

## **New Blooming Meadows in the Ajoie – from Cornfields to Orchid Meadows**

As an ecological compensation for the construction of the motorway in the Ajoie (Kanton Jura) in the Combe Vatelín, land was bought at the Etang de la Creule behind the Pinède de Courgenay. The lots 1248 and 1031 in the municipal area of Courgenay were afterwards transformed to blooming meadows.

### **Situation and Use of the Lots 1248 and 1031 prior to their Acquisition**

The two lots with a total acreage of approximately 25,800 m<sup>2</sup> are located behind the pinewood of Courgenay. The rather [shallow soil](#) on lime rock consists of a 5 – 15 cm thick bed of mineral soil, covered with about 10 – 30 cm humus. Considering the lots southern orientation and its poor vegetation, normally these areas are wet in winter and spring, whereas arid in summer and autumn during dry periods. Before their acquisition by the A 16 the areas were used as artificial meadows, cornfields or grain fields. During the agricultural use the soils were enriched with manure or chemical fertilizer. Furthermore herbicide, insecticide and fungicide were applied to the grain fields. During the work on the A 16 between Delémont and Porrentruy and the breakthrough of the tunnel of Mont Terri, a road was built adjacent to the building site of the A 16 and the quarry Sur Serroye, leading through the lots 1248 and 1031. After the opening of the motorway Delémont – Porrentruy the concrete road between the two lots was removed and replaced by a marl path. Currently the lots are accessible by the Cras d’Hermont Street and the concrete road from Bas d’Hermont.

### **Transformation of lot 1246 in the year 1998**

Lot 1248 has an acreage of 7,166 m<sup>2</sup> and is surrounded in the north, east and west by a path, in the south and south-west, the land adjoins the pinewood of Courgenay. On a 4 m wide band along the path a hedge and trees were planted. On this band the assortment „UFA special Brache Mischung“ was sown. In the higher half of the lot the native soil of humus was removed and the assortment „UFA Wiesenblumen CH“ was sown with a sowing strength of 10 gr/m<sup>2</sup>. The southern part was left in its original state and the assortment „UFA Standard 451“ plus 10% *Salvia pratensis*-seed was sown with a strength of 2,5gr/m<sup>2</sup>.

Since 1998 the lot is rented out to the farmer Roland Zwahlen with the contractual stipulation to cut the grass for the production of hay after the 15<sup>th</sup> of June. A second cut for the aftermath or the grazing by cows is allowed in September. The band of with the hedge and the fallow is to be cut every second year only. The contract furthermore forbids any use of fertilizer.

The result of the transformation and maintenance of lot 1248 is in every way positive for nature. The flowering time of the different newly introduced species varies from March to November, so that the insects can collect nectar almost the entire year. In the hedges numerous birds nest which subsist on many different insects, earthworms and berries.

### **Transformation of lot 1031 in the year 2004**

Lot 1031 has an acreage of 18,657 m<sup>2</sup>. In the north the area is partially surrounded by a hedge, belonging to the community of Courtenay. In the north-east the lot adjoins to a private property, in the east a path separates it from lot 1248. In the south the lot is limited by the pinewood of Courgenay. The lower part of the area along the residential zone and the pine wood of Courgenay is used as willow. In the higher part, about one third of the area was stripped of the humic topsoil. On the entire area the mixture „UFA Trockenwiese“ was sown with a sowing strength of 10 gr/m<sup>2</sup>. To separate the area optically from the houses of the residential zone, a hedge measuring 35m by 3m was planted. The existing hedge in the north of the area, belonging to the community of Courtenay, was extended to a length of 25m and a width of 3m.

Since 2004 lot 1031 is rented out to the same contractual condition as lot 1248 to the farmer Jean-Paul Frossard.

Analogous to lot 1248, the result of the transformation and maintenance of lot 1031 is very satisfying.

Both lots offer a diverse flora and fauna to numerous visitors and walkers, especially between May and June. I am allowed to say that, thanks to the Transjura motorway the realised activities will be

beneficial to nature and humans. The lots are a prototype for successful re-establishment of flowers on formerly intensely used agricultural land.

### **The Educational Trails – Parcour Nature Courgenay**

To discover the revitalised area in the context of the ecological compensation for the construction of the motorway, different locations (Combe Vatelín, Etang de la Creule, Ancienne Carrière, Courgenay) were linked with educational trails, which are also part of the hiking path network of the canton. An information leaflet is at the disposal for the visitors on the parking zone of the quarry (Ancienne Carrière) and on the Etang de la Creule.

