strongly glandular pubescent. Buds green: sepal tips 2-3mm, appressed below, somewhat divergent above. Hypanthium glandular pubescent, (25)28-35mm long. Petals obcordate, distinctly broader than long, 15-30x18-35mm, yellow. Anthers 5-10mm long. Stigma-lobes 5-15mm, spreading between anthers. Capsule 20-35mm long with obtuse teeth, green, glandular pubescent with arcuate stiff hairs growing up simple or from bulbous, coniform bases (Fig. 1). Seeds angular, of cacao-fuscus color, 1.2-2.2mm long, 0.5-

1.7mm thick, 0.5-1.6mm high.

*Origin:* Unknown.

*Distribution:* Europe, East Asia.

*Distribution in Albania and Montenegro:* Common in Velipoja and Divjaka, but rare in Kune-Vain (Albania), Velika Plaža and Štoj, Ada Bojana, Ulcinj (Montenegro); sandy places, sea shore dunes, edge of the pine forest and road sites (Fig. 2).

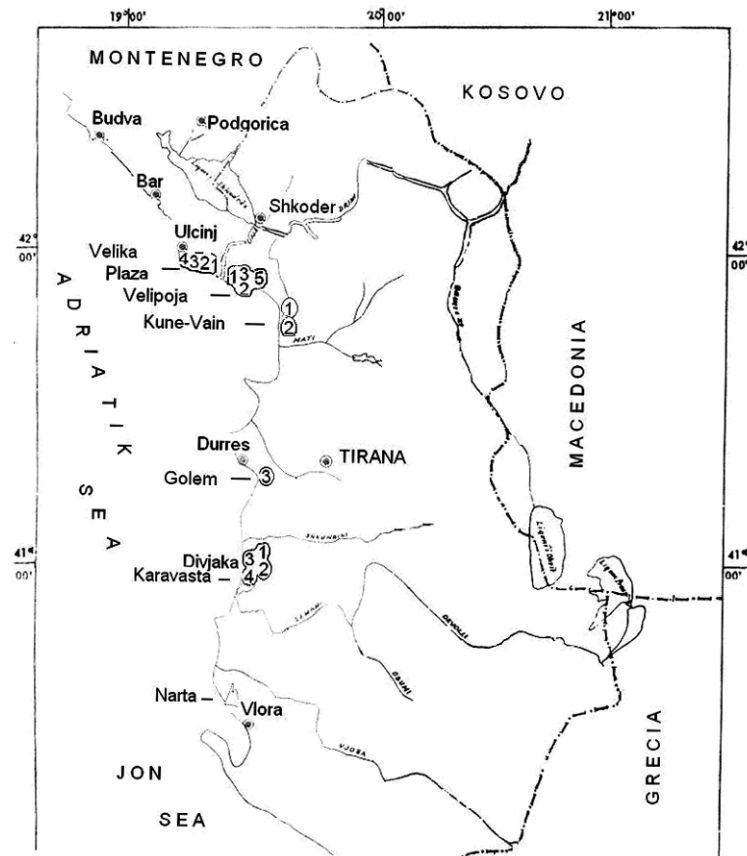
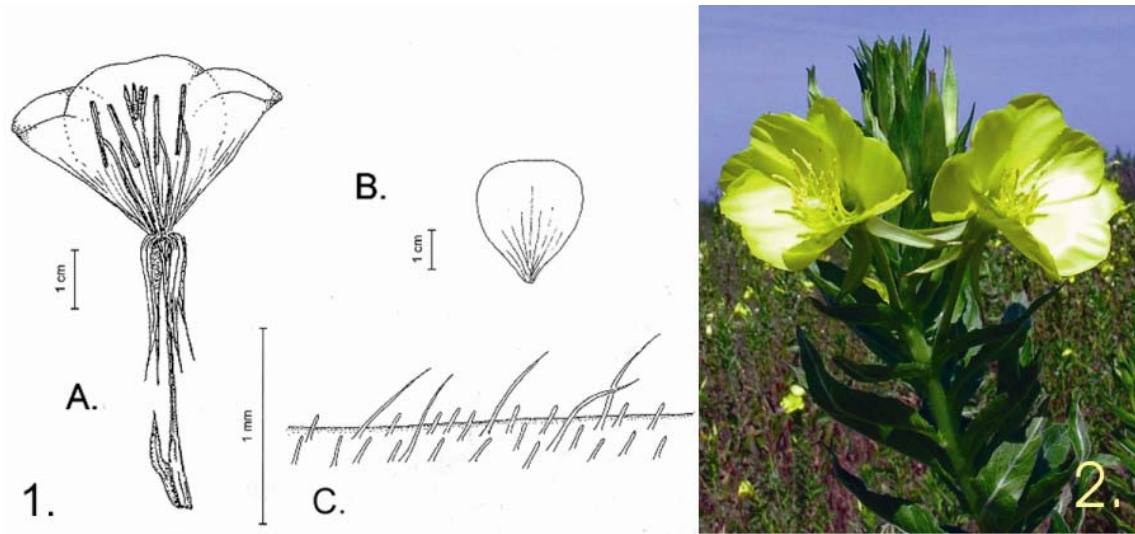


