

F.h. landsgræðslunefndar U.M.F.G. Erlingur Loftsson, Birgir Sigurðsson, Guðmar Guðjónsson, Páll Steinarsson, Jón Ólafsson.

Breytingartillata kom fram frá Gísla Júlíussyni, svohljóðandi: Við upphafsgrein: „*lýsir yfir eindegnum andstöðu við rafvæðingarátlanir sem gera ráð fyrir myndun uppistöðulóns ofan við vatnshæð 581.1 yfir sjó.*“

Við niðurlagsgrein: „... rösklun á náttúrufari Þjórsárvera yfir 581.1 m yfir sjó og hvetur til áframhaldandi rannsókna sem verði undirstaða framkvæmda og skorar á almenning ...“

Breytingartillagan var síðan borin undir atkvæði og felld með 30 atkvæðum gegn 17. Ályktunin var síðan samþykkt óbreytt með 28 atkvæðum gegn 6.

Fleiri voru ekki á mælendaskrá.

Jón Ólafsson þakkaði gestum og öðrum fundarmönnum fyrir komuna og sleit fundi kl. 3:30.

Fundarritari Steinþór Ingvarsson.

Ásólfur kvað Birgi ekki hafa skilið rétt sína ræðu, hann hefði aðeins talað um hvort betra væri að eyðileggja verin með ofbeit eða gera í þeim uppistöðu fyrir virkjunarframkvæmdir.

Einar Gestsson kvað það ekki rétt sem komið hefði fram að hann legði til að Þjórsárverum yrði sökkt og það menn taka betur eftir því sem sagt væri.

Bjarni Einarsson kvaðst geta sætt sig við lægsta vatnsborð ef engar hliðarverkanir kæmu til. Bjarni kvaðst vilja láta það koma fram að U.M.F.G. hefði látið um 70 dagsverk til uppgræðslu í Þjórsárdal.

Erlendur Jóhannsson taldi að landvernd og framkvæmdir ættu að geta farið saman og það þyrfti að finna einhverja málamiðlun sem allir geta sætt sig við. Hann vildi láta nytja gæsina í staðin fyrir að láta hana drepast í stórum stíl.

Jón Ólafsson sagði það vel gæti verið að lítið stöðuvatn væri til þrýði inni í Þjórsárverum en það vildi oft vera svo að þegar réttur væri fram litlifingur þá væri hendingin tekin öll.

Katrín Árnadóttir vildi forða því að sett yrði of mikið fjármagn í rannsóknir sem myndu kalla á áframhaldandi virkjanir, taldi hún vænlegra að laða hingað ferðamenn.

Dr. Finnur taldi kjana málsins hvort við Íslendingar hefðum efni á því að eiga Þjórsárver eða værum of fátæk til þess.

Þá var áðurnefnd tillaga borin undir atkvæði en hún var svohljóðandi:

„Tillaga til hreppsnefndar Gnúpverja: Fjölmennur sveitarfundur haldinn að tilhlutan landgræðslunefndar U.M.F.G. í félagsheimilinu Árnesi 17. mars 1972, skorar á hreppsnefnd Gnúpverja að beita sér fyrir því, að Gnúpverjar fái nú þegar fulltrúa í nefnd þá sem skipuð var á s.l. ári til þess að fylgjast með rannsóknum í Þjórsárverum. – Nefnd þessa skipa nú dr. Finnur Guðmundsson, dr. Gunnar Sigurðsson og Jakob Björnsson.“ Tillagan var samþykkt móttatkvæðalaust. Þá var ályktun tekin til afgreiðslu en hún hljóðar þannig:

„Fjölmennur sveitarfundur haldinn að tilhlutan landgræðslunefndar U.M.F.G. í félagsheimilinu Árnesi 17. mars 1972 lýsir yfir eindreginni andstöðu við rafvæðingaráætlanir þar sem gert er ráð fyrir myndun uppistöðulóns í Þjórsárverum. Fundurinn vekur athygli á nokkrum mikilvægum atriðum varðandi Þjórsárver:

A. Þjórsárver eru geysistór og einstæð vin á miðhálandi Íslands. Þau eru umlukin auðnum á alla vegu og eiga ekki sinn líka hvað varðar fjölbreytilegan gróður og fuglalíf.

B. Gróðureyðing í aldaraddir er alvarlegasta vandamál náttúruverndar á Íslandi. – Verði Þjórsárver sett undir vatn er gróðri og gróðurfari landsins unnið óbætanlegt tjón. Auk þess eru miklar líkur á því að mismunandi hæð yfirborðs vatnsins í fyrirhuguðu lóni í Þjórsárverum orsaki uppblástur.

C. Þjórsárver eru verðmætt beitiland.

D. Talið er að ¾ hlutar heiðargæsastofnsins í heiminum verpi í Þjórsárverum. Margar fuglategundir í heiminum eiga nú á hættu að verða útrýmt. Rösklun í Þjórsárverum stofnar varplöndum heiðargæsarinnar í hættu.

