



## Public perception of environment in the mountains of Vâlcea County

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### Abstract

The Vâlcea Carpathians are of great value given their scenic attractions combined with specific glacial relief features in the Parâng and rare plant and animal species of Cozia. Complemented by a diverse cultural landscape, with monasteries, vernacular buildings and pastoral traditions, the area offers a uniquely attractive backdrop for a cluster of spa resorts of international standing which make Vâlcea one of Romania's leading tourist regions. Environmental protection is very necessary to regulate private enterprise in the post-communist era, but financial resources and institutions are insufficient at the present time. The paper demonstrates how highly-motivated individuals can play a significant role in advocating a more sustainable future through their own capacities to carry out research and develop personal networks enabling them to extend their influence with the public at large and also with academic and administrative hierarchies. The Romanian author of this paper is one of a number of environmental activists in Vâlcea county who able to promote environmental issues in the absence of effective NGOs.

### Introduction: Sources of pressure

The Vâlcea Carpathians are of great value given their scenic attractions combined with specific glacial relief features in the Parâng and rare plant and animal species of Cozia (Popescu, 1968; 1977) (Figure 1). Complemented by a diverse cultural landscape, with monasteries, vernacular buildings and pastoral traditions (Conea, 1938), the area offers a uniquely attractive backdrop for a cluster of spa resorts of international standing – especially Băile Olănești and Călimănești-Căciulata – which make Vâlcea one of Romania's leading tourist regions (Table 1; Plate 1). Pressure on the high mountains was originally restricted to adjacent areas of Transylvania where the resort of Păltiniș (originally named Hôhe Rinne (i.e. 'Izvoru de Sus') was founded in coniferous woodland above Sibiu at 1450 m in 1892 by Societatea Carpatină din Transilvania (Siebenburgische Karpatenverein) (Gherasim, 2000). However, road building in the Lotru catchment geared to forestry work and hydropower opened the way for a new resort at Voineasa (700 m) and a smaller establishment at Vidra (1,400 m) which more nearly matches Păltiniș a century later (Plate 2). There is no doubt that roadbuilding has been very beneficial for tourism, although pressure on certain rare plants (monuments of nature) and medicinal plants: *Angelica archangelica* (*angelica*); *Rhododendron Kotschyi* (*rose day*) and *Tamus communis* (*lady's seal*).

The rural economy was broadly sustainable under communism, with significant areas protected as nature reserves (Buia et al., 1962; Bărbulescu & Motcă, 1983) (Figure 1). Vâlcea was inevitably affected by communist industrialisation but the mountain regions were not too heavily de-

graded. While major lignite quarries were opened in the Alunu-Berbești area, the large power stations burning this low-grade fuel were located to the southwest so there was no major impact on the Vâlcea Carpathians. However mining has affected Arnota and Cataractele Lotrului. Arnota, which provides lime for Govora soda factory, is a major blot on the landscape – but an accumulation of small rocks now threatens the village while there is also a danger of a collapse of rock that would block the Costești Gorge (Plate 3). Only pieces of limestone of 5–15 cm diameter can be used in the industrial process, which results in a huge accumulation of small fragments. The material can be used beneficially on local (unsurfaced) roads but the transport cost limits the range over which this solution can be applied. It is necessary to develop new technology which will enable the factory to use the waste material which has been tipped for many years, but research has not yet been successful. Meanwhile Cataractele Lotrului, above Voineasa, provides 'terasit': a gangue containing feldspar and mica which has been much used locally for building purposes. Although there are no toxic effects the particles in suspension affect the breathing of fish, especially trout which need rivers with heavy stones and clean water. On the other hand, torrents were corrected and wild life flourished.

Dumps left by the Lotru hydropower project were graded and covered with soil, although the sedimentation of the reservoirs of Brădișor and Malaia poses a threat to fish, frogs and insects. But there was inadequate environmental impact assessment for industry and especially chemical production, represented by the large Oltchim complex south of Râmnicu Vâlcea, which caused pollution damage. This is not a sig-

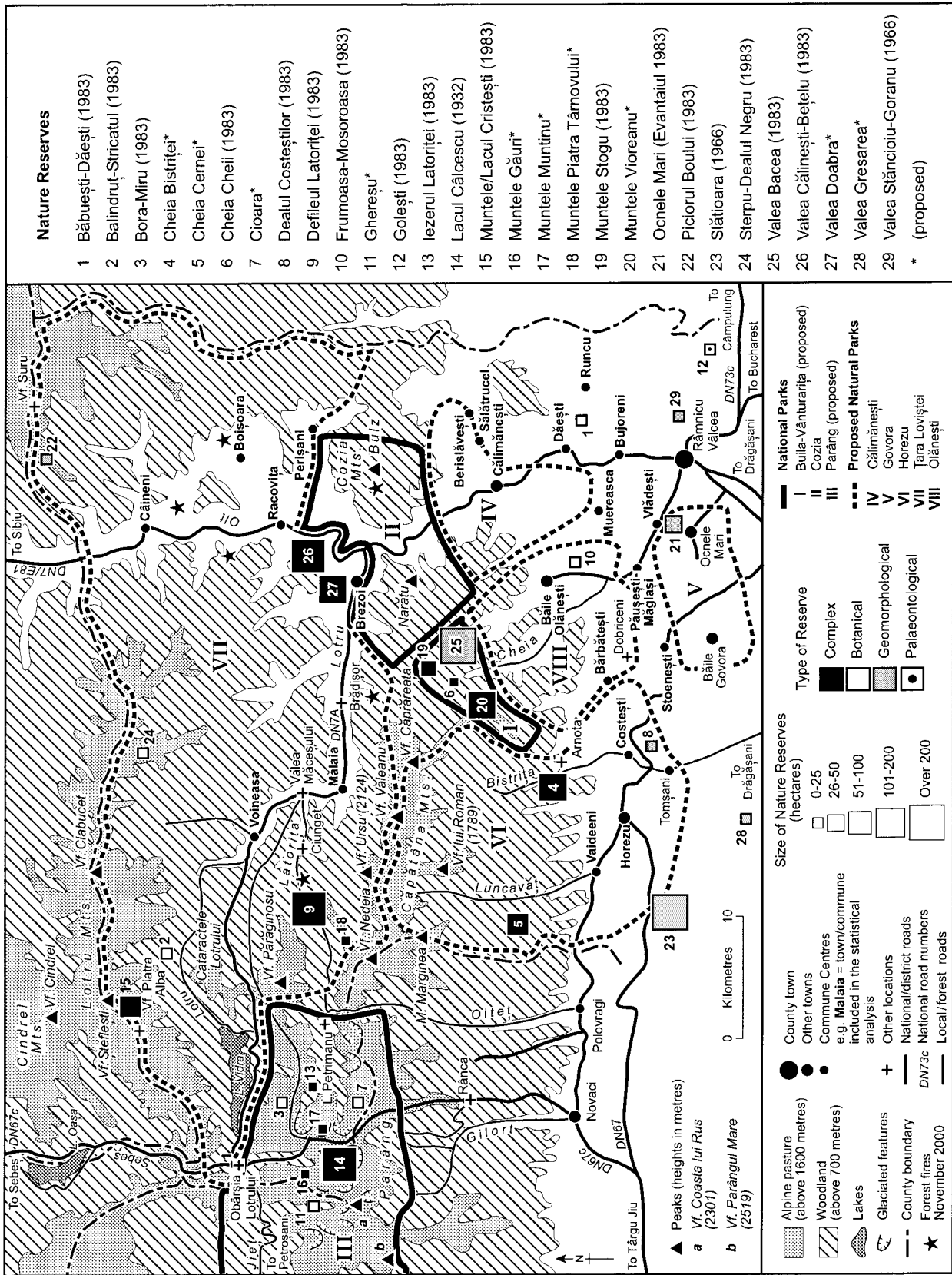


Figure 1. The Vâlcea Carpathians showing the settlement system, nature reserves and parks.

Table 1. Profile of the Vâlcea resorts

Resort	Population	Height (m)	A	B	C	D	E	F
Băile Govora	3025	360–380	20	19	–3	800	*	*
Băile Olănești	4820	430–475	18	21	–3	750	20	2657
Călimănești-Căciulata	8633	260–280	18	20	–2	775	43	4678
Costești	3783	450	40	*	*	*	1	25
Ocnele Mari-Ocnița	3641	310	15	21	–2	700	*	*
Voineasa	2384	600–800	60	14	–7	800	19	1874

A, Distance from Râmnicu Vâlcea km; B, Average temperature July; C, Ditto January; D, Rainfall mm; E, Number of establishments providing accommodation 1990/1991 average; F, Ditto number of beds.

Băile Olănești is situated in the attractive valley of the Olănești River in a Subcarpathian depression surrounded by wooded hills and is an all-season resort of national importance. Waters supplied from some 30 springs are recommended for the treatment of kidney, respiratory and dermatological diseases as well as nutrition disorders. There are warm mineral water baths for electrotherapy and hydrotherapy; also two dozen mineral water drinking fountains. With a public park as an added attraction, the accommodation base is relatively modern and four hotels (one only recently finished) have adequate standards in terms of the facilities and space, though they lack character and have been described as architecturally uninspiring. Despite plans to build a new treatment centre, there is a lack of planned maintenance and both hotels and public spaces have suffered as a result. Local tourist objectives include the monastery of Sărăcinești (15th Century), the wooden church of St Nicholas (18th Century) and many good examples of vernacular building. It is recommended that Ceaușescu's villa should be converted and marketed as a high class hotel. Călimănești-Căciulata is situated in a depression along the River Olt (Badea 1960) astride the main highway from Pitești to Sibiu. Today there are modern establishments catering for a wide range of medical conditions; along with hepatitis and ear nose and throat diseases along with gynaecological and neurological disorders. Căciulata treats children suffering from hepatitis and it houses the country's only sanatorium for silicosis patients with outdoor pools of sulphurous thermal waters. Meanwhile a clinic belonging to the Bucharest Institute of Balneophysiotherapy and a section of the Bucharest Institute of Medicine & Pharmacy is located in Călimănești. There is also a bottling station for mineral water. Most accommodation offers adequate facilities and is modern, though visually unremarkable and poorly maintained. Furthermore, the position of the resort on the main highway makes for good accessibility but generates traffic problems associated with pollution, noise and pedestrian conflicts. Although most guests come for the medical treatment, rather than for a holiday, there are significant local tourist attractions including the 14th Century Cozia Monastery (with the original murals of 1391), the 16th Century Church of Ostrov, the 17th Century Turnu Hermitage church. Further monasteries exist nearby at Cornet and Stânișoara.