Figure 2. The distribution map of genus *Oenothera* in Albania and Montenegro:  
 1- *O. biennis*, 2 - *O. suaveolens*, 3 - *O. fallax*, 4 - *O. glazioviana*, 5 - *O. parodiana*  
 subsp. *parodiana*

**2. *Oenothera suaveolens* DESF.**, 1804, Tabl. ecol. bot.: 169, nomen nudum, ex PERS., 1805, Syn. Pl., 1: 408

Type: "Hort. Paris, DESFONTAINES s.n" (described on cultivated plants from Jard. Bot. Paris) (FI, Herbarium Webbianum Nr 69285 -lectotype, KR).



**Figure 3. *Oenothera sualveolens*:**  
**1. A - flower, B – petal, C – enlarged part of the ovary** (according K. Rostanski, 2004);  
**2. *Oenothera sualveolens* from the coastline of Velipoja**

*Description:* Stem 80-150(200) cm high, simple or branched, green or tinged with red below, pubescent with appressed hairs and longer spreading hairs from green, low bulbous bases. Cauline leaves oblanceolate to lanceolate, sinuate-dentate in lower half, sub-entire in the upper one, acuminate, green with white midrib. Rhachis green, pubescent, with glandular hairs only in uppermost part. Lower bracts lanceolate. Buds green to yellowish, slender, sepal-tips 3-6mm, appressed. Hypanthium 30-40(45) mm, pubescent, with glandular hairs. Petals pale-yellow, obovate, + / - emarginate at tip, fragrant, 25-35x26-35 mm. Anthers 7-10(12) mm, stigma-lobes 6-8(10) mm, spreading between anthers. Capsules 30-40(45) mm long, green, appressed pubescent with obtuse to acuminate teeth (Fig. 3). Seeds angular, of atro-castaneus colour, 1.0-2.3 mm long, 0.4-1.65 mm thick, 0.4-1.8 mm high.

*Origin:* Unknown.

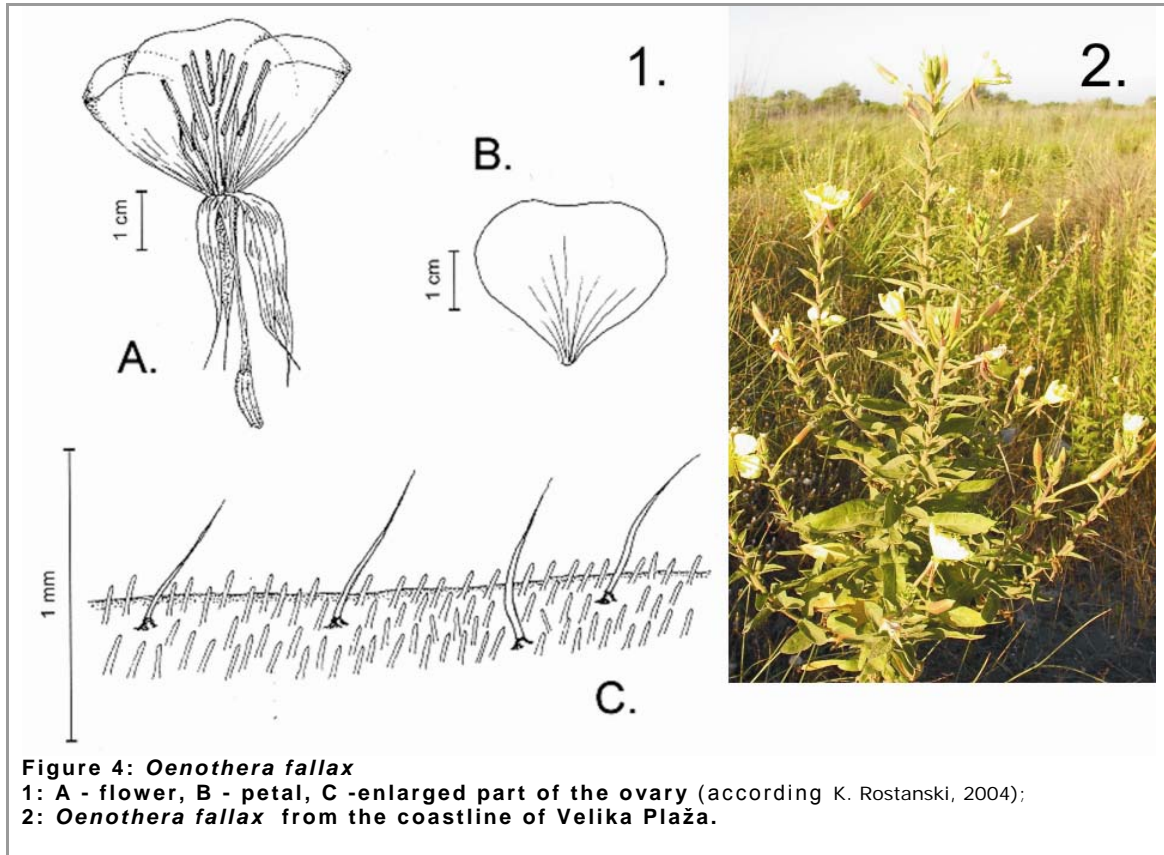
*Distribution:* South Europe.