Að ofangreindum ástæðum andmæli fundurinn hverskonar röskun á náttúru Þjórsárvera og skorar á almenning í landinu að sameinast um að varðveita þessa einstæðu perlu íslenskra öræfa.“

Einar Gestsson þakkaði fundinn og þær upplýsingar sem hann hafði fengið, einkum um ástand veranna, sem eftir myndum að dæma væru í nokkurri hættu vegna fjölgunar gæsanna.

Dr. Finnur kvað það fjarstæðu að hann vildi eyða sauðfénu til verndar gæsinni. Hann þakkaði Gísla Júlíussyni fyrir upplýsingarnar sem hann kvaðst ekki hafa heyrt áður, þvert á móti verkfræðingurinn í Þjórsárveranefnd talið hingað til frumskilyrði að hafa vatnstæðið svo hátt sem mögulegt væri.

Dr. Arnþór Garðasson ræddi um raforkuáætlun Orkustofnunnar þar sem efst á blaði væri Laxá og næst Þjórsárver. Þetta þætti náttúruverndurum nokkuð langt gengið og hefðu sem kunnugt er komið upp deilur þar um. Við nýtingu gæsarinnar kvað hann athuganir þær sem verið væri að gera í Þjórsárverum hníga í þá átt að athuga hvað gæsin tæki til sín af gróðri, en þeim rannsóknum lyki ekki fyrr en eftir 2-3 ár.

Aðalsteinn Steinþórsson kvað ekki mega hugsa til þess að Þjórsárverum yrði sökkt það skipti víst ekki máli þó bændur misstu beitaland fyrir 500 fjár, það hefði aldrei verið spurt um hag bænda í þessu sambandi.

Sveinn Ágústsson spurði hve margar gæsir hefðu verið skotnar af þeim sem merktar voru 1951-52.

Dr. Finnur Guðmundsson taldi það vera 20-25%. Hann kvað það órannsakað mál hvaða áhrif það hefði að mynda stórt lón sem yrði lækkað í öðru hvoru, en þá yrði mjög mikil hætta á foki.

Jóhannes Sigmundsson þakkaði það tækifæri að koma á fundinn og þann fróðleik sem hann hefði fengið, kvaðst hann ánægður með upplýsingarnar sem Gíslu Júlíusson kom með, sem hann kvaðst vona og trúna að væru réttar.

Jóhannes ræddi um virkjun Gullfoss sem samkvæmt áætlunum ætti að vera nokkurskonar sýningargripur fyrir ferðamenn á sumrin en að öðru jöfnu yrði hann tekinn í orkuvinnslu. Kvaðst hann benda á þetta til umhugsunar og til að reynt yrði að koma í veg fyrir að eitthvað yrði gert sem óbætanlegt gæti orðið.

Birgir Sigurðsson deildi á Ásólf og Einar fyrir afstöðu þeirra, hann taldi of seint að byrgja brunninn þegar barnið væri dottið ofaní. Einnig ræddi hann um að óviðeigandi væri að Gnúpverjar ættu ekki sæti í Þjórsárveranefnd.

Guðjón Ólafsson spurði hvornig menn hugsuðu sér að varna því að fé kæmist austur yfir Þjórsá þegar búið væri að þurka hana á löngum kafla.

Þá las Jón Ólafsson upp tillögu og ályktun frá landgræðslunefnd U.M.F.G. og bað menn segja álit sitt á þeim.

Sveinn Eiríksson kvað ýmislegt hafa breyst í Þjórsárverum, t.d. hafi þau þornað víða og gróður minnkað við það. Einnig taldi hann verðurfar hafa átt þátt í þeirri gróðureyðingu sem þar hefði orðið. Sveinn varpaði því fram hvort ferðamenn mundu ekki geta orðið eins mikils virði og stórvirkjanir. Hann kvað frumbyggja landsins hafa eytt gróðrinum af neyð en taldi Íslendinga ekki svo illa stadda núna að gróðureyðing væri réttlætanleg.

Gíslu Júlíusson sagði að við hlytum að verða að gera okkur grein fyrir hvaða verðmætum við ætlum að halda hver hverju að sleppa, því að ef við ætlum að lifa áfram á landinu yrði að halda áfram að virkja fallvötnin. Honum fannst ályktunin einum of róttæk.

**Almennur sveitarfundur um Þjósárver, haldinn að Árnosi 17.03.1972,
að tilhlutan landgræðslunefndar U.M.F.G.**

Erlingur Loftsson setti fundinn og bauð náttúrufræðingana dr. Finn Guðmundsson og dr. Arnþór Garðarsson velkomna, einnig bauð Erlingur velkomin til fundarins Johannes Sigmundsson formann H.S.K.