Voineasa is situated at a height of some 700 m at the southern limit of the Lotru Mountains. It is an all-season health and holiday resort with national importance. There are no spa waters present and the main therapeutic factor is the climate with clean air, rich in iodinated and ozonised aerosols and ultraviolet radiation. Initially owned by a trade union, the accommodation is relatively new and consists of a hotel complex with apartments and maisonettes; the latter are set in attractive landscaped grounds and are designed to emulate Swiss chalets. Despite the relatively high altitude, winter sports are not generally promoted or available. But local attractions include the nature reserves (such as Latorița forest) the Lotru gorges and Vidra reservoir. A network of waymarked paths provides access to Dobrunu forest chalets and also to Capra Foi two kilometers to the west with its shepherding traditions. However, the road connecting Voineasa with Petroșani remains largely unsurfaced beyond Obârșia Lotrului, as do the interconnecting north-south roads from Novaci to Sebeș and through the Latorița Valley to Polovragi.

Even more remained to be done at the planned high level winter sports resort of Vidra (1400 m) situated around a lake comprising the main storage reservoir for the Lotru hydropower plant. 2,000 beds are planned for Puru on the southeastern shore close to the dam: apartments and chalets were finished in the early 1990s but the hotel was still under construction in 1995 and access was restricted by delay in rebuilding and surfacing the national road (via Curmătura Vidruței) as far as the lake. The surrounding mountain scenery and the lake are very attractive and, due to the high altitude, summer temperatures are relatively low and the resort is subject to snow for much of year. A winter sports centre with 1,000 beds is planned for Alba, at 1850m on the higher ground to the south, where ski runs and nursery facilities have been constructed. There is also a plan for a sanatorium at Mura on the northern side of the lake. Chairlifts are proposed for both Voineasa and Vidra (also for Brezoi, Malaia, and Petrimanu).

The whole Voineasa-Vidra project is an outstanding example of coordinated development with a base in the logging and hydropower programmes. But careful management will be needed to maintain landscape quality. On balance it seems that the scope for a flourishing winter sports industry is currently lacking and while there are opportunities for cross-country skiing the limited ski runs are unlikely to attract foreigners. But the complex offers a varied programme of outdoor sports and activities. 'The beauty of the mountains, forests, valleys, lakes, rivers and hills...combined with the wide open spaces offer plenty of scope for active outdoor pursuits including walking and trekking, horse riding, mountain biking, mountain climbing, canoeing, sailing, fishing, orienteering, wildlife spotting and hunting. Such activities should be planned and catered for as part of the holiday experience' (Walker, 1995 p. 51). Hunting however needs to be carefully managed in the interest of sustainability and to minimise conflict with other visitors.

Sources: Ghinea (1993); Rusenescu (1969, 1980)

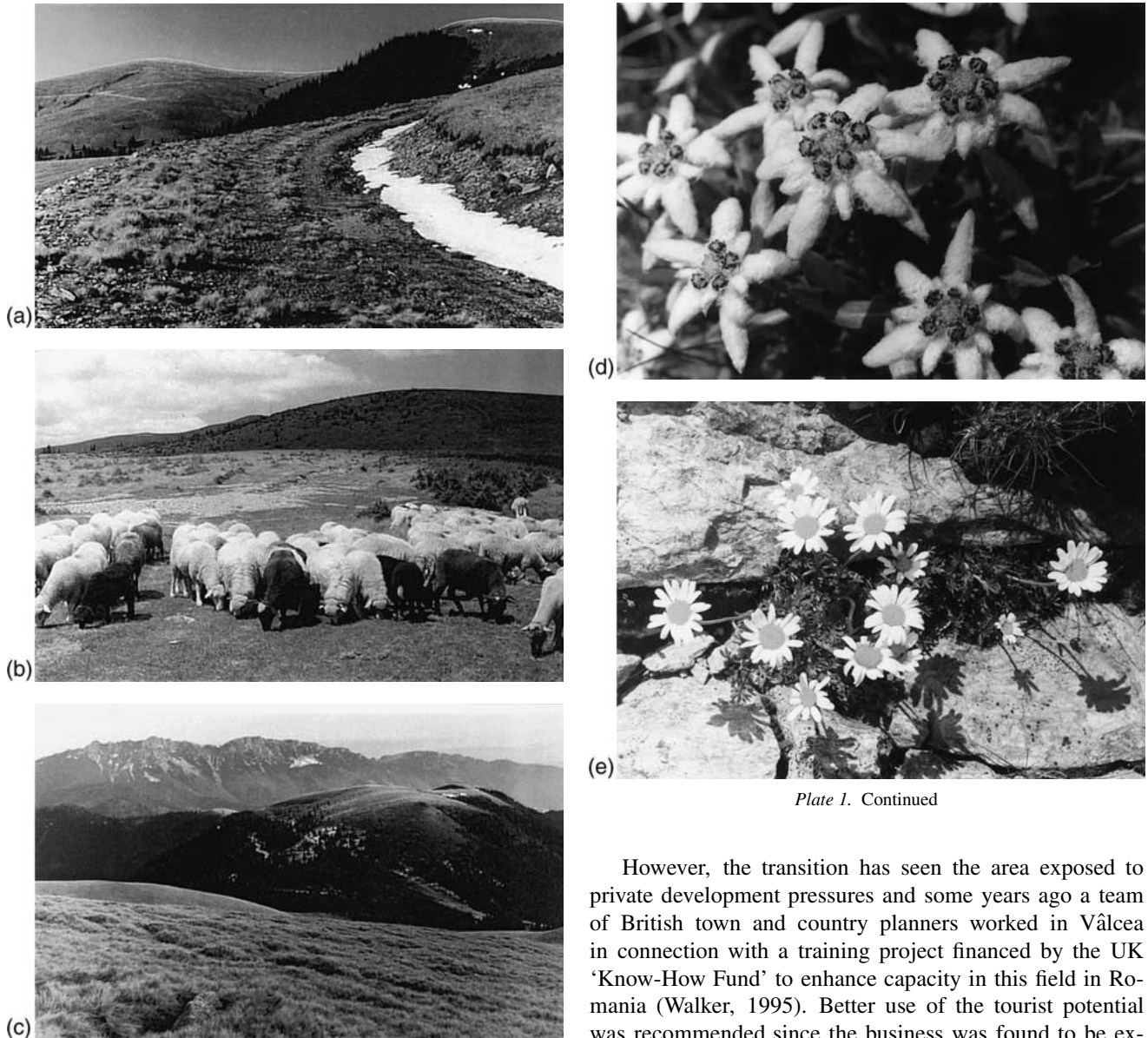


Plate 1. The Vâlcea Carpathians: land use and vegetation (a) high grazing lands; (b) intensive grazing in the Căpățâni Mountains; (c) grassland with *Nardus stricta* in the same area; (d) 'Floarea de colți' or 'Edelweiss' (*Leontopodium alpinum*) at Muntinu Reserve in the Parâng; (e) 'Margarete de munte' (*Chrysanthemum alpinum*) in the Parâng (G. Ploaie).

nificant problem now, although there is some acid rain and a good deal of smoke emanates from wood fires in the resorts, while domestic waste may affect watercourses. Wood processing is a long-established industry at Brezoi exploiting the valuable forests that extend over an altitudinal range towards 1,800 m. The largest spruce stand in southeastern Europe exists in the Lotru basin (Decei, 1989). Much of the forest is accessible now by road and some tractor paths gave rise to severe erosion problems (Plate 4), though cutting rates were generally sustainable and the areas affected by clear felling were replanted or left to regenerate naturally. However, there was too much grazing pressure in forests, especially by goats, and considerable damage arose through tourism (Badea-Klebleev et al., 1970; Doniță et al., 1977; Giurgiu, 1978).

However, the transition has seen the area exposed to private development pressures and some years ago a team of British town and country planners worked in Vâlcea in connection with a training project financed by the UK 'Know-How Fund' to enhance capacity in this field in Romania (Walker, 1995). Better use of the tourist potential was recommended since the business was found to be excessively concentrated, with insufficient attention paid to the cultural resources. Although the leading monasteries (Cozia and Hurez) were well known, rural culture was generally overlooked, despite the Collection of Ethnography & Folk Art at Bujoreni and the strong pastoral traditions (Bugă, 1996). The environmental resources were also regarded as a key factor. Specifically, it was recommended that 'the majority of the mountain areas should be recognised as an area of landscape beauty [with] special protection from unsuitable/inappropriate development' (Walker, 1995, pp. 63-64). There was considered to be a need for scheduling equivalent to the British 'Area of Outstanding Natural Beauty' (AONB) designation, requiring full justification for all proposed commercial and industrial developments in the relevant areas. However, while progress in this domain ultimately requires recognition at the national level, local initiative is crucial in making an effective case. In this respect the emerging civil society in East Central Europe has been considered deficient in the sense that universalist values – expressing concern for all sections of society – are neutralised by particularism as the more affluent elements look to their own



(a)



(b)

*Plate 2.* Aspects of settlement I: (a) the tourist resort of Voineasa; (b) seasonal habitations ('conace') on the high ground concerned with livestock grazing and subsistence agriculture; (c) typical loosely-concentrated low ground settlement showing maize fields and orchards (D. Turnock).



