

**ECOLOGICAL MANAGEMENT OF THE RIVERBANKS ALONG THE ENNS
(NATIONAL PARK GESÄUSE, STYRIA, AUSTRIA)**

*NATURRAUM MANAGEMENT DER FLUSSUFER AN DER ENNS (NATIONALPARK
GESÄUSE, STEIERMARK, ÖSTERREICH)*

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ABSTRACT

The Enns River forms the sensitive “backbone” of the National Park Gesäuse. Between the Gesäuse entrance and the weir in Gstatterboden, the Enns is characterized by a very natural state, a highly varied riverbed structure, and particularly strong dynamics.

Unfortunately, the various user groups are heavily concentrated along this very stretch of the Enns, placing a range of demands on the green-blue band of water as it winds its way through the mountains. One of the National Park’s greatest challenges is to develop a package of measures and implementation strategies that will help minimize current ecological deficits over the medium and long term. The goal is not only to prevent further deterioration, but to actually improve the habitat along the Enns. Three case studies show the different ways the National Park Gesäuse meets the demands on the ecological management of the riverbanks along the Enns.

KEYWORDS: Stream ecology, visitor management, forest conversion, nature-orientated control works,
NATURA 2000

ZUSAMMENFASSUNG

Die Enns bildet das sensible Rückgrad des Nationalparks Gesäuse. Zwischen Gesäuseeingang und dem Wehr in Gstatterboden zeichnet sich die Enns durch einen hohen Grad an Natürlichkeit, eine abwechslungsreiche Struktur im Gewässerbett und eine besonders starke Dynamik aus.

Leider konzentrieren sich in eben diesem Abschnitt der Enns auch die verschiedensten Nutzergruppen, die das schmale, grün-blaue Band von verschiedensten Seiten bedrängen.

Es ist nun für den Nationalpark eine der vordringlichsten Aufgaben, Maßnahmenvorschläge auszuarbeiten und mittel- bis langfristige Handlungsstrategien zur Minimierung bestehender ökologischer Defizite aufzuzeigen. So soll im Endeffekt nicht nur eine Verschlechterung verhindert, sondern auch eine Verbesserung des Lebensraumes an der Enns erreicht werden.

STICHWÖRTER: Fließgewässerökologie, Besucherlenkung, forstliche Umwandlungsmaßnahmen,
ökologische Verbauung, NATURA 2000

1. INTRODUCTION

The Enns River forms the sensitive “backbone” of the National Park Gesäuse. It has its source in the Province of Salzburg (Radstätter Tauern, at the foot of the Kraxenkogel, 1735 m) and drains a catchment area of 6080 km² along a stretch of 254.15 km. Between its source and confluence with the Danube River, the Enns drops 1497 m. This makes the Enns Austria’s longest river to both originate and end within the country’s borders. The Enns crosses the border between the greywacke zone and the Calcareous Alps in the Admont Basin; at the entrance to the Gesäuse. Ice Age moraines forced the river to make its way through the Northern Calcareous Alps. This is accompanied by a rapid change in the river landscape from wide valleys in the Admont Basin to the gorge-like Gesäuse entrance, to a narrow, V-shaped valley bordered by the towering rock faces of the Hochtorn chain and the Buchstein. The Hochtorn peak lies nearly 1800 m above the Enns.

Between the Gesäuse entrance and the weir in Gstatterboden, the Enns is characterized by a very natural state, a highly varied riverbed structure, and particularly strong dynamics. The fish fauna corresponds to a fast flowing river of the grayling-trout zone. Grayling (*Thymallus thymallus*) and trout (*Salmo trutta f. fario*) together amount to nearly 90 % of the biomass in the Gesäuse Enns (Jungwirth et al., 1996). Also some endangered species have their habitat in the Gesäuse Enns: these are the soufie (*Leuciscus souffia*) and the ukrainian lamprey (*Eudontomycon mariae*). Both of them depend on the occurrence of gravel and sand bars. There were some shifts in the population structure of the fishfauna in the past. They occurred because of different reasons: sudden water level variation because of hydraulic bore from an upstream hydro power plant, kormoran population explosion (Zauner et al., 1999) and disruption of the river corridor.



Fig. 1: Enns River (National Park Gesäuse)
Abb. 1: Die Enns im Nationalpark Gesäuse



Fig. 2: Gesäuse Entrance and Hochtorn chain
Abb. 2: Gesäuse Eingang und Hochtorngruppe

Different anthropogenic changes threaten the highly natural state of the Enns river. Unfortunately, the various user groups are heavily concentrated along this very stretch of the Enns, placing a range of demands on the green-blue band of water as it winds its way through the mountains. One of the National Park's greatest challenges is to develop a package of measures and implementation strategies that will help minimize current ecological deficits over the medium and long term. The goal is not only to prevent further deterioration, but to actually improve the habitat along the Enns.