Síðan skipaði Erlingur Jón Ólafsson og Steinar Pálsson fundarstjóra og Steinþór Ingvarsson fundarritara. Jón Ólafsson las dagskrá sem hljóðaði þannig:

1. Kvikmynd úr Þjósáverum, dr. Finnur Guðmundsson.
 2. Litskuggamyndir úr Þjósárverum dr. Arnþór Garðarsson.
 3. Kaffihlé.
 4. Framsöguerindi landgræðslunefndar U.M.F.G., Birgir Sigurðsson.
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1. Dr. Finnur Guðmundsson hóf mál sitt með því að útskýra hve einstakt náttúrufræðingurinn Þjósárver væru, bæði vegna gæsabyggðarinnar þar og eins sérkennilegra landshátta. Útskýrði dr. Finnur síðan kvikmyndina jafnóðum, en hún var tekin 1951-52 en þá áttu sér stað gæsamerkingar þar sem þeim var smalað saman í réttir og merktar.
 2. Næst sýndi dr. Arnþór Garðarsson litskuggamyndir og flutti eridni um rannsóknir þær sem gerðar voru í Þjósárverum s.l. sumar.
 3. Þá var gefið kaffihlé.
 4. Birgir Sigurðsson ræddi um Þjósárver og aðdraganda þessa fundar, sem var framkvæmdir þær sem verið var að hugsa um inni á hálendinu við Þjósá. Kvað Birgir nefndarmenn hafa verið einhuga um að vernda bæri Þjósárver. Hann sagði þá ekki vera á móti virkjunum, en það gæti kostað of mikið ef fórna þyrfti jafn eintæðum hluta landsins og Þjósárver væru. Birgir taldi þetta merkilegan fund þar sem þetta væri ekki eingöngu innansveitarmálefni sem tekin væru fyrir heldur næði það til landsmanna allra.
 5. Frjálssar umræður og fyrirspurnir.
Gísli Júlíusson tók til máls og kvað framsögumenn hafa tekið nokkuð stórt upp í sig, þegar þeir segðu að sökkva ætti Þjósárverum. Hann skýrði frá því að mjög hæpið væri að stærri vatnsmiðlanirnar yrðu að veruleika þar sem þær yrðu ekki hagkvæmar með tilliti til orkuframleiðslu.
Ásólfur Pálsson þakkaði þær upplýsingar sem Gísli kom með en varpaði fram þeirri spurningu hvort það yrðu ekki gæsir frekar en maðurinn sem eyðilegðu Þjósárver með sama áframhaldi. Ásólfur bað menn fara sér hóflega í því að sporna á móti áframhaldandi uppbyggingu landsins.
Guðjón Ólafsson þakka myndasýningarnar og spurði hvort Íslendingar hefðu efni á að sökkva 140 km² gróðurlendi undir vatn og hvort verkfræðingar tækju ábyrgð á því ef stíflurnar brystu.
Erlingur spurði fuglafræðingana hvort hugsanlegt væri fyrir bændur að nýta gæsina eitthvað þar sem gróður mundi vera í hættu í Þjósárverum vegna fjölgunar gæsastofnsins. Hann deildi á Ásólf fyrir of mikla bjartsýni í virkjunarmálum.

Tajikistan, South Africa, and Iceland (Þingvellir). I have also undertaken extensive field research in Labrador-Ungava, Baffin Island, the Rocky Mountains, and Switzerland.

Major publications include:

1974 (co-ed with R.G. Barry): *Arctic and Alpine Environments*, Methuen, London and New York, 999 pp.

1981 (ed): *Geoecology of the Colorado Front Range*, Westview Press, Boulder, 484 pp.

1989 (with B. Messerli): *The Himalayan Dilemma: Reconciling development and conservation*, Routledge, London and New York, 295 pp.

1994 (ed) *Mountains: Illustrated Library of the Earth*, Rodale Press, Emmaus, Pennsylvania (large format), 160 pp.

1995 (co-ed with D. Sugden): *Polar Regions: Illustrated Library of the Earth*, Readers Digest, Sydney, San Francisco, and London (large format), 160 pp.

1997 (co-ed with B. Messerli): *Mountains of the World: A global priority*, Parthenon, London and New York, 495 pp. (also published in Russian, Italian, French, and Spanish editions).

2004 *Himalayan Perceptions: Environmental change and the well-being of mountain peoples*, Routledge, London and New York (August 2004).

I have also served as Founding Editor of the quarterly scientific journals *Arctic and Alpine Research* (1968-1980) and *Mountain Research and Development* (1981-2000).

JDI

CONCLUSION

As a not disinterested visitor, it may seem untoward for me to make any firm recommendations. Furthermore, argument over several alternate approaches have become integral to the on-going discourse. However, Iceland is becoming widely recognized as possessing the largest areas of wilderness and near-wilderness easily accessible to Europe and North America. Since the catastrophes of 11 September, 2001, it would appear that this attraction has the double advantage of being safe in the minds of the many people concerned about travel in an age of terrorism. Tourism, especially adventure- and nature-tourism, are economic sectors that are destined for significant growth and, in this respect, the attractions of Iceland would be augmented considerably by World Heritage designation. In conclusion, as great advances in exploitation of its vast reserves of geothermal energy are underway, the economic need for hydro-electric development comes into question. At least, a delay in further development of the water resources of Þjórsárver pending exploration of the prospects for World Heritage designation warrants careful consideration.

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PERSONAL EXPERIENCE

I completed my doctorate at McGill University in 1956 based on geomorphological and glaciological fieldwork in Öræfi. This initiated a half century of close contact with Skaftafell from 1952 onwards. Of special interest is the close relationship with the late Ragnar Stefansson and his family and intimate knowledge of the establishment of the Skaftafell National Park, its subsequent operation, and the current discourse concerning the proposal for a much larger Vatnajökull National Park. In addition to my numerous visits to Skaftafell (1952-2003) I have also been able to visit extensive areas of Iceland.