(c)

Plate 2. Continued

wellbeing and society fragments into ‘potentially conflicting networks of postmodern tribes’ (Lagerspetz, 2001, p. 12). Granted that there should be political participation by all members of society to address the shortcomings of representative democracy, the need arises for non-governmental organisations (NGOs) to form effective partnerships with government (Lagerspetz, 2001, pp. 14–15). In the environmental field NGOs have been seen as effective in the late 1980s but less conspicuous during transition, given an overriding concern for economic survival today plus an element of surrogacy in the late 1980s when environmental problems were exploited as a means of securing system change (Dawson, 1996). Experience varies considerably among transition states, for some countries have spawned effective environmental NGOs (Czech Republic, Hungary and Poland) whereas a study of Ukrainian society reveals how ‘the culture of dependence and the cult of power created a general inertia in society and individuals [leading to] the marginalization of intelligent and competent people’ (Van Zon, 2001, pp. 78–79) and hence ‘a mismatch between the formal institutional framework and social practices’ (Van Zon, 2001, p. 92). In Romania, the transition years have seen Transylvania as being more reform-oriented than provinces of Moldavia and Wallachia (Bucharest excepted) and the same contrast exists in the formation of environmental NGOs (Figure 2). Indeed, outside Transylvania there is often little recognition of the beneficial role that NGOs can perform, given the depth of cynicism which associates virtually all private initiatives with self-interest. In such a situation progress in the environmental field may depend on the enthusiasm of individuals who work with their own limited resources to study the environment and

gain support for biodiversity conservation through informal networks which provide access to the media and a degree of academic and political support. Such a situation has been studied by the British author of this paper through several years of close professional association with a Romanian colleague – joint author of this paper – based in Râmnicu Vâlcea and thoroughly committed to the conservation of the mountain country in the vicinity. The paper considers first the current ecological trends in the Vâlcea Carpathians and then deals with initiatives in the Cozia-Narățu National Park.

#### **Environmental trends in the Vâlcea Carpathians since the revolution**

Restitution woodlands have been heavily cut by their new owners and have rarely been replanted. Sweet cherry, evergreen oaks and walnut trees are frequently cut in private forests near villages because there is a demand for logs that can be used for high quality veneer. There is much private sawmilling now, but the sawdust (frequently left on the banks of streams) is a source of water pollution in the Latorița, Lotru, Luncavăț and Otăsău valleys. A considerable amount of processing takes place within the forests where the operations are hidden from both ecological and fiscal scrutiny. But even in the state forests there are problems through the inadequate forest road system (they are too expensive to build now); so trees are dragged by tractors and in the process standing trees are damaged and exposed to attack by vermin while river beds are eroded. It is unfortunate that the wood processing complexes of the communist period are in decline while the market for unprocessed timber is buoy-

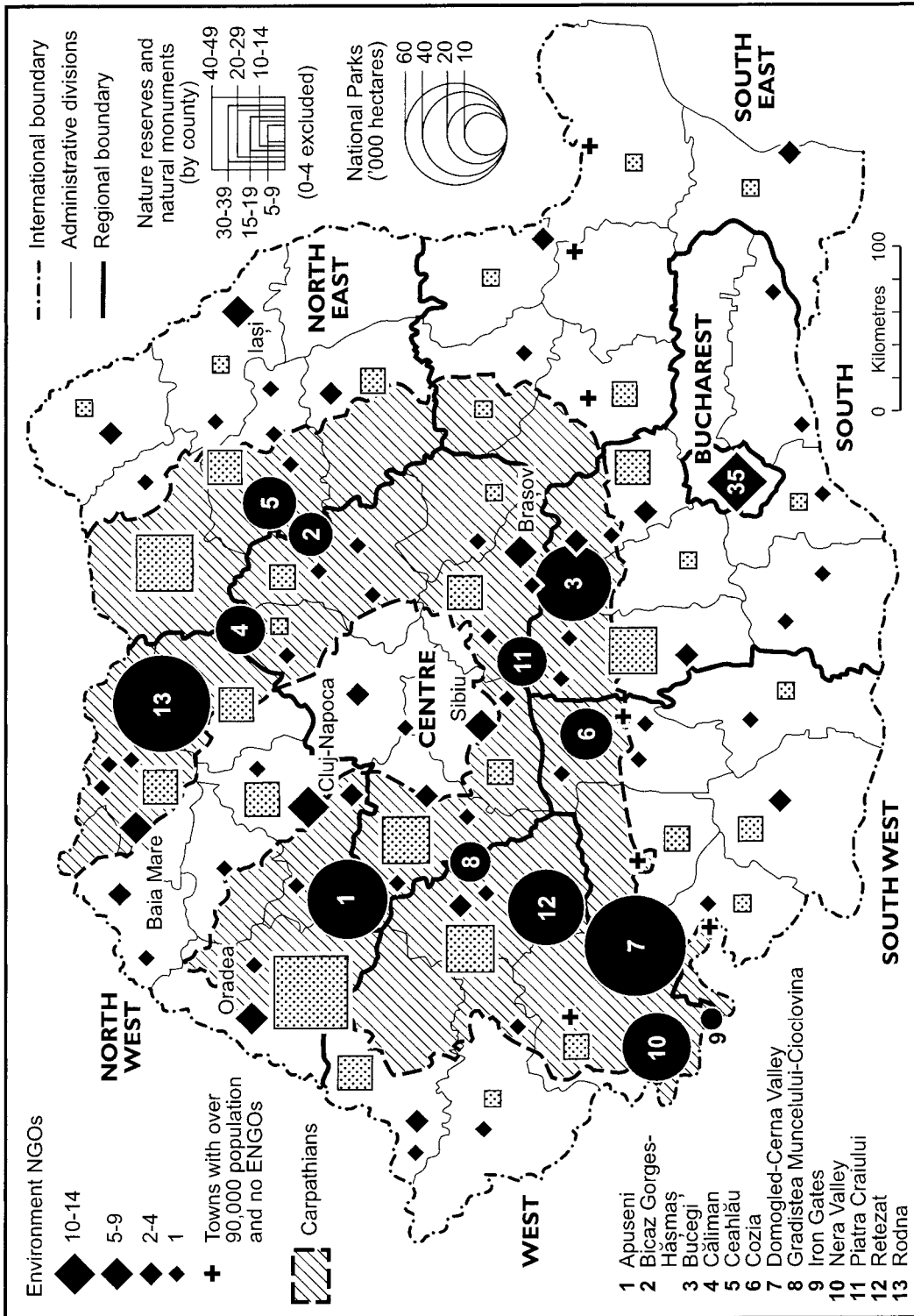


Figure 2. Environmental NGOs, nature reserves and national parks in Romania.

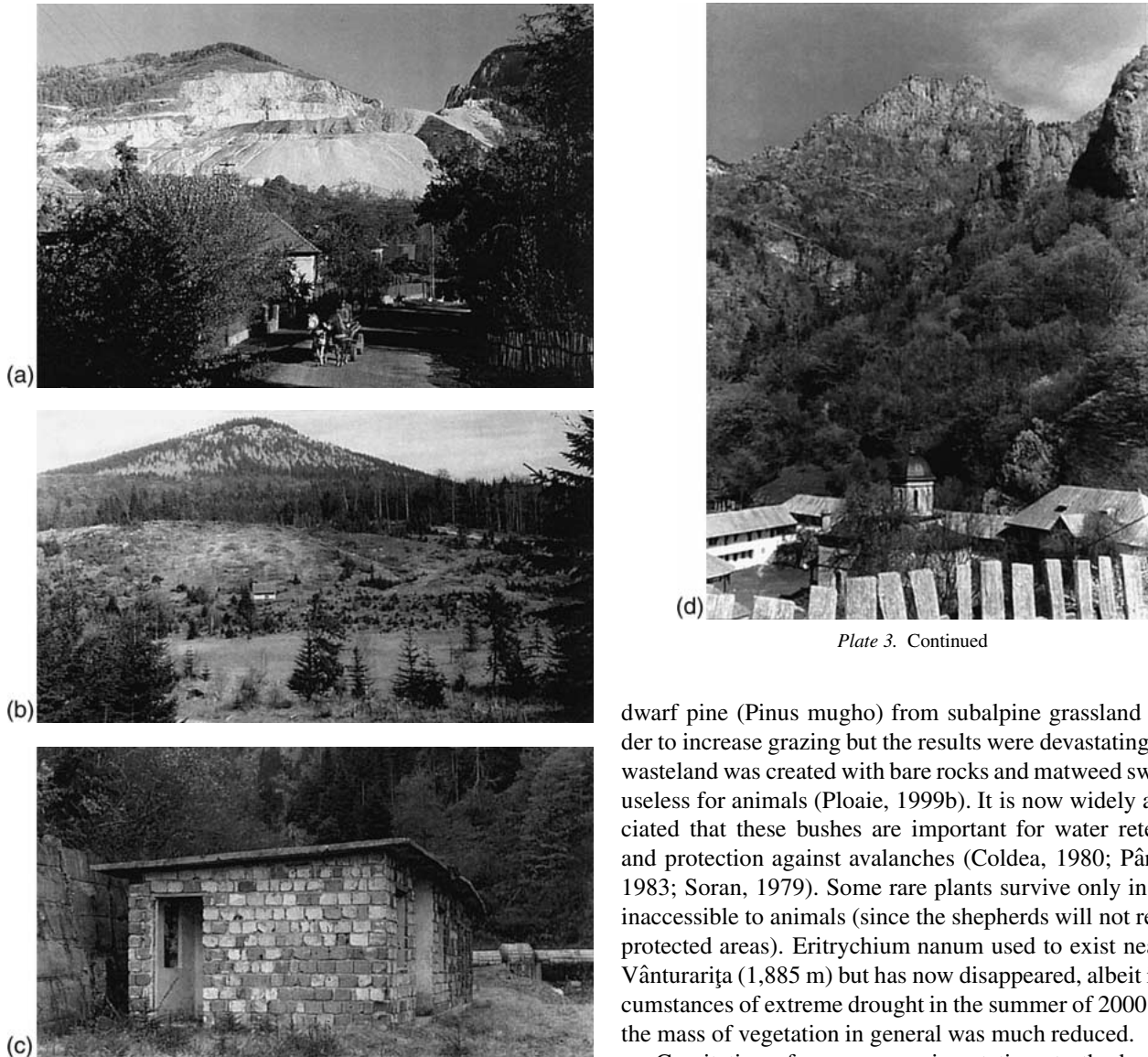


Plate 3. Continued

Plate 3. Aspects of settlement II: (a) Arnota quarry threatening Pietreni village; (b) a forest chalet on Pleașa Mountain; (c) a deserted building erected in connection with hydropower construction; (d) Stănișoara Monastery under the rocks of Colții Foarfecii in the Cozia Massif (G. Ploaie).

ant. Landowners frequently burn young fir and spruce trees in order to prevent encroachment on pastures, as at Șterminosu in the Făgăraș Massif and in the Marginea Mountains within the Căpățâni Massif between the Luncavăț and Olteț valleys (also at Cășăria, Găuriciu and Zăvidanu in the latter area) (Milescu, 1990).