### **Orchids spontaneously established on the transformed lots**

During a visit on both lots in the beginning of march, I was very surprised to find about 50 rosettes of *Ophrys apifera* and some of *Anacamptis pyramidalis*. The orchids grew both on the area where the humus has been removed, as on the areas where it was left, as well as in the hedge planted in 1998. It is amazing, that orchids could settle on areas, where 6 years before corn was cultivated!

A possible explanation for this discovery may be that the endophytic fungi, which live symbiotically with other orchids in the nearby pine wood, have colonized the soil of the lots. As the seeds of the orchids have no endosperms, they absolutely need a specific fungus to germinate. The mycelia of this fungus enter the seed to nourish the embryo. Fed this way, the embryo develops a protocorm, which after having formed the first green leaves, will be a more or less autonomic seedling. But how did the seed of the two orchids species get on these areas? To my knowledge neither *Ophrys apifera* nor *Anacamptis pyramidalis* are growing in the pine wood of Courgenay next to the two lots or in the direct neighbourhood. The next location where these orchids can be found is about 5 to 10 km away. Supposedly the seed was transported to these lots by the wind. Considering the number and the size of the leaves of the found plants the germination probably took place in the years 2006 or 2007.

### **The florescence of the orchids in 2010**

During the winter 2009/2010 the orchid rosettes were counted (see plan). All in all 5 rosettes of *Anacamptis pyramidalis* and 153 rosettes of *Ophrys apifera* were found on the two lots. *Anacamptis pyramidalis* however was only found on the part of lot 1248 that was stripped of the humus. Thanks to good weather conditions, the majority of the counted plants blossomed in June and July 2010. The majority of the flowering plants were pollinated and formed seed capsules. Regarding the development of the orchids on the lots 1248 and 1031, it would be useful to delay the mowing from 15<sup>th</sup> of June to 15<sup>th</sup> or 1<sup>st</sup> of august, to support the formation of seeds to a maximum.

### **Conclusion and perspective**

Since the inventory of the meadows and dry willows of the Canton Jura by Ritter (1985), 50 – 70 % of the dry willows of the Ajoie and the Canton Jura disappeared because of the intensive agriculture or the natural succession of these biotopes to fallow land and woods. The diagnosis from Ritter for the Jura, can be transferred to all regions of Switzerland.

The consequence of this transfer may be abstracted as follows: Fewer biotopes = less biodiversity = fewer ecosystems = pauperization of flora and fauna = loss of species.

The example of transformation and use of the lots 1248 and 1031 in Courgenay shows, that it is possible to react to the disappearance of the traditional flora and fauna of our country. For a new use of cultivated areas political will would be necessary on national, cantonal and communal levels. If all Swiss communes would follow the example of transformation of the areas and their new cultivation, as in the Combe Vatelín, the Etang de la Creule, the pine wood of Courgenay and the newly established meadows, the condition of the biodiversity and the ecosystems of Switzerland could be ameliorated and conserved. Currently approximately one quarter of the Swiss flora (Lauber & Wagner 2000) is growing on the mentioned lots. The list of the plants can be seen in the „Acte de la Société Jurassienne d'émulation de 1999“ (Sprunger 1999).

### **Acknowledgment**

The original „Combe Vatelín, Pinède de Courgenay, Etang de la Creule“ (Sprunger 1998) is deposited in the office of the community of Courgenay and the department of water and conservation at St.

Ursanne. I thank the former mayor of Courgenay, Mr. J.-K. Kohler, who enabled this activity with his request, to rescue the pine wood of Courgenay.