Beyond my experience in Iceland I have worked with UNESCO, and especially with the United Nations University and have consulted for the World Bank, IUCN, FAO, and the Aga Khan Foundation, amongst others. This has involved extensive field experience in the Himalaya, Tibet, southwestern China, northern Thailand, Tajikistan, the Andes, and mountain areas of Africa. I have served as UNESCO/IUCN consultant for evaluating World Heritage Site proposals submitted by the governments of India, China,

1. high level biodiversity, including the rich tundra plant communities that extend to unusual altitude on Arnarfell,
2. the world-renowned birdlife,
3. the permafrost features, including palsas,
4. the rich insect fauna,
5. local volcanic activity, including hot springs,
6. archaeological evidence of very ancient bird drive traps,
7. the landscape.

As a geomorphologist of fifty years or more, I will focus on item 7. Considering my personal world-wide experience, I must emphasize that the Kerlingarfjöll-Hofsjökull-Þjórsárver region, as viewed from a hilltop on the southeast side of the Þjórsá (for example, from Sóleyjarhöfði), is one of the most majestic and inspiring landscapes of the entire world. I would expect that an enlarged nature reserve, to include Kerlingarfjöll, sections of the surrounding desert, and the whole of Hofsjökull, would prove a serious candidate for designation as a World Heritage site.

Can such a World Heritage designation be consistent with the modest invasion of its perimeter that is called for in Landsvirkjun's proposed development? The development may appear to barely fringe upon the reserve, although visually it will have a pronounced impact resulting both from the two northern reservoirs and their associated dams and canals. This would be aggravated by the possibility of the drying up of the upper Þjórsá. While Landsvirkjun states that two cubic metres per second of water will be allowed to pass over the dam to ensure that the upper Þjórsá does not dry up, the issue will remain in doubt from the point of view of any international reviewers.

Thus, I cannot provide an unequivocal answer to this question of possible World Heritage designation except to caution that widespread failure by several national governments to maintain existing World Heritage sites at the agreed-upon standards is producing a much more stringent attitude within UNESCO/IUCN toward new designations. It would be necessary to wait for any such determination following formal submission on the part of the Government of Iceland. Important here, however, is that any immediate initiation of Landsvirkjun's development plans would likely be irreversible and may well destroy an opportunity for the Government, in cooperation with the local municipal council, to obtain prestigious recognition for this "heart of Iceland".

comparison with other famous landscapes of the world: sections of the Tibetan Plateau; Sagarmatha (Mt Everest) National Park; the ice-capped volcanoes and Altiplano of the Andes; northeastern Baffin Island, Canada; and Yellowstone National Park, USA.

I find it remarkable that the actual boundaries of the Nature Reserve are geometric in form, cutting arbitrarily across natural features, and do not encompass the entire wetland area, together with appropriate areas of desert and ice cap. If the boundaries had been well-defined originally the present conflict about hydro-electric development would not have arisen.

It has been argued that energy development (water) to date has had no significant impact on the natural integrity of the wetlands, even from an extreme 'purist' point of view. Such development of water resources to the southeast of the Þjorsá has served mainly to improve tourist access. It has been claimed that the evolution of Landsvirkjun's plans to utilize water from the main stream and the wetland section close to Hofsjökull has demonstrated the organization's sensitivity to the environmental issues. Nevertheless, it was the outcome of the EIA that had produced significant environmental improvements, yet Landsvirkjun appears to have been hesitant to sacrifice apparent economic gain for improved nature protection. Actual invasion of the wetlands, apparently, will be limited to a very small extension of the planned Norðlingaalda Reservoir across the existing Nature Reserve boundary. The effective flushing of sediment from the reservoir related to this extension was demonstrated for me by impressive computer simulations.

This proposed reservoir, however, is not what many scientists regard as potentially the most damaging aspect of the project. There are two other proposed, smaller reservoirs to the east of the reserve. One will lie on the actual reserve boundary. Both are to be accompanied by dams and canals. The reservoirs will have to be re-excavated at regular intervals, at least more than once every twenty years. This will entail distributing the excavated sands, silts, and mud across the river plain. The site of these proposed developments lies immediately to the east of Arnarfell and would certainly prove a major eyesore for anyone who climbed the 1,150 metre-high mountain to enjoy one of the more spectacular mountain landscape views available in Iceland. Moreover, the most significant long-term impact of the construction may be that it will leave the uppermost watercourse of the Þjorsá nearly dry for a distance of about eight kilometres downstream from the dam, and water flow will be very much reduced for an additional four kilometres. Most of this area lies within the present boundary of the reserve. The river course is between one and one-and-a-half kilometres wide; a serious danger is that the cold, dry (and frequent) northeasterly winds will blow dry sand and silt over some of the most luxuriant vegetation of the area. This prospect would be in defiance of Iceland's determination to halt soil erosion, especially considering that one of the most valuable highland areas would be under threat.