There has been considerable pressure on the mountains through the summer grazing of cattle and sheep and changes to the vegetation include the greater prominence of matweed (*Nardus stricta*) which livestock will only eat when it is young (Dinu, 1997). There are a few other species of 'minimal abundance': common bennet (*Geum montanum*), the gentians *Gentiana clusii* and *Gentiana verna*, the pasque flower (*Pulsatilla alba*), and the salsify (*Scorzonera rosea*). Other species have adapted to shorter cycles that end with intensive grazing (after June 15th): *Potentilla* sp. and *Ranunculus* sp. There was formerly much cutting of juniper and

dwarf pine (*Pinus mughu*) from subalpine grassland in order to increase grazing but the results were devastating since wasteland was created with bare rocks and matweed swamps useless for animals (Ploaie, 1999b). It is now widely appreciated that these bushes are important for water retention and protection against avalanches (Coldea, 1980; Pânzaru, 1983; Soran, 1979). Some rare plants survive only in areas inaccessible to animals (since the shepherds will not respect protected areas). *Eritrychium nanum* used to exist near Vf. Vânturarița (1,885 m) but has now disappeared, albeit in circumstances of extreme drought in the summer of 2000 when the mass of vegetation in general was much reduced.

Gravitation of summer grazing stations to the banks of streams increases erosion and pollution, while the shepherds who hire grazings from the local authorities are not concerned with the aesthetics of the business and fail to maintain the grazing stations in a good order. However, agricultural use of land is changing through reduced animal numbers and a decline of sheep relative to cattle. This brings a cultural change as shepherds prefer to concentrate on lowland grazings where cheese production is higher. There is still conflict between sheep and wild animals; aggravated by destruction of large livestock shelters erected by the socialist farms – in the Căpățâni Massif at Vf. Căprăreța, southeast of Malaia, and Milescu north of the Marginea Mountains; also on Părăginosu in the Latorița Massif – in order to salvage the building and roofing materials. Sheep that still graze in these areas in summer no longer have the benefit of shelter and are most likely to be attacked by bears and wolves at night (Popescu, 1977).

However, reduced interest in the mountains for grazing means that the programme of mountain road building by the socialist farms has stopped and the benefits for tourism are no longer available, especially when lack of maintenance





(a)



(b)



(c)

*Plate 4.* Some environmental problems: (a) Drying of vegetation on the limestone of Buila-Vânturarița following drought; (b) Erosion following the cutting of *Juniperus* sp. on Balota mountain, Căpățâni Massif; (c) erosion produced by a tractor road in Marginea Mountain (Căpățâni Massif); (d) erosion around a spring in the Căpățâni Massif (with natural reforestation above); (e) a small dam to steady run-off in the Recea basin (G. Ploaie).



(d)



(e)

*Plate 4.* Continued

makes the existing roads impassable, as is the case at several places in the Căpățâni Massif: Vf. Nedeia southwest of Ciunget, Vf. Văleanu southwest of Malaia and the area north of the Marginea Mountains, including Coasta Lacului and Găuriciu. Nevertheless, there has been a growth of tourism in many remote locations; facilitated by the building of chalets needed originally in connection with forestry and hydropower exploitation. Wooden buildings quickly degenerate but brick and concrete structures with architectural quality provide opportunities for tourism (as at Obârșia Lotrului, Petrimanu, Vidra and Voineasa). There are still some small brick buildings that could be refurbished for tourist use: Bistricioara, the Hoteagu and Olteț valleys and Pârâul Rece; while there is an old building on Vf. Căndoaia which once belonged to the Carpatina logging company. Also, with scope for private enterprise, rural tourism has been strengthened and this also makes for a more even distribution of pressure and support for rural diversification (Ion-Tudor, 1998).

However, tourism is not an unmitigated blessing because greater regulation is needed to prevent damage through litter and campfires in remote places. Too many wild flowers are being taken, including such rarities as edelweiss (*Leontopodium alpinum*), globe flowers (*Trollius europaeus*) and white ivy (*Daphne blagayana*), and there is also much interest in collecting wild mushrooms for commercial gain. Wild animals can be disturbed by parties of tourists playing loud music but the biggest threat arises through poaching. Highly controlled access to firearms before 1990 ensured the conservation of animals but now private gun ownership is increasing and the numbers of bear, chamois, deer and wild boar are declining. International hunting tourism operates in

the Făgăraş Mountains and the Boia and Lotru valleys and corruption among the local staff may result in authorised shooting levels being exceeded. And despite police surveillance, there is also unauthorised fishing including some use of a traditional method (well-known among shepherds) which involves 'tickling' the fish with the root of *Aconitum nepellus* or *A. tauricum* (monk's hood) since this paralyses the fish which can then be taken out of the water by hand. Butterflies, birds, frogs, lizards and snails are collected and sometimes exported.

The environment is affected by natural change. The effects of the drought in 2000 were evident in June on the rocky mountains of Buila-Vânturarița, Cozia and Narău where grassland started to dry. Acacia and birch trees were badly affected in premontane areas with conglomerates and gritstones. The top metre of soil was generally without moisture. Fodder production was greatly reduced as were the crop and fruit yields (with the added damage of some violent storms). More animals than usual had to be disposed of and this will have an effect on meat prices in the future. Many springs dried up and some villages experienced problems; lower river levels meant increased risk of damage by pollutants (and poisons affected fish); while the rising temperature of river water during June-August was damaging to trout stocks. The artificial lakes built in connection with the Lotru system have very low water levels (Vidra is less than a quarter capacity): this exposes the banks to erosion and accelerates silting. Forest fires broke out as the drought continued through the autumn: on the north side of Cozia at Boișoara and Greblești (8 ha) and on the south side at Bulz above the Păușa valley (1 ha); also west of the Olt at Robești (28 ha); and 50 ha in the Lotru valley south of Sălișteța-Chica Seciului, including the Latorița above Ciunget.

### Networks for environmental protection in the Vâlcea Carpathians

In the context of financial and institutional weakness, the paper has already indicated how individuals can play an important role; notably through the role of foresters in the creation of national parks. The paper now considers other ways in which environmental issues are being considered. The need has been demonstrated in Buila-Vânturarița and the Parâng especially where national parks are considered appropriate. This will extend the designations well beyond the limited proposals put forward by Oarcea (1981). But 'natural parks' could also be established at Băile Olănești, Călimănești and Govora, with much larger ones for Horezu and Țara Loviștei (Ploaie & Turnock, 1999). While a good many people are aware of the scenic and biodiversity resources it is a complex business to gain wider public support. However, Vâlcea provides an illustration of what can be done to build supportive networks through individual effort. Based on training as an ecologist and wide experience of the Vâlcea Mountains, the Romanian author of this paper has set about building local network in support of further environmental protection, particularly in the Parâng and Vânturarița Mountains.

Work as a teacher in Voineasa and (since 1990) as an inspector (for specialisation) at the Râmnicu Vâlcea 'Inspectorat Școlar Județean' has provided opportunity to introduce ecology into local education and stimulate other teachers in the county to help develop ecological consciousness among young people. For several years (1985–1994) annual seminars were held on the theme of 'Omul și Muntele' (Ploaie, 1995 p. 59) and books have been distributed to local schools (Ploaie, 1999a). In education much support has come from the Vâlcea inspector for geography, Ghiță Procopie, and local teachers especially Ion Banu. From this base, NGOs have become involved; most importantly 'Fundatia Cultural Științifică Niphargus' (of which Procopie is president): founded in 1992 when the old speleology club developed a wider profile covering environmental education (especially for young people), environmental protection, scientific research and tourism. Since 1995 annual symposia have been organised on the theme of 'Geografia Teoretică și Aplicată a Județului Vâlcea' (in collaboration with the local schools inspectorate and organisations concerning with geography, teaching and young people). Speleological festivals were held annually from 1980 to 1998 but could not continue for lack of money.

Influence with young people is also obtained through the student organisation 'Cercetașii României' which operates very much in the West European 'scouting' tradition, with time spent camping in the mountains in the course of which some useful work is done in waymarking tourist routes (notably in the Latorița Mountains). At the same time, contacts with the local mountain rescue service 'Salvamont' provide valuable information on the state of the environment from week to week in the Cozia and Căpățâni Mountains especially. A further link that is valuable for the exchange of information concerns the Vâlcea Environment Protection Agency created after 1989 to monitor environmental quality (especially pollution control). A close contact exists through the biologist Gheorghe Turcu who heads the section on conservation and biodiversity but requires assistance in dealing with potential threats to scenery in general and protected areas in particular. And a wider audience has been reached through television which has become accessible through the support of Emilian Frâncu, director of Vâlcea I Television which serves the Drăgășani and Horezu areas as well as Râmnicu Vâlcea. During 1998–1999 a series of 15 programmes of one to two hours duration were broadcast on the theme of 'Natura Sălbatică din România' (Wild Romania) – inspired by a 'Wild America' programme presented by Romanian Television some years ago – and the TV company's studios were made available for the preparation of the visual material (Ploaie, 1999a). Feedback through the press made is clear that the initiative was effective, coming as it did on the heels of a number of television interviews on a range of ecological matters.