2. CASE STUDY 1: SHORE STABILIZATION BRUCKSTEIN

The narrow valley serves as an important W-E traffic link, and the river is therefore bounded by both the railway and the road. During the flooding in 2002, the concave bank at the opposite side of the Lettmairau was so highly eroded that it affected property owned by the ÖBB (Austrian Federal Railways). The directly impacted sections must now be stabilized. Agreement has been reached to make every effort to construct an ecologically compatible passage combined with an improved riverbed structure (coarse rough stone layering, groins).

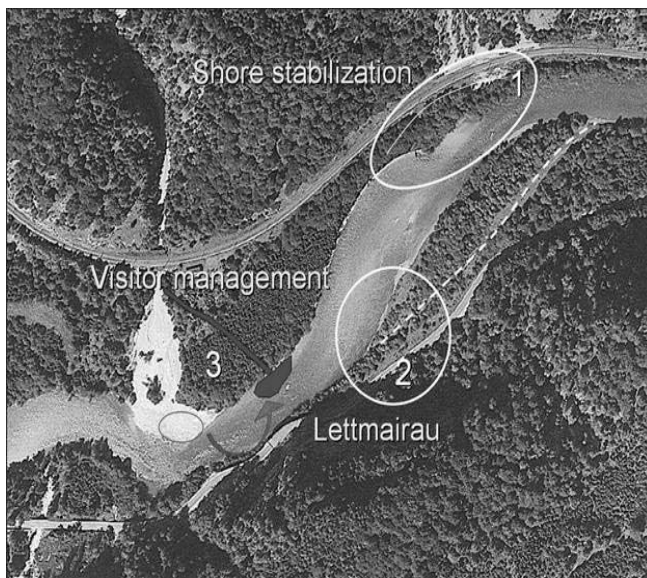


Fig. 3: Location of the case studies (airial photograph)

Abb. 3: Örtlichkeit der Fallstudien (Orthophoto)



Fig. 4: Shore stabilisation: Rough stone layering, coins under water level

Abb. 4: Uferverbauung:
Grobblockschichtung

3. CASE STUDY 2: NATURA 2000 MANAGEMENT

In the framework of the above project, an adjoining, dried-out floodwater channel is to once again be provided with water in order to maintain the floodplain dynamics in the Lettmairau. Moreover, a new, calm-water habitat for endangered fish species (souffie, ukrainian lamprey both Habitat Directive Annex II) and spawning habitats for amphibians are planned.

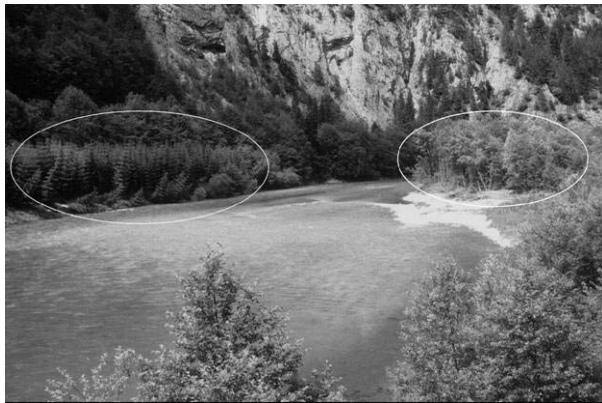


Fig.5: Right: Natural floodplain forest Left: Anthropogenic spruce forest

Abb. 5: Rechts: Natürliche „Weiche Au“ Links: Anthropogner Fichtenforst

Across the river is an area (“Krapfalm”) where spruce (*Picea abies*) dominates. A long-term goal is to fully replace the anthropogenic spruce forests along the Enns by the site-specific floodplain forests (*Salix eleagnos* scrub, *Salicion albae*). Due to its easy accessibility and level terrain compared to the surrounding massifs, every square meter was intensively used in the past. This ranged from “alpine” farming near Krapfalm to intensive forestry. This transformation will primarily involve setting free admixture tree species. The forest management and service is done by the “Steiermärkische Landesforste” (Forest company of the province of Styria).

4. CASE STUDY 3: VISITOR MANAGEMENT

Gravel banks form an additional key habitat. They provide a substrate for the first pioneer communities that ultimately give rise riverine forests. From *Calamagrostion pseudofragmitis* to willow bushes to gray alder riverine forests. They not only form potential sites for the highly endangered tamarisk (reintroduction program for *Myricaria germanica*) but also a habitat for the rare summer snipe (*Actitis hypoleucos*) and numerous ground beetle species (e.g. the highly endangered *Bembidion foraminosum*) or grasshoppers. This particularly

sensitive habitat is under heavy pressure from tourism (rafting, kayaking, illegal camping and fireplaces). This requires developing and implementing a visitor management plan (information signs, ranger service, etc.)

The first step for all these measures was taken last year in the framework of an IST-survey, which has already been completed in certain sectors, like vegetation (Kammerer, 2003) and summer snipe (Zechner, 2003). A future monitoring program will then serve as a mechanism to control and fine-tune the implemented measures to help ensure that the goals are met.



Fig. 6: *Calamagrostis pseudophragmites* and *Actitis hypoleucos* as visitor management indicator species
Abb. 6: *Calamagrostis pseudophragmites* und *Actitis hypoleucos* als Indikatorarten in der

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