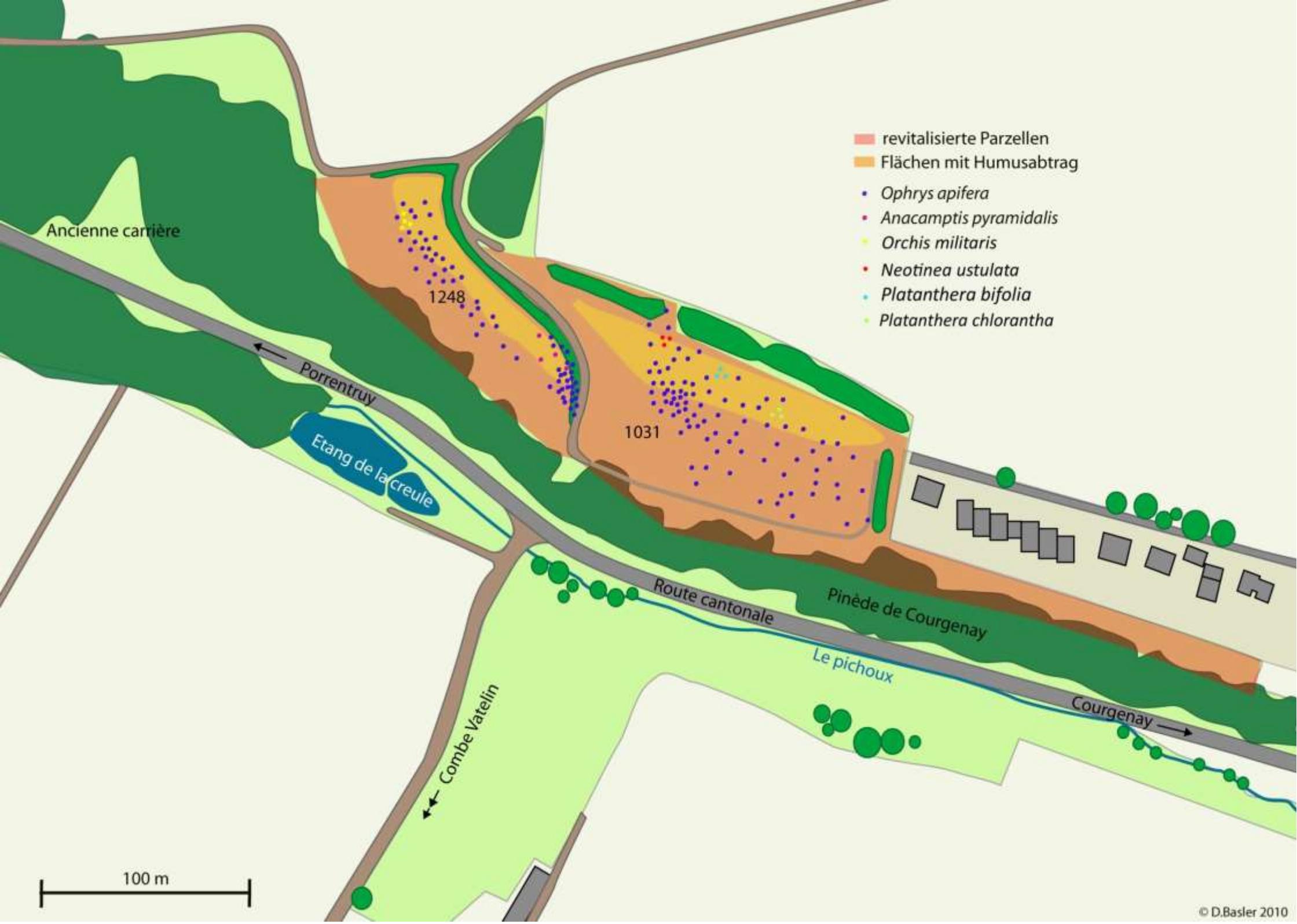
A big thank-you also to Mr. Vincent Challet, mayor of Courgenay, for his support and encouragement to continue to ameliorate the natural heritage in the area of his community.

### Literature

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- Landolt, E. 1991. Rote Liste. Gefährdung der Farn und Blütenpflanzen in der Schweiz. Bern EDMZ.
- Sprunger, S. 1998. Combe Vatelín, Pinède de Courgenay et l'étang de la Creule – un ensemble de biotopes à sauvegarder et à protéger! *Bauhinia* 12(1/2) 23-31
- Sprunger, S. 1999. Courgenay, un haut lieu de la flore en Ajoie. Société Jurassienne d'émulation, Actes 43-64
- Lauber, K. & Wagner, G. 2000. Flora Helvetica, Haupt Berne.

- Photos:
- Map of the flowering meadows
  - Rosettes of *Ophrys apifera*
  - Rosettes of *Anacamptis pyramidalis*
  - Flowering times of wild flowers
  - *Ophrys apifera* in flower
  - *Anacamptis pyramidalis* in flower

The list of the plants of the mixtures of UFA seeds, mentioned the the text, can be found on the internet: [www.ufasamen.ch](http://www.ufasamen.ch)



- revitalisierte Parzellen
- Flächen mit Humusabtrag
- Ophrys apifera*
- Anacamptis pyramidalis*
- Orchis militaris*
- Neotinea ustulata*
- Platanthera bifolia*
- Platanthera chlorantha*

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