It is fortunate for the cause that the president of Vâlcea county, Iulian Comănescu, is responsive to representations on environment problems and he has been particularly supportive over the Parâng proposal which is highly relevant to plans for the development of the tourism infrastructure in the area including the modernisation of the road (presently

closed) which crosses the Carpathians between Novaci and Sebeş, reaching a height of 2,135 m. The challenge of sustainable development in this sensitive area is therefore pressing and the Romanian author is in a stronger position to achieve his objective because Comănescu has supported his membership of the county's 'Comisia pentru Ocrotirea Monumentelor Naturii': COMN (Commission for the Protection of Monuments of Nature) and also negotiated a research contract needed to secure an inventory highlighting the faunal and floral species to be declared 'monuments of nature'. It has therefore been possible to recommend a substantial increase in the number of nature reserves in the Vâlcea Carpathians (as indicated in Figure 1, with Cioara and Ghereşu reserves in the Parâng Mountains proposed as recently as 2001. Moreover, good progress has been made in documenting all protected areas so that they are properly respected in the planning process (required under Article 54 of the 1994 Environmental Protection Law). The revised regulations set out under Ordinance 236 of 2000 highlight the scope for initiative by educational organisations in the field of environmental protection,

These initiatives are also appreciated in Bucharest where researchers at the Romanian Academy's Geography Institute (Lucian Badea, Dănuţ Călin and Gheorghe Niculescu) have supported local initiatives in Vâlcea for some time and this is of great significance given the traditional role of the Academy in advising where protection should be extended on a provisional basis (Article 57 of the 1994 legislation). Thanks to a close personal relationship the Romanian author has now been asked by the president of national COMN (Dan Munteanu of the Romanian Academy) to extend his documentation to adjacent areas of Gorj and Hunedoara counties. Finally, an international dimension is being sought through the initiative of the World Wide Fund for Nature (WWF) for a Carpathian Ecoregion. This could attract expertise from other countries which are cooperating over the initiative and provide support for a conservation plan. This will need to be informed about anthropic impact areas and development plans in order to propose the best locations for investment and for tourist access routes. Part of the proposal involves setting up a school for park rangers which would be the first such establishment in Romania. Support is also needed for a range of publicity materials: a guidebook along with maps, posters, postcards and videos. A total budget of some \$8,000 funded by the three Romanian counties and the WWF (or other foreign donors) would provide the necessary resources.

It is also relevant to mention the strong orientation towards environmental improvement within the local authority for Râmnicu Vâlcea. This owes much to Elena Dumitru, a young engineer who has specialised in municipal services and especially waste management. Having been a member of consulting team working a study of waste management in Bucharest, she moved to Râmnicu Vâlcea in 1996 to work for 'Urban', the company providing local services to prepare an operational strategy for waste collection, transport and storage and to work on a national concept of urban waste management in which Râmnicu Vâlcea town hall is a partner. Since 1999 she has a wider responsibility at the

head of the Environmental Protection and Waste Management Service for the municipality and coordinates a number of programmes which are externally funded. Not only is the town's waste management system performing to European standards (with new disposal arrangements including the composting of biodegradable waste) but the credibility of the municipality has been enhanced both locally and internationally and it gained the EU's 1999 and 2000 Compliance Award Towards a Healthy Environment (a special recognition diploma) for the Romanian city with the best record of compliance with EU standards with regard to air and water quality, waste management and public participation, including access to information; based on an exhaustive questionnaire return. Unfortunately a planned ecological waste facility poses a threat to a nature reserve in the Stăncioiu Valley. Waste recycling is needed but resources are not available to acquire the technology and installations. The city hall is promoting education in the field of environment protection for the adult population and also in the schools through the programme 'Educational Issues in Environmental Protection in Râmnicu Vâlcea', to further improve aesthetic and sanitary standards, protect environment and health and bring the local administration even closer into line with European standards.

#### **Cozia-Narăţu National Park: a balance sheet of achievements and challenges**

The official declaration of Cozia-Narăţu as a national park (listed in *Monitorul Oficial* during 2000) is the culmination of efforts by many naturalists (botanists, geographers, geologists, silviculturists and tourists). In 1966 the former Argeş Region established the Cozia natural reservation and after the Bucharest Biological Research Institute researched a 'Cozia National Park' proposal for the Romanian Academy – and silviculturists took action to protect much of the Cozia and Narăţu Mountains - Vâlcea County went on to confirm the 'Cozia natural reservation' with its rare plant and animal species. But only in 1974 was a proposal for 12 more national parks (including Cozia) – to supplement the one existing national park in the Retezat Mountains – accepted by the Academy and its 'Comisia pentru Ocrotirea Monumentelor Naturii' as the basis for study. Seven years later, Oarcea (1981, p. 127) presented details of all these parks (plus the Danube Delta) on the basis of research was carried out by the Timişoara branch of the Silvicultural Research Institute (Institutul de Cercetări şi Amenajări Silvice: ICAS) with reserve, buffer and pre-park zones specified in each case. However nothing further was done until 1990, when Oarcea revived his proposal for a 'Cozia-Narăţu National Park' (190 km<sup>2</sup>) at a symposium in Voineasa. There was support from the local authorities, while Ion Greere – the chief engineer of the Călimăneşti silvicultural office ('Ocol Silvic') - played a key role in laying the groundwork for a park with interesting vegetation and distinctive geomorphological characteristics. But he – and all the foresters – have disappointed the conservationists by failure to control graz-

ing in the central area of the park where sheep are damaging the young forest.

The name 'Cozia-Narău' refers to the mountains on either side of the Olt defile between the mouth of the Lotru at Golotreni and the Cozia monastery. The meaning of the 'Narău' on the western side (also known as 'Nauru', 'Năru' or 'Noră') is unclear, but 'Cozia', which is mentioned by Herodotus, could be interpreted through 'Koz' – Turkish for nut – which fits the alternative Romanian name of 'Nucet' and the existence of wild nuts on the south side of the mountains; or alternatively through the Slav meaning of 'Cozia' as a goat (Panighian, 1969). The name is used for both the mountains and the famous monastery founded by Mircea cel Bătrân in 1388 but it is not known in what connection the name was first used. Lying within the towns of Brezoi and Călimănești and the communes of Berislăvești, Perişani and Sălătrucel – with a buffer strip up to one kilometer wide – the park boundary follows the Lotru from the Stan valley downstream to the Olt and thence northwards to the latter's confluence with the Băiaşu brook. To the east the border is marked by Surdoiu-Perişani and Dângeşti-Berislăveşti villages and the Gresilor and Turburoasa valleys; while to the south the boundary follows a ridge running eastwards from Dosul Pământului (1,159 m) to the Căciulata stream and thence to the Olt (south of the Poştei valley) and beyond via Muşetel ridge to the Păuşa valley, Căliman hill, Păteşti valley and Dângeşti village. Finally the western limits include the Stan valley as well as La Mocirle ridge and Sturii Olăneştilor (1,415 m) and Dosul Pământului (1,159 m).

#### *Relief and landforms*

The Cozia Massif is part of the Făgăraş Mountains, though separated from the main mountain range by the Loviştei Depression. Geologists agree that Cozia is a crystalline 'horst' showing evidence of an erosion surface, for despite great erosion small flat surfaces are evident on the 'high field' at 1,600–1,650m as at Bulz, Grădină Bulzului and Omu (Călin, 1998; Ghica-Budeşti, 1940, 1958). However, the horst is asymmetric with very steep slopes on the northern side compared with the more gentle descent to the Păuşa and Coisca valleys on the southern side where some aspects of a piedmont are evident. In 1907 De Martonne thought that Cozia (and also Narău) represented the last vestiges of the Râu Şes platform and that the impressive precipices of the Brezoi or Lotru fault on the northern side – seen to best effect from the summits of Căpăţâni Mountains – arose from a major event 80 mln years ago (Tufescu et al., 1981). The raising of the horst led to inclination of 50–60 degrees which has given rise to cuestas and various structural forms (as on Căliman hill and the Păuşa valley). There are three main ridges: the first starts from Cozia's highest peak (Ciuha Neamţului 1,668 m), descends to Omu (1,558 m) and branches into the second ridge of Căprăriile, Măţăriile and Şirul de Pietre; while the third comprises a succession of rocky peaks ending with Şoimu (1,281 m) (Savu, 1963).

The massif comprises crystalline schist (including Cozia gneiss and micaschist) surrounded by sediments and conglomerates of Eocene and Miocene age: the contact is

very evidence in the railway cutting between Turnu and Stănişoara monasteries (Codarcea Desilla, 1961; David, 1974; Dimofte & Georgescu, 1972). With Ciuha Neamţului (1,668 m) as the highest peak, Cozia was not affected by Quaternary glaciation but periglacial relief forms are evident; most interestingly in such places as Colţii Foarfecii, Izvoarele Lotrişorului and Muntele Sălbaticul. Frequent blizzards in winter, coming from the north and northwest result in deep snow accumulations and some small cirques and 'cryo-nivation pipes' have formed. Periglacial action accounts for the prominence of residual relief forms with anthropic and zoomorphic shapes, described by Popescu and Călin (1987) and other authors. Some were named by shepherds as a claim to grazing while others have been identified more recently by research workers. Periglaciation also accounts for the grottoes modelled from crystalline schists which are spread extensively across the Cozia Massif. Although not as striking as karstic landforms, impressive examples – appreciated as shelters by wild animals and tourists – include Peştera din Cale, on the way to Stănişoara monastery, Grota Haiducului from Colţii lui Damaschin, Grota Urşilor below Ciobanu and 'Mecetul Pustnicului' on Sălbaticul Mountain. Natural archways of 1–10 m (high 3–5 m wide) are a further feature of periglacial activity; exemplified by Poarta Stănişoarei on Bulz peak near Stănişoara monastery and Poarta Turnului on the ridge extending to Usturoi Mountain.

Structural, tectonic, petrographic and climatic conditions result in contrasting central-northern and southern fields where relief shapes are concerned. The former is crystalline (reflected in the Armăsar, Muchia Boldanului and Scorţaru ridges); characterised by steep slopes (35–55 deg) and impressive precipices like Bulz and Colţii Foarfecii. There are impressive gorges associated with the drainage system e.g. the Gardu and Păteşti streams. By contrast the southern field, based on sedimentary conglomerates, gritstones and limestones is characterised by low summits of 600–1,000 m (e.g. Căliman, Făgeţel and Ursoaia hills) stretching to the Jiblea-Călimăneşti depression. East of the Păuşa valley, relief energy is much lower (200–250 m) and the deep valleys cut by the torrents are wider and extensively afforested. Although erosion has resulted in the accumulation of scree material, it is generally long-settled and is now covered by beech forest or beech-fir-spruce mixtures (Plate 5).