*Distribution in Albania and Montenegro:* Frequent in Velipoja and Kune-Vain, very rare in Divjaka (Albania), Velika Plaža and Štoj, Ulcinj (Montenegro); sandy dunes, edge of the pine forest, mixed forests and road sites (Fig. 2).

B. THE GROUP OF SPECIES WITH RED PUNCTULATED STEMS, RHACHIS AND OVARY:

**3. *Oenothera fallax* RENNERT**, (nomen nudum), 1917, Zitschr. f. indo Abst. U. Ver-erbungslehre, 18: 176; ex ROSTANSKI, 1965b, Fragm. Flor. Geobot., 11(4): 506-508

Neotype: "Wratislaviae, in minis ad viam Podwale prope viam Olawska die 16.07.1962, K. Rostanski" (WRSL).



*Description:* Stem often over 100 cm high, with branches from low down, green or somewhat reddened, distinctly red-punctulated, with numerous long stiff hairs with bulbous red bases and shorter arcuate hairs. Leaves elliptic to ovate-lanceolate, with white or red-dish midrib, denticulate, the lower ones crinkled. Rhachis green, red punctulated, red-dened at apex with numerous glandular hairs and stiff hairs with red bulbous bases. Buds red-striped, with stiff and glandular hairs; sepal tips 2-4mm, appressed below, divergent to appressed above. Hypanthium 30-40mm long. Petals yellow, obcordate 20-30mm long, 22-34mm broad. Anthers and stigma-lobes 3-10mm long; stigma lobes spreading between anthers. Capsule green, red-striped and red-punctulated when young with numerous glandular hairs; teeth obtuse to somewhat emarginated (Fig. 4: 1, 2). Seeds of the colour between atrobrunneus and niger; 1.1-2.2mm long, 0.4-1.7mm thick, 0.4-1.5mm high.

*Origin:* From Europe as a hybrid between *O. giazioviana* x *O. biennis* (velans.rubens).

*Distribution:* Europe, often in botanical gardens.

