

Are divergent preferences between benefactors and beneficiaries an obstacle to community-based conservation?

A case study of the Palas Valley, northern Pakistan

Alexander Hellquist



Master's Thesis

Department of Economics, Lund University, autumn 2004

Supervisor: Krister Hjalte



Palas

Abstract

This paper examines the problems of nature conservation in the Third World. A Pakistani community-based conservation project, the Palas Conservation and Development Project (PCDP), acts as a reference point. A field study was conducted to elicit the preferences of the benefactors and of the beneficiaries, i.e. the PCDP staff and the locals of the Palas Valley in which the project operates.

Four preference-eliciting techniques were used: qualitative questions, a ranking question on environmental goods in the Palas Valley, a contingent valuation question on the threatened pheasant Western Tragopan, and a choice experiment on possible scenarios in the Palas Valley.

The results show that the preferences of the PCDP staff and the Palasi locals diverge. In particular, locals stress physical infrastructure as being the most important PCDP objective, while the PCDP staff considers attitude changes among locals most important. Also, the locals endorse the notion of existence-values, from which First World nature conservation draws heavily, to a lesser extent than does the PCDP staff.

Divergent preferences are problematic as they can result in misunderstandings and suspicion concerning the project among its beneficiaries. Also, basing project actions on preferences that are not shared with the beneficiaries is a sensitive issue. While a deepened participatory approach can overcome these difficulties, it could also compromise the original project objectives.

Some steps to prevent these dilemmas are identified. Improving the communication between benefactors and beneficiaries is crucial. In particular the motives behind the project objectives must be understood by the beneficiaries.

”Why do foreigners travel all the way to Palas to save this Western Tragopan?”

25-year old shepherd from Bas Seriat, Kuz Palas.

Contents

Acknowledgements	4
List of abbreviations	5
1 INTRODUCTION	6
1.1 Presentation of the problem	6
1.2 Disposition	7
2 THEORETICAL BACKGROUND	8
2.1 Critique on nature protection in the Third World	8
2.2 Community-based conservation	8
2.3 Does wealth affect environmental concern?	10
2.3.1 <i>The income elasticity of environmental goods</i>	10
2.3.2 <i>The Environmental Kuznet's Curve</i>	10
2.3.3 <i>Commitment</i>	11
2.4 Valuing the environment	11
2.4.1 <i>Why value the environment?</i>	11
2.4.2 <i>Underlying ethics and principles</i>	12
2.4.3 <i>Fundamental problems</i>	12
2.4.4 <i>Different measures of utility change</i>	12
2.4.5 <i>What is being valued?</i>	13
3 THE PALAS VALLEY AND THE PCDP	15
3.1 The Palas Valley and its people	15
3.2 The Palas Conservation and Development Project	16
3.2.1 <i>Project history and objectives</i>	16
3.2.2 <i>Local participation</i>	17
3.2.3 <i>Local attitudes towards the PCDP</i>	18
4 METHOD	19
4.1 Implementing the study	19
4.2 Sample	20
4.3 Opinions on the PCDP	21
4.4 Ranking environmental goods	21
4.5 Contingent valuation of the Western Tragopan	23
4.5.1 <i>Scenario</i>	23
4.5.2 <i>Information given to the respondents</i>	24
4.5.3 <i>WTP or WTA?</i>	24
4.5.4 <i>Open-ended or closed questions?</i>	25
4.5.5 <i>Identifying existence-values</i>	26
4.6 Choice experiment	26
4.6.1 <i>Experimental design</i>	26
4.6.2 <i>Modelling choices</i>	28
5 RESULTS	30
5.1 Opinions on the PCDP	30
5.2 Ranking environmental goods	33
5.3 Contingent valuation of the Western Tragopan	35
5.4 Choice experiment	40
5.5 Possible biases influencing the results	43
6 DISCUSSION	45
6.1 Are the results valid?	45
6.2 How do the preferences diverge?	46
6.3 Are divergent preferences problematic?	46
6.4 Policy implications	48
7 CONCLUSIONS	50
References	51
Appendix 1	54
Appendix 2	56
Appendix 3	57
Appendix 4	60

Acknowledgements

First I would like to thank Klaus Euler, Co-director of the PCDP, who supported my idea to go to Palas from the very start. Without his encouragement and help in arranging the practical details of my trip, this study would not have been possible.

I would also like to thank the rest of the PCDP staff in Abbottabad and Pattan. They were all very friendly and helpful, and made me feel at home in a new environment. I would like to mention in particular Afsar Khan and Rizwan Pirzada, who went with me to Islamabad only to deal with the considerable bureaucratic obstacles I faced.

I am grateful to my interpreter and friend Fazalur Rehman, who did an excellent job of explaining my rather abstract and academic questions to the Palasi locals and taught me many things about the people of Kohistan.

Krister Hjalte at the Department of Economics, Lund University, has been a very good supervisor. I thank him for supporting my plans for this study, and for his wise comments on the drafts. Thanks also to Curt Wells, Department of Economics, who kindly gave comments on the econometrics in the paper. The study was funded by the Swedish International Development Cooperation Agency (Sida).

Last but not least I would like to thank the Palasi locals who patiently took their time to answer my questions, many of which must have seemed quite irrelevant. To quote one farmer from the village of Shukiser:

"I am tired of doing interviews. Many foreigners have come here with notebooks, but nothing happens."

While being well aware that I am one of these foreigners taking notes, it is my humble hope that this study somehow can be used to improve the situation for the people of Palas.

List of abbreviations

BLUE	-	Best linear unbiased estimator
CBC	-	Community-based conservation
CBO	-	Community-based organisation
CE	-	Choice experiment
CM	-	Choice modelling
CV	-	Contingent valuation
EKC	-	Environmental Kuznet's Curve
ENGO	-