Narău comprises the eastern extremity of the Căpăţâni Mountains – separated from the rest by the saddle 'La Mocirle' (1,079 m) which is the source of the Olăneşti stream flowing south and the Stan to the north. Rising to Narău peak (1,509 m), the relief developed on gneiss and Cretaceous conglomerate – with a highly complex geological basement – replicates the precipitous slopes of Cozia but over a relatively small area (Savu, 1963). There is also contrast between a northern crystalline and southern sedimentary fields. The former includes the highest summit – Narău or Cărligele Olăneştilor (1,509 m) – from where a ridge runs eastwards incorporating the peaks of Sturii lui Pavel (1,300 m) and Foarfeca (857 m) from where there is a precipitous drop to the Olt. The massif is also limited

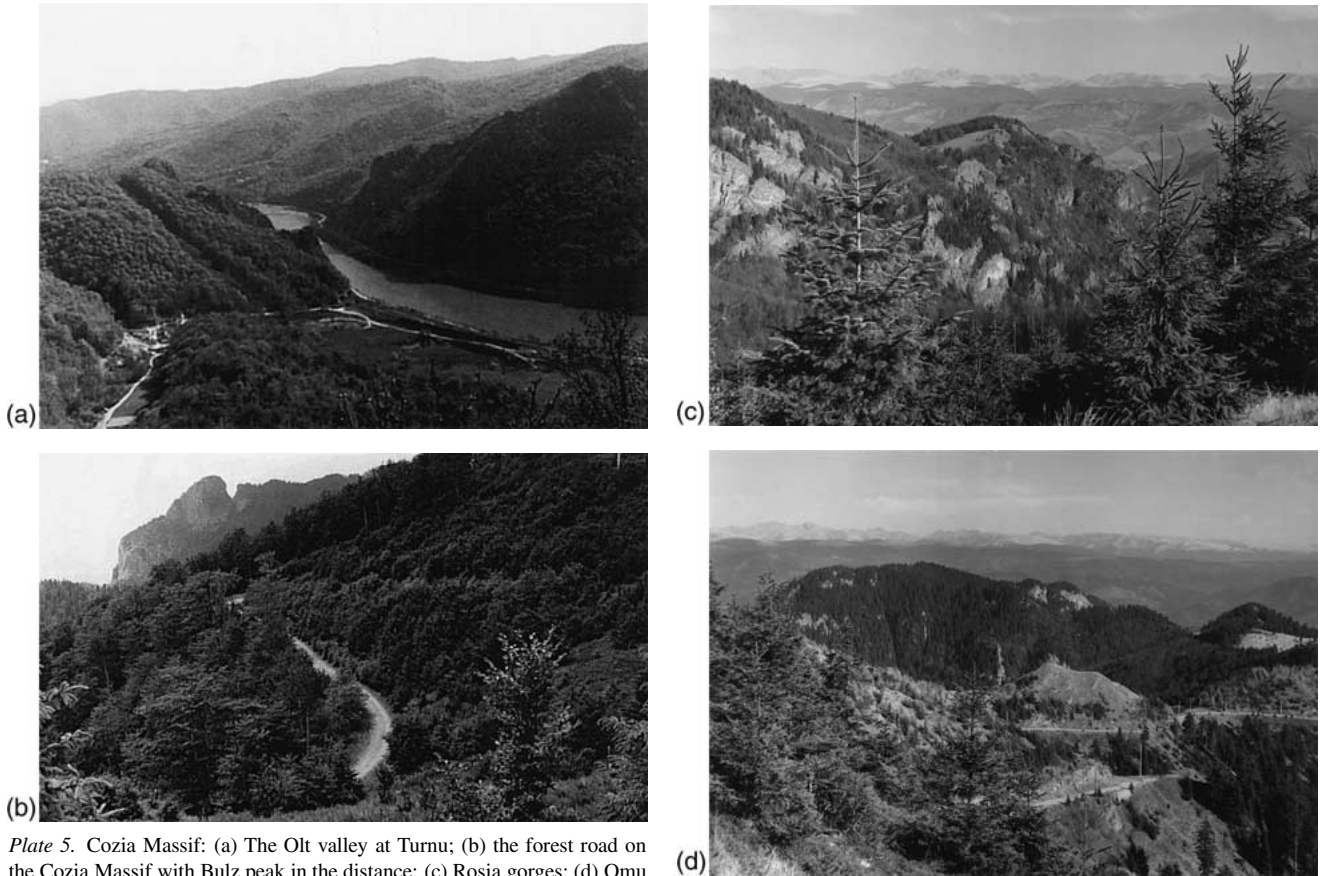


Plate 5. Cozia Massif: (a) The Olt valley at Turnu; (b) the forest road on the Cozia Massif with Bulz peak in the distance; (c) Roșia gorges; (d) Omu mountain (G. Ploaie).

(d)

Plate 5. Continued

on the northern side by the Brezoi fault, well seen from the Vultureasa valley. Periglacial relief forms can be found but not on the scale of Cozia. However stones with anthropic and zoomorphic appearance can be found on the southern and western sides of Narătu peak, including ‘Șopârla’ (the lizard). The southern field, consisting mainly of conglomerate (but with crystalline areas in the Lotrișor Gorges and Basarab Mountain) covers a larger area with a focus on Sturii Olăneștilor (1,415 m) and the ridge running southwards marked by Dosul Pământului (1,159 m) and Badea (1,064 m) (Plate 6).

#### Climate, flora and fauna

Climatic contrasts arise when warm, dry air on the south of the mountains confronts cold and wet air to the north, though the gorge provides a passage for rain and cold turbulence draughts. Annual average temperature is about  $+10^{\circ}\text{C}$  in Călimănești and  $+3$  on the high mountain ridges. Frost occurs in the Olt valley early in October and the river may freeze in December forming an ice bridge (though later frosts may allow wild duck to winter near alluvial soil banks rich in silt). In view of the dominant winds from the north and northwest, snow may accumulate to a thickness of 70 cms on the northern side of the mountains, but does not exceed 30 cms on the south side where it does not lie for long periods either. Rainfall varies from 700 mm in the Olt valley to 1,200 mm on the high ground, with the heaviest falls during May–June and October–November. Vegetation

reflects the climatic contrasts: both thermophilous elements of submediterranean type (similar to those of Orșova) and submontane elements specific to cold climate can be seen (Nyárády, 1955).

#### Flora

Forests cover more than 85% of the park territory: beech 40%, oak (*Quercus petraea*) 20% – found at 1,200–1,300 m, higher than its usual level, on the south side (Dimitriu-Tătăranu, 1949; Teofilescu, 1984) – resinous 10% with the balance consisting of limes (*Tilia tomentosa*; *Tilia cordata*); walnuts (*Juglans regia*); the ash (*Fraxinus excelsior*) and the flowering ash (*Fraxinus ornus*). Near water sources on the high part of the massif are spruce fir (*Picea excelsa*), fir (*Abies alba*), pine (*Pinus silvestris*) and small bushes like *Bruckenthalia spiculifolia*, *Juniperus communis*, *Juniperus nana* and *Vaccinium myrtillus*. Bushes comprise alder (*Alnus viridis* f. *dacica*), coronet (*Spiraea ulmifolia*), spurge olive (*Daphne mesereum*), the wild service tree (*Sorbus cretica*) and the famous wild rose of Cozia (*Rosa Coziae*). In the forests numerous herb species can be found like *Asperula taurina*, *Deschampsia flexuosa* and *Primula columnae*; in contrast to the wet valleys of Cozia, Narătu and the Lotru where *Alliaria officinalis*, *Cardaminopsis arenosa* and *Saxifraga cuneifolia* are examples of what can be found.

In the most arid areas there are herbs like white ivy (*Daphne blagayana*) and the wig tree (*Cotynus coccgygia*), as well as flowers with an attractive range of colours includ-

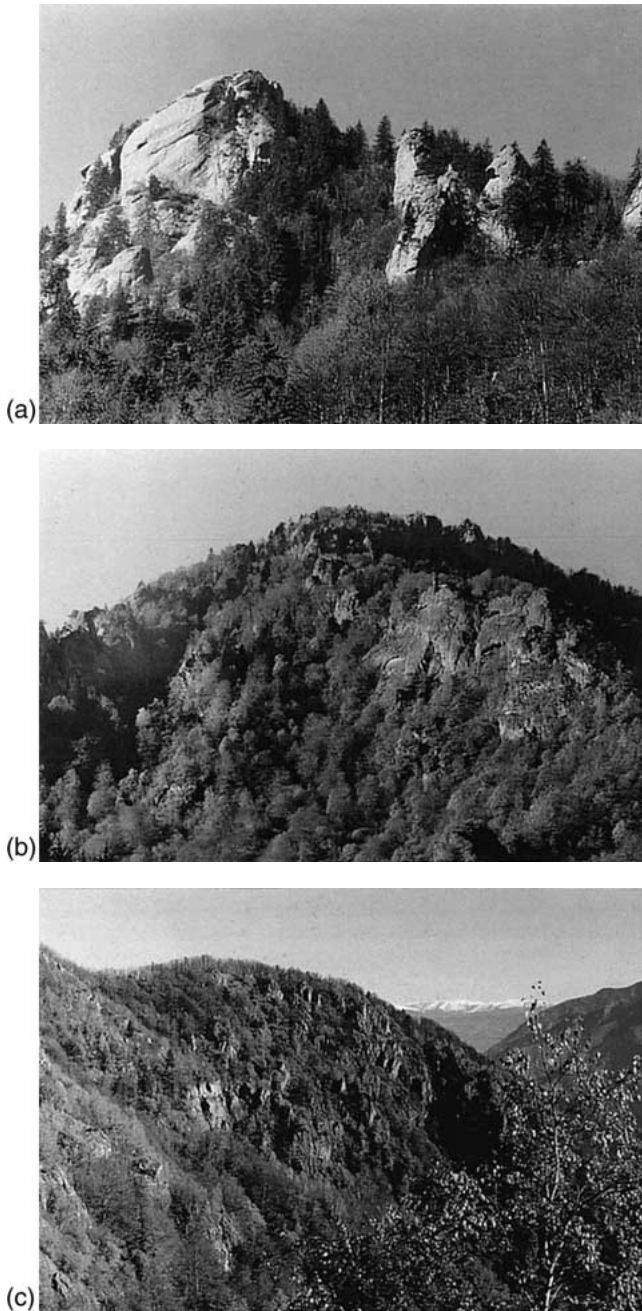


Plate 6. Narătu Massif:(a) Narătu; (b) Pietrele Goale; (c) Sturii lui Pavel.

ing *Allisum murale*, *Dianthus henteri*, *Genista spathulata*, *Leontopodium alpinum*, *Potentilla haynaldiana* and *Semprevivum heuffelli*. In the high fields *Antennaria dioica*, *Festuca supina*, *Gymnadenia conopea* and *Soldanella montana* appear; while in glades protected from sheep grazing there are examples of *Achillea pannonica*, *Malva lepida*, *Teucrium chamaedris* and *Viola tricolor*. Thermophilous species include *Allisum murale*, *Fraxinus ornus*, *Lathyrus vernetus* and *Sorbus cretica*; while *Cerastium lanatum*, *Festuca supina*, *Phyteuma nanum* and *Saxifraga cymosa* are among the subalpine species. Most species are of Central European origin but some are from the Alps, Balkans, Caucasus and the Mediterranean (Banu & Măldărescu, 1984; Berbece,

1973, 1984; Berbece & Banu, 1973; Chiurchea, 1962a, b; 1966; Nýarády, 1955).