It would be superfluous for the purpose of this report to repeat the extensive recent scientific data that have been accumulated. Thus, I will simply itemize the range of topics:

REPORT ON A VISIT TO ÞJÓRSÁRVER, ICELAND, 23-30 JUNE, 2004

Jack D. Ives, Ottawa, Canada

INTRODUCTION

This report results from a visit to Iceland (23-30 June, 2004) on the invitation of Landvernd (Icelandic Association for the Protection of the Environment, an NGO member of IUCN). The purpose of the visit was to assist Landvernd in assessing the conservation potential of Þjórsárver. During the eight-day period I was able to spend two full days inspecting Þjórsárver and surrounding areas, including an overnight stay at Setrið, close to Kerlingarfjöll. I was also generously granted interviews by Icelandic experts, scientists, and officials representing viewpoints on all sides of the controversy. These included Björn Stefansson, of the National Power Company, together with four engineering consultants who provided an excellent and extensive explanation of the engineering and related conservation issues, the Board of Directors and many of the staff of Landvernd, the Minister of Environment, Siv Friðleifsdóttir and staff, former President Vigdís Finnbogadóttir, Professor Þóra Ellen Þorhallsdóttir and Gisli Már Gíslason at the University of Iceland, Ragnhildur Sigurdardóttir, ecology consultant, Guðmundur Páll Ólafsson, nature conservation activist and writer, Aðalsteinn Guðmundsson, chairman of the municipal council of Skeiða- and Gnúpverjahreppur, Oddur Hermansson, landscape architect, and Sigprúður Jonsdóttir, spokesperson for the local nature conservation group. Interviews were also granted by Árni Bragason at the Environment and Food Agency, and Kristinn Haukur Skarphéðinsson and Snorri Baldursson at the Natural History Institute.

My visit was capped by a specially arranged low-altitude over-flight of Þjórsárver and surrounding area that provided a superb aerial perspective. Access to many scientific reports and government documents was also arranged.

The courtesy and enthusiastic response of all those mentioned above is gratefully acknowledged.

ÞJÓRSÁRVER: CONSERVATION OR DEVELOPMENT?

The above heading is intended to carry the question: can development occur in such a manner that adequate conservation of this significant natural resource is assured, or are 'development' and 'conservation' mutually exclusive?

The Þjórsárver Nature Reserve, embracing part of the extensive Þjórsárver wetlands, is famous throughout the world as the primary breeding grounds of the Pink-footed Goose (*Anser brachyrhynchus*) and many other highly valued avian species. The association of the geese with a biologically rich wetland itself heightens the importance of this area. However, to my mind, the location of the wetlands within the Central Icelandic Desert, immediately to the south of Hofsjökull, provides a highly unusual natural setting of stark contrasts: black desert sands; ice caps; sandar; permafrost phenomena; luxuriant green swards; and distant mountain profiles. This prompts

Conclusions and recommendations

The Thjorsarver area, as currently protected as a Ramsar site, and the wider catchment from the southern flowing watershed of the Hofsjokull ice cap to the exit from the canyon on the Thjorsa, are of national and international importance as a hydrological-geomorphological-vegetational system in northerly latitude. The current protected area is insufficient to reflect these natural values and also the visual, aesthetic and cultural values of the area. Proposals by Umhverfisstofnun reported in 2003 to extend the size of the protected area, rejected by the Environment Minister, should be approved. In addition, the area should be extended to the south flowing watershed on the Hofsjokull ice cap. The area justifies Category II status under the IUCN Guidelines for Protected Area Management Categories.

The area should be formally evaluated under the UNESCO World heritage Site criteria by the Icelandic authorities to decide whether it should be put forward as a candidate Site.

At present there are only minimal effects from hydro-electric developments in the Thjorsarver area. The original proposals for further development have been scaled back and this should be welcomed. However, the new proposals will still have a profound and detrimental effect on the ecology, hydrology and geomorphology of the system, and in turn affect detrimentally the visual, aesthetic and cultural values of the area. It is surprising therefore that the state authorities advising on the revised proposals have been supportive of the scaled-down development going ahead. I conclude that developments, even of the scale now proposed, will have profound detrimental effects and should be refused. Independent objective assessment is required to assess fully, quantitatively and qualitatively, the social, economic, cultural and environmental costs and benefits using standard methodology. There should also be further comparative assessment of the alternatives on the lower courses of the Thjorsa and other rivers in the south and east of Iceland in the context of the recently published master plan. These other locations could provide the same scale of power generation but without the same detrimental effects on the environment and traditions of the area.

There is no basis from the assessments carried out to date to allow approval of the revised scheme. New and larger protected area measures should be developed and implemented as a matter of priority.

*Roger Crofts
IUCN World Commission on Protected Areas
Regional Vice-Chair for Europe*

August 2004

protected areas and extensions to existing ones elsewhere in Iceland. Maybe the Minister's proposals reflect a decision within government that the revised plans for hydro-electric development should be allowed to go ahead.

If the best international practice were followed, then the whole of the Thjorsarver system from the watershed of the southern flowing drainage on the Hofsjokull to the exit from the canyon into the Sultartangalon reservoir should be protected. Applying the internationally accepted criteria for the management of protected areas, developed by IUCN-The World Conservation Union, suggests that the area would qualify as a Category II Protected Area defined as a "protected area managed mainly for ecosystem protection and recreation". The IUCN internationally recognised management objectives that are most relevant to this area are:

"To protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes;
To perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources, and species, and to provide ecological stability and diversity; and
To eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation."