*Distribution in Albania and Montenegro:* Common in Divjaka, rare I Velipoja

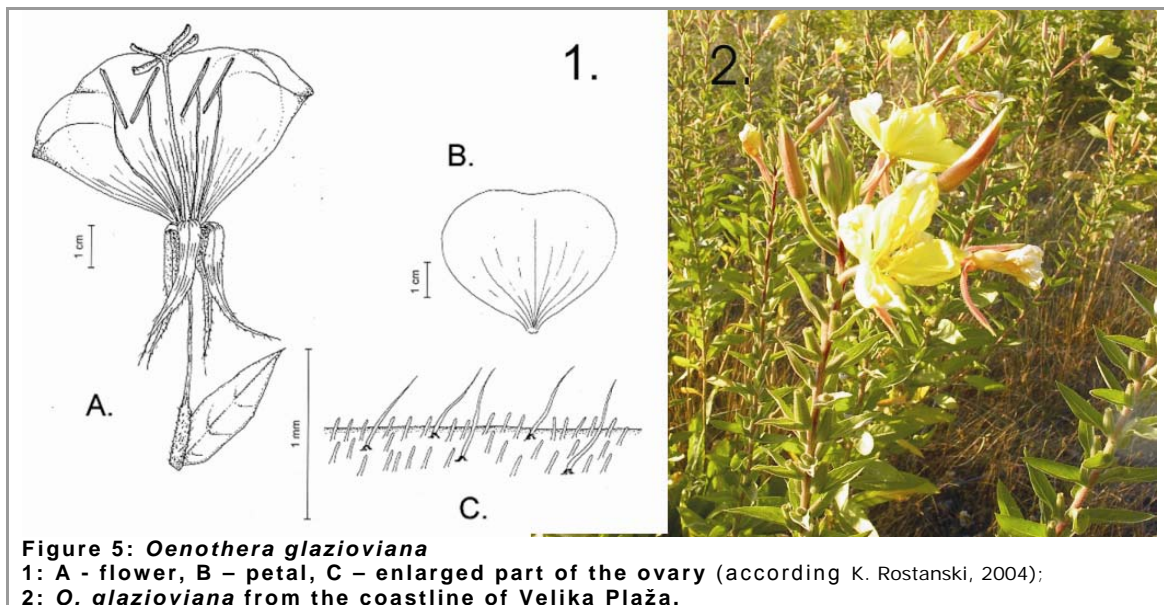
(Albania), Velika Plaža, Štoj Ulcinj (Montenegro), only in a locality in Golem (Durrës); sandy places, edge of the pine forest, mixed forests and railroads (Fig. 2).

**4. *Oenothera glazioviana* MICHELI, 1822, in Mart., Fl. Brasil. 13, 2: 178**

**Type:** "Brasil, Rio de Janeiro, Tijuca, 7 Feb. 1868, GLAZIOU 2568" - **holotype**; (BR, F, G, isotypes).

**Syn.:** *O. erythrosepala* BORBAS, 1903; ROSTANSKI, 1975; Dietrich, 1978.

**Description:** Stem up to 180 cm high, simple or branched, green or reddish, strongly punctuated, with spreading short hairs and longer stiff hairs with red bulbous bases. Leaves elliptic to oblong-lanceolate, with white or reddish midrib, denticulate, often strongly crinkled. Rhachis green but red-punctuated, reddened at apex, with numerous glandular hairs and stiff hairs with red bulbous bases. Buds red-striped when ripe, strongly glandular-pubescent; sepal tips 3-8mm, appressed below, somewhat divergent above. Hypanthium 30-40mm long. Petals yellow, broadly obcordate, 30-50mm long, 32-58mm broad. Anthers 10-13mm long. Stigma-lobes considerably exceeding anthers, 6-10 mm. Capsule green or red striped when young, 20-35mm long, densely glandular and with long stiff hairs with red bulbous bases; teeth concave to obtuse (Fig. 5: 1, 2). Seeds atro-brunneus/atropurpureus, 1.1-2.2mm long, 0.3-1.7mm thick, 0.3-1.8mm high.



**Origin:** North America, introduced to South America, Europe and other continents, in the beginning as ornamental plant (ROSTANSKI & FORSTNER, 1982).

*Distribution:* America, Europe, Eastern Asia and rare in Africa.

*Distribution in Albania and Montenegro:* Very common in Divjaka (Albania), Velika Plaža, Štoj and Ada Bojana, Ulcinj (Montenegro), but very rare in Velipoja; mainly on the belt between beach and pine or mixed forests, in sandy places, road sites (Fig. 2).

## CONCLUSIONS

Five different introduced wild species of genus *Oenothera*: *O. biennis* L., *O. suaveolens* Desf. ex Pers., *O. fallax* Renner em Rostanški, *O. glazioviana* Micheli and *O. parodiana* MUNZ have been recorded in the coasts of Albania and Montenegro, Ulcinj to Divjaka.

The first four of the *Oenothera* species were found both in Albania and Montenegro, while *O. parodiana* MUNZ subsp. *parodiana* was found only in Albania (Velipoja).

Three species of the genus *Oenothera*: *O. suaveolens*., *O. glazioviana* and *O. fallax*, are reported and described for the first time for Montenegro.

A large area of the coasts, mainly on the belt between beach and pine or mixed forests in Velika Plaža (Ulcinj) and Divjaka (Lushnje) was occupied by overgrown plants of *O. glaziovina* and *O. fallax*.

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