#### Fauna

Large vertebrate animal species important for hunting include the badger (*Meles meles*), bear (*Ursus arctos*), chamois (*Rupicapra carpathica*), fox (*Canis vulpes*), marten (*Martes martes*), roebuck (*Capreolus capreolus*) and stag (*Cervus elaphos*). Hedgehog (*Erinaceus europeus*) and squirrel (*Sciurus vulgaris*) are found in the woods; while birds include erete (*Circus cyaneus*), grosbeak (*Coccothraustes coccothraustes*), harok (*Accipiter gentilis*), owl (*Bubo bubo*), tuft (*Asio otus*) and turtle dove (*Streptopelia turtur*). Reptiles are represented by the green lizard (*Lacerta viridis*), rock lizard (*Lacerta muraria*) as well as snakes (*Natrix natrix*) and vipers (*Vipera berus* and *Vipera ammodytes*); not to mention local species such as *Rana dalmatina*, *Salamandra salamandra* and *Triturus cristatus*. Although polluted in the past, the Olt now supports fish such as barbel (*Barbus barbus*), blaek (*Alburnus alburnoides*), carp (*Cyprinus carpio*), crucian carp (*Carassius auratus*) and red fish (*Scardinius erythrophthalmus*) – with herons (*Ardea cinera*) on the river banks; while trout (*Salmo trutta fario*) can be found in some brooks (Bănărescu, 1950; Berbece, 1968; Costache, 1973).

#### Human pressure

This is merely one aspect of human pressure which must be alleviated by consent if conservation is to be effective. Quarrying the gneiss of Cozia for railway use has ceased since the mid-1980s when the line was raised clear of the lakes formed by the canalisation of the river. The quarry buildings at the end of the Usturoaia ridge have been removed and vegetation now obscures the worst of the damage. However woodcutting and sheep grazing are much more important anthropic threats. Timber was cut extensively throughout the communist period, especially in the Băiașu, Lotrișor, Pătești, Tulburea and Sâmniceanu valleys although inaccessibility and rough terrain prevented exploitation throughout the Narătu Massif and the nucleus of the Cozia reserve. Hence valuable birch and sycamore trees have been saved as well as the commoner species. A modest level of woodcutting will remain necessary to remove diseased trees and deal with windblown timber but these operations are strictly regulated by the silviculturists.

However, the cleared areas have been quickly replanted and regeneration is proceeding well. This is particularly so where sheep grazing has been stopped, as it has on the Narătu Massif since 1998 with the closure of the Jiliște and Târșea sheepfolds. Grazing continues on the eastern and southern sides of the Cozia Massif at the sheepfolds of Foarfeca (on Colții Foarfecii 1,445 m) Perișani (Șoimului Peak 1,281 m), Mocirlele (on the ridge between Babolea 1,538 m and Omul 1,558 m), Sâmniceanu (near Groșilor peak 1,158 m) and Urzica on Urzicii ridge. This is damaging when the sheep are allowed enter the forest, but the local authorities – who are responsible for renting communally-

owned pastures to shepherds – are not yet adequately organised to stimulate shepherds to take alternative stations outside the national park which are not presently being used; though there are possibilities in both the Căpățâni and Făgăraș Mountains

The fine landscapes and minor landforms of the area attract visitors (Măldărescu et al., 1973). Some of the peaks are particularly beautiful - like Bulz, Colții Foarfecii, Pietrele Vulturilor and Șirul de Pietre – while picturesque waterfalls in the Cetății, Pătești, Păușa, Roșia and Tisa valleys (including the man-made waterfall of Cheile Lotrișorului, dating to 1975 when a small dam and tunnel were built) add to the variety. The precipices attract rock climbers although the crystalline rocks are not very strong. Conveniently lying on a major transport route, the Olt defile – cut in crystalline schist – is an tourist objective in its own right (Orghidan, 1969). It is 10 kms long and 800 m deep, with many curves and seems to be developed on an earth fracture. The first road was built in Roman times and is no longer visible, while the present road dates to the Austrian occupation of Oltenia (1717–1739) and the modernising work of the engineer F. Schwantz (Moțoc, 1972). Unfortunately, the scene has been somewhat transformed by the Turnu barrage and the rising water level which now reduces the scope for study. The road was rebuilt during 1980–1985 on a level 10–15 m higher up and several viaducts were constructed including Cârlișig Mic disposed parallel to the river and mountain to avoid cutting into the mountainside and damaging the vegetation. At the same time the railway has been realigned and largely concealed in a series of five tunnels through the gorge at Cozia reserve. However the water management programme has also flooded the stone named 'Masa lui Traian' though the stone cross placed on top of it has been moved to higher ground close to the Cozia fountain – built in memory of the nineteenth century prince A.I. Cuza – which also had to be resited along with the road during the period 1980–1983 when the barrage was built (Figure 3).

Conea (1938) believes that the high ground constitutes the holy mountains of the Geto-Dacians, though most cultural tourism is related to Cozia monastery in the Olt defile. It was finished in 1388 but was much restored during the twentieth century (1927–1930 and 1958–1962). There are also smaller monasteries. at Turnu, lying in a small basin along the stream of the same name just before its confluence with the Olt and overlooked by the Teofil Tower, was inaugurated by monks who migrated the short distance from Cozia: the church was built in 1676 under prince Ion Duca. Stânișoara dates to the period 1744–1748 (though the church was rebuilt in 1908) and lies further from settlement; being situated in a small depression surrounded by Colții Foarfecii, the Fruntea Oii edge and Vf. Sălbaticu. It can be reached by road from Turnu via the Păușa valley or by path through the La Troiță saddle. And the new monastery of Cozia Veche or Sfântul Ioan de la Piatră (Old Cozia or St John of Stones) was built in 1995–1996 on some old ruins near Valea Poștei viaduct, between the Olt and Basarab Mountain. Reference may also be made to the ruined Roman castle of Arutela near Turnu dam and Posada, a place near Pripoare village

on the road from Berislăvești to Perișani (the old Dacian road between the northern and southern parts of the country) where a battle took place in 1330 when the Hungarian king Carol Robert of Anjou was defeated by the Wallachian prince Basarab. The Loviștea basin remains important for popular culture through customs, songs (many associated with shepherds) – and traditional costumes which are still made in Berislăvești.

Tourism is a threat, although most groups who arrive at weekends, especially in summer, are quite small. People visit the monasteries. They also climb the mountains; generally following the footpaths but motorists can get to the Lotrișor valley. Unacceptable pressures arise when visitors take wild flowers which are themselves natural monuments (*Daphne blagayana*; *Leontopodium alpinum*) and medicinal plants; poach game such as the chamois (which is a protected species) and make noises that disturb wild animals; damage trees through barbecues and parties; and leave rubbish behind. A proper regulation system should be in place soon to ensure that the resources that support the business are not undermined. However the two scientific reserves – accessible only by accredited scientists – will have to be better protected. In the Cozia Massif a reserve is situated between Pietrele Roșii, Muchia Turneanu and the mountains of Durduc, Bulz and Fruntea Oii; an area of spectacular relief (including many micro-relief features) and significant vegetal elements. Its inaccessibility discourages tourists and leaves the wild animals undisturbed, apart from the tourist path on the Scorțaru Mountain which crosses a fragment of the protected territory (and may be closed in future). The reserve of Narățu lies around the highest peak and is also relatively accessible. Tourist access is presently tolerated, despite damage by visitors who pick the rare edelweiss (*Leontopodium alpinum*) for commercial use, but will be restricted in future as a new path is provided to avoid the sensitive area.

There is a substantial tourist infrastructure which consists primarily of the Cozia-Căciulata-Oltul hotel complex, lying just one kilometer inside the national park, within the resort of Călimănești-Căciulata. This offers over 1,000 beds, as well as mineral water treatments and business facilities. There are also a number of filling stations with small motels and restaurants along the main road, while Șaua Cozia chalet lies on the saddle between the peaks of Cozia (1,668 m) and Ciuha Mică (1,628 m). Rebuilt in 1966, it provides 30 places (in rooms with two to six beds) and includes a small restaurant open all year. In addition to the main road – and the railway on the left bank (built originally during the years 1896–1902 but modernised in 1980–1987 when the hydropower scheme was proceeding) – there is a county road which runs from Argeș county through Vâlcea's Loviștei region (with branches to Dângești and Berislăvești villages) to join the main road at Perișani. This system connects with forest roads which follow the Brădișor, Robaia and Sâmniceanu valleys and provide access to Cozia chalet. Meanwhile Narățu can be reached from the national road from Brezoi to Voineasa via the forest road along the Stan valley. Another forest road follows the Lotrișor valley