This approach is entirely in tune with the objectives of the Ramsar Convention and therefore the current protection status, i.e. "to develop and maintain an international network of wetlands which are important for the conservation of global biodiversity, and for sustaining human life through the ecological and hydrological functions they perform". To develop the reservoirs, even on the more limited scale now proposed, will therefore breach Iceland's approval and implementation of the Ramsar Convention.

Within the envelope of protection suggested above under IUCN Category II status, various levels of informal activity which would not damage the natural heritage and which would enhance public understanding and enjoyment of the area could be put in place. The traditional grazing and the more recent recreational activities of hiking, climbing and snow scooters would be able to continue. Indeed, there is potential for improving visitor access to the area provided this is done in a manner and at a scale entirely in sympathy with the natural heritage and its ecological and wider environmental carrying capacity.

There has been some limited and informal consideration as to whether Thjorsarver should be proposed as a candidate World Heritage Site under the UNESCO World Heritage Convention. The systematic assessment undertaken by the Nordic Council in the 1990s ('Nordic World Heritage') did not include this area in proposals for new World Heritage Sites. While I consider Thjorsarver to be of international significance, a more thorough assessment would be required against the World Heritage criteria to judge whether the area is of 'outstanding universal significance'. The combination of features and the importance of the natural functioning of the system as a whole point to potential strong candidacy.

small in proportion to the total discharge from the Thjorsa system as a whole. There may well be economies of scale for the power company in developing facilities in the Pjorsarver area, but the current proposals should not be judged on the basis of power generation economics alone. The proposals require a full economic appraisal of the costs and benefits to the environment and natural resources using standard quantitative and qualitative tests, such as contingent valuation.

Also the Master Plan for Development of Hydro and Geothermal Energy in Iceland (published in November 2003) indicates that there are alternatives in the lower Thjorsa catchment as well as in other less environmentally sensitive catchments in the south and west of Iceland. These should be given prior consideration in order to meet the apparent needs for further power generation. Unless the natural resource values are thoroughly investigated, it is not possible to decide in favour of hydro-electric development in any way which is in tune with the Icelandic government's sustainable development strategy ('Welfare for the Future: Iceland's National Strategy for Sustainable Development 2002-2020') and its international responsibility to protect a Ramsar site.

The issue in detail is not whether a scheme goes ahead but the scale of the Nordlingaoldulon dam and the water level behind it. There has been a great deal of debate and some confusion about the actual maximum water level proposed and the extent of draw down below this level. The levels indicated in the Landsvirkjun proposals are 566 and 568m above sea level. All of this debate suggests that the planning by the developers has been less precise than is needed in such an environmentally sensitive area. It is accepted that concessions have been made in reducing the scale of the development. These have led some of the state environmental authorities, such as Umhverfisstofnun, on the basis of what impact the project would have within the boundaries of the protected area, to accept that the revised scaled down facilities should be allowed to go ahead. However, I consider that a more radical appraisal of the effects on the natural functioning of the system and the full environmental costs and benefits is required before such a judgement can be delivered and a final decision made. These assessments need to be truly independent of the developers of the scheme and to be of the highest objectivity.

Protection measures

The area was designated as a Ramsar site in 1990. The boundaries of the Ramsar site are artificial and appear to have been drawn in a rather arbitrary manner. They do not reflect the boundaries of natural features or natural systems. There are no other natural protection mechanisms applied to the area.

Umhverfisstofnun in its 2003 report to the Minister for the Environment on nature protection areas in Iceland recommended that the Thjorsarver Ramsar site be about doubled in size. Specifically, the agency recommended an extension down the mainstream of the Thjorsa River to the exit from the canyon, plus widening of the protected area to the east and west from the present position. The Environment Minister's proposals published in October 2003 did not include any extension to the protected areas in Thjorsarver in the programme for 2004 to 2008. This is a major disappointment given the strength of the arguments in favour of extension and the scale of proposals for new

peripheral hills, the huge rivers and sediment banks, and the wetland and pool systems, together provide a diversity of landscape rarely seen any where on earth and certainly unique in Iceland. Also the varying light conditions provide a remarkable aesthetic dimension to the landscape.

The area also has strong cultural associations with the farming communities to the south on either side of the river who have traditionally used the area for summer grazing and still do so. The annual cycle of taking the sheep out in the spring to the lands above the canyon and bringing them back home in the late summer is an important part of the social calendar.

For all of these natural, aesthetic and cultural reasons the whole area from the mouth of the canyon to the summit of the Hofsjökull ice cap is worthy of protection as a natural dynamic system.

Proposals for hydro-electricity development

At present there are two hydro-electric power developments in the Thjorsarver area. There is a small dam impounding an area of about 3 sq. km (Þjórsárlón) and an offtake pipe from the dam into the Kvislavatn controlled reservoir system to the south east. Otherwise the river is untouched until it flows into the Sultartangalon reservoir.