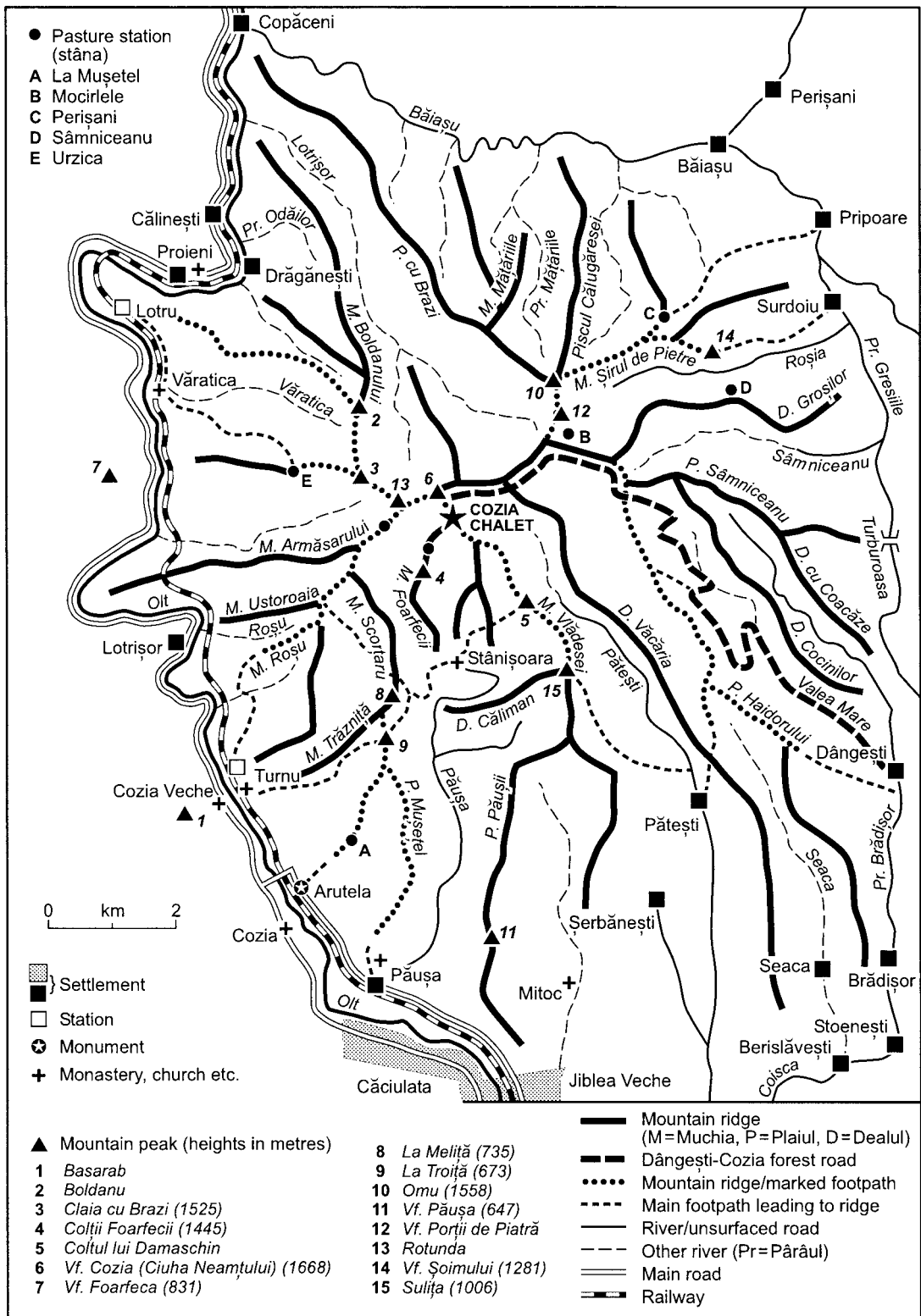


Figure 3. Cozia Massif.



through crystalline gorges to the forest chalets. The forest road from Băile Olănești follows the Bacea valley for 15 kms to reach forest chalets but at this point there are no marked paths of the kind that most visitors depend on. The best facilities for the Narău Massif are between Brezoi and Poiana Târșă, where there are views over the forested Lotrișor basin and the possibility of returning along Vultureasa edge and the Lotrișor forest chalets to the road at Gura Lotrișorului (Popescu, 1983; Ploaie, 1983).

The Cozia Massif is better endowed in this respect with several routes available (Popescu and Călin, 1987): two from Turnu railway station, one from Lotru station and others from Pripoare village and the Turnu and Stănișoara monasteries (though Stănișoara is also accessible by the Păușa valley forest road). These routes offer transects right across the massif with the most impressive involving the Pripoare path to Șirul de Pietre ridge, Omu peak (with views of the Loviștei depression), the archway of Poarta de Piatră and Cozia chalet. This is not greatly used by tourists and the ridge between the sheepfolds of Perišani, Mocirlele and Rotunda suffers primarily from heavy grazing pressure. Then the descent to Stănișoara and Turnu – with heavy tourist pressure – offers caves, precipices, gorges and waterfalls, along with anthropomorphic and zoomorphic rockforms; also the rocky Turneanu edge, the Pietrele Roșii forest and the views to Colții Foarfecii and Narău. However, the alternative path down to Lotru affords views of the Lotru valley, the Olt defile, Foarfeca mountain precipices and the fine church of Văratca.

A priority is now the setting up of a proper administration by the Ministry of Waters & Environment Protection acting in collaboration with the local authorities. At the moment responsibility rests with the 'Ocol Silvic' at Călimănești, but there is no funding specifically for this function at present and since the transfer of the experienced engineer Ion Greere to Râmnicu Vâlcea the park is in the hands of a young colleague Prundurel Pavel. It is desirable that the expertise of the foresters should be retained on a more formal basis but this may be difficult since the forest administration is now subordinate to the Ministry of Agriculture while national parks are the responsibility of the Ministry of Environment & Waters. Any future management regime will need to be based on scientific research, but it is clear that the limits of the national park must be properly indicated. There will have to be proper planning control to prevent harmful development and landowners will need to comply with conservation policies: in particular sheep grazing will have to stop throughout the park and local authorities will have to offer alternatives to the present users. Selection of appropriate tourist routes should be combined with support by better directions and maintenance (bridges, steps and rails) especially on Narău; while the possibility of cable transport should be looked into and accommodation improved by modernisation of chalets to bring them up to international standards. Much better information should be made available (including handbooks, maps, postcards, videos, and interpretation) while education in the schools should cover nature protection more thoroughly.

Hopefully it may be possible to get wider support for conservation through an organisation of 'Friends of Cozia' (Prietenii de Coziei) but although there are ample precedents in Western Europe there is little momentum as yet in Romania. However students from a Bucharest secondary school have helped to improve the marking of footpaths. It is unfortunate that the leading ecological parties (MER and PER) are not represented in Vâlcea and nationally they have lost much of their identity through joining the governing Democratic Convention which no longer has parliamentary representation. A possible way forward would be through NGO-local government partnerships. However, while there are around ten NGOs with interests in tourism and conservation, they have great difficulty in raising money and are undertaking no significant environmental actions at the present time. 'Fundatia Română pentru Tineret' in Râmnicu Vâlcea is concerned primarily with tourism while the rural cooperative ('obștea') which exists at several places in the Lotru valley – Brezoi, Malaia, Săliște and Voineasa (Obștea Pleașa) – and also at Rădăcinești (on the south side of Cozia) and in the Vaideeni area (Coșana-Curmătura Popești), is concerned with the management of grazings rather than the protection of the forests. Even if they were interested in conservation their lack of financial resources would limit their effectiveness. There has been local controversy over the decision to return forests to the ownership of village communities (Coșana, Curmătura Popești, Fratoșteanu, Malaia, Târnovu Mare, Târnovu Mic and Turcinuri) which has affected 10,300 ha of woodlands in the Latorița forestry district. Silviculturists fear that this will lead to widespread cutting given recent experience where foresters have been injured and even killed through trying to stop abuses. There is clearly a need more effective control to enforce proper management. The lack of commitment by local communities to local woodlands has been evident during forest fires which were checked by foresters and firemen with minimal help from villagers, especially at Săliște-Chica Seciului where a fire raged for five days over 50ha very difficult to reach.

## Conclusion

The case of Cozia shows that limited progress is being made. Although a national park has been declared and some inappropriate activities have been curtailed (e.g. a quarry in the Cozia reserve has been closed) there is no effective management system and while there is much public support the level of environmental awareness is such that people are not yet able to accept the need for sustainability. There is also a case for better monitoring by forest rangers (even a need for armed guards in nature reserves) coordinated by an ecological centre for the Jiu and Olt valleys (perhaps an even wider area) with adequate communications and recording equipment. Certainly more research is needed with more effort to education for the public through the schools and with better information and media coverage. At a time of woodland restitution there could well be a national afforestation programme with enforcement of the law requiring landowners to correct environmental damage. Better maintenance and

reconstruction of forest and pastoral roads is needed (and improved marking of tourist routes), combined with an end to damaging logging practices such as using streams as skidways for the extraction of timber. Such measures would not only safeguard Cozia but would address challenges elsewhere in the Vâlcea Carpathians.

Vâlcea is an area of great potential where rural development needs to respect the fragility of the environmental resources. Yet public perception needs further stimulation and a stronger legislative and institutional base is also required, with greater involvement by local authorities in environment protection and more NGO participation. While the opening-up of the massifs to rural tourism is acceptable, including cable transport on Cozia and surfacing of the present forest road which gives access to the summit, there is concern over the development of second homes (occurring for example at Rânca, at the approach to the Parâng north of Novaci) and a need to encourage fuller appreciation of the cultural resources (museums and ethnographic collections; churches and monasteries; handicrafts and festivals) to complement the traditional watering places and avoid excessive pressure on the high mountains. Rafting on the Olt, organised by a Sibiu company with German connections, is an example of what is possible.

However while current arrangements are unsatisfactory, not least the lack of formal institutions, it should not be assumed that progress has been arrested. Given the stresses of transition there are many in Romania and elsewhere who feel most confident in working through a range of predominantly informal networks that can keep a range of ecological and other issues on the political agenda at a time when heavy pressure on limited financial resources makes for complex decisions over allocation. Under the circumstances, where there is very little documentation and even conventional tourist literature is virtually non-existent, it is easy to assume that nothing is happening and that environmental problems are going unnoticed. While it would be quite wrong to suppose that the networks referred to in this paper can effectively replace the more substantial 'institutional thickness' of West European society, it would be equally unfortunate if Romania's informal sector were to be dismissed as ineffective or irrelevant. Hopefully a formal management structure for the Cozia National Park will give a higher profile for local conservation efforts, while a revival in tourism at Voineasa could generate some finance for a complementary effort in the Lotru Valley and Parâng.

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