Proposals for the construction of dams in the Thjorsarver area, as part of the extension of the Thjorsa hydro-electricity scheme, have been under discussion for some years. An earlier scheme, which would have entailed a 1, 115 m long dam and a 29 sq km reservoir, was not approved. A smaller scheme is now being presented, as a result of the formal environmental assessment (EIA) that ended in January 2003 with the rejection of the original proposal. The scheme comprises 2 reservoirs on the upper part of the Thjorsa – Arnarfellslón (0.3 sq km) [also named Þjórsárjökulslón] and Vesturkvíslarlón (4 sq km) in addition to the existing Thjorsarlón - with connecting engineered channels. The position of these engineering works means that they will impede and reduce the supply of water and sediment to the Þjorsarver system. Further downstream, but still well above the entrance to the canyon, a further reservoir is proposed – Nordlingaöldulón (3.1 – 5.3 sq km) on the Þjorsa itself and other rivers further east. These will inevitably reduce the flows of water and sediment in the middle and lower reaches of Thjorsarver and therefore affect the natural functioning and integrity of the system.

There are two issues arising from these new proposals: one of principle and one of detail.

The national and international significance of Thjorsarver has led some commentators to consider that there should be no further development of hydro-electricity in the Thjorsarver area. This has a great deal to commend it from the natural heritage standpoint. Any dam and reservoir will impede the flow of water and sediment which are vital to the health and maintenance of the system and will also have a greater impact on the water level and aesthetic attractions of the canyon than the current dam and offtakes. There is a counter argument that the system has already been modified and therefore is not pristine. This argument is weak as the extent of modification in Thjorsarver is very

THJORSARVER: PROTECTING A UNIQUE ASSET IN PERPETUITY

Roger Crofts – August 2004.

This report provides an assessment of the importance of the Thjorsarver area of the central highlands of Iceland, comments on proposals for further hydro-electric power development, and makes suggestions for the improved protection and greater visitor access.

Status of Thjorsarver

Since March 1991 part of the area has been recognised as a wetland of international importance under the Ramsar Convention. The inscription states: “tundra meadows dissected by numerous glacial and spring-fed streams, the site includes abundant pools and lakes and extensive marshland dominated by sedges. The site is surrounded by a desert composed of volcanic sand. It is the most important nesting area in Iceland for the goose *Anser brachyrhynchus* supporting about 10,000 pairs.”

Thjorsarver is the largest area of vegetated wetland in the highlands of Iceland. It is basically a hydro-morphological-vegetation system comprising the following elements: open channels and sand bars in the Thjorsa River and its tributaries fed from both glacial and non-glacial sources, patterned ground typical of taiga and tundra conditions with a diversity of vegetation mosaics and extensive pool systems. It is the breeding ground for around 10,000 pink-footed geese, some 4.4% of the population in the Iceland/Greenland biogeographic zone.

Thjorsarver as a wetland and natural feature cannot just be seen in isolation as it is part of much larger system. This system begins with the Hofsjökull ice cap and its outlet glaciers – Blautukvislarjökull, Mulajökull and Þjorsarjökull - to the south and east. The ice cap rests in part on a collapsed volcanic caldera some 300m deep. The upstanding remnants of the caldera wall rise as nunataks above the ice cap. Numerous hills at the ice front, including Arnarfell, Olafsfell and Hjurtafell, act as obstructions and cause the ice streams to divide and deliver their meltwater through separate channel systems to the main river. The outlet glaciers have very wide fronts and Mulajökull is one of the best examples globally of a piedmont glacier. These glaciers provide the water source for the anastomosing streams which in turn provide the life blood of the Thjorsarver system as without water and the sediment transported by the rivers the complex would not exist. Downstream from Thjorsarver the river enters a canyon around 12kms long with a series of waterfalls in the main stream, notably Dynkur and Gljufurleitarfoss, and at the junction of the side valleys with the main valley. At the southern extremity of this canyon the river flows into the Sultartangalon reservoir; this is part of the hydro-electric power scheme on the Thjorsa River and its main tributary the Tungnaa. The system from the watershed on the Hofsjökull to the point where the Thjorsa River exits from the canyon is of great international ecological and geomorphological significance.

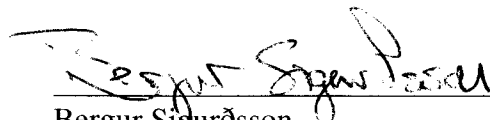
In addition, there is the visual and aesthetic component of this natural area. Whether flying over it or crossing the rivers or standing on one of the hills, such as Bishops Hill (Biskupahúfa), the backdrop of the ice cap and outlet glaciers, the nunataks and

Hinsvegar er í tillögum lagt til að friða Þjórsá og nærliggjandi svæði að Sultartangalóni. Landvernd telur eðlilegt að þessi mörk verði einnig látin ráðast af náttúrufari fremur en t.d. tiltekinni vegalengd frá ánni. Þannig mætti með friðuninni vernda og varðveita heildsstæða náttúrufarslega mynd svæðisins. Þegar skilgreina á þessi mörk mætti horfa til vatnasviðs Þjórsár ofan Sultartangalóns eða á landslagsheildina vestan Þjórsár, sbr. það sem fram kemur í skýrslu Jacks D. Ives frá heimsókn hans í ágúst 2004, en þar segir m.a.:

„As a geomorphologist of fifty years or more, I will focus on item 7. Considering my personal world-wide experience, I must emphasize that the Kerlingarfjöll-Hofsjökull-Þjórsárver region, as viewed from a hilltop on the southeast side of the Þjórsá (for example, from Sóleyjarhöfði), is one of the most majestic and inspiring landscapes of the entire world. I would expect that an enlarged nature reserve, to include Kerlingarfjöll, sections of the surrounding desert, and the whole of Hofsjökull, would prove a serious candidate for designation as a World Heritage site.“ – Jack D. Ives.

Það er einlæg von Landverndar að þessi þingsályktunartillaga nái fram að ganga og að við ákvörðun á endanlegum mörkum friðlandsins verði horft til náttúrufars og landslagsheilda. Með slíkri nálgun má ætla að svæðið verði mun líklegra en ella til þess að komast inn á heimsminjaskrá UNESCO.

Virðingarfyllst,


Bergur Sigurðsson,
framkvæmdastjóri Landverndar.

Meðfylgjandi eru:

- Kort sem sýnir vatnaskil og ísaskil á Hofsjökli.
- Skýrsla Rogers Crofts, Thorsarver: Protecting a unique asset in perpetuity, ágúst 2004.
- Jack D. Ives, Report on a visit to Þjórsárver, Iceland 23-30 June, 2004.
- Fundargerð frá almennum sveitarfundi um Þjórsárver, haldinn að Árnesi 17.03.1972, að tilhlutan landgræðslunefndar U.M.F.G.



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Umsögn Landverndar um þingsályktunartillögu um stækkun friðlandsins í Þjórsárverum.

Í tillögunni kemur fram að stærsta og gróðurrikasta votlendi á hálendi Íslands skuli verndað í heild sinni og að unnið skuli að því að hið stækkaða Þjórsárverafriðland verði tilnefnt inn á heimsminjaskrá UNESCO. Landvernd hefur lengi beitt sér fyrir því að friðlandið verði stækkað og að mörk þess verði látin markast af náttúruferi Þjórsárvera. Landvernd fagnar því þeirri tillögu sem hér er fjallað um. Fáí Þjórsárver þá vernd sem þeim sæmir eru umtalsverðar líkur á því að þau gætu komist inn á heimsminjaskrá UNESCO eins og fram kemur í meðfylgjandi greinargerðum Rogers Crofts og Jacks D. Ives. Í þessu ljósi er dapurlegt að hugsa til þess að nýlega þurftu náttúruunnendur og náttúruverndarsamtök að kljást við yfirvöld frammi fyrir dómstólum til þess að varna því að verndargildi svæðisins yrði rýrt til muna. Komandi kynslóðum til heilla unnu náttúruverndarsinnar sigur í Héraðsdómi Reykjavíkur. Heimamönnum hefur lengi verið ljóst að verndargildi Þjórsárvera er verulegt eins sjá má í meðfylgjandi fundargerð frá almennum sveitarfundi um Þjórsárver árið 1972. Fundurinn lýsti yfir eindreginni andstöðu við þau virkjunaráform sem þá lágu fyrir. Það er því langþráð fagnaðarefni að nú skuli vera útlit fyrir að Þjórsárver fái þá verndun sem þeim ber.

Í tillögunni er annarsvegar lagt til að friðlandið verði stækkað þannig að sem mest af gróðurlendi svæðisins lendi innan friðlýsingarmarkanna. Hér er mikilvægt að hafa hugfast að Hofsjökull er bakhjarl Þjórsárvera og sér gróðurlendinu fyrir vatni. Þegar hugað er að því hvar nyrðri mörk friðlandsins eiga að liggja ber því að lágmarki að horfa til vatnaskila og ísaskila á jöklinum. Með þeirri nálgun yrðu mörkin sett vestan við Blautukvíslarjökul og þaðan upp á hæsta hábungu jökulsins eftir vatna- og ísaskilum sem liggja saman á þessum hluta jökulsins. Þaðan myndu þau fylgja ísaskilum að Miklafelli og austur að Jökulkvísl. Vatnaskil og ísaskil liggja að mestu leyti saman nema hvað varðar svæðið sunnan og austan Miklafells eins og sjá má á meðfylgjandi korti af vatnaskilum og ísaskilum á Hofsjökli. Sjónarmið um að fylgja vatnaskilum kemur einnig fram í meðfylgjandi skýrslu Rogers Crofts en þar segir m.a:

„... In addition, the area should be extended to the south flowing watershed on the Hofsjökull ice cap. The area justifies Category II status under the IUCN Guidelines for Protected Area Management Categories.“ – Roger Crofts.

Í meðfylgjandi skýrslu Jacks D. Ives kemur fram það sjónarmið að við stækkun friðlandsins skuli Hofsjökull friðaður í heild sinni, sbr. tilvitnun á næstu blaðsíðu. Sú nálgun kæmi að mati Landverndar einnig til greina og vísar til þess að með stofnun Vatnajökulsþjóðgarðs er komið fordæmi fyrir slíkum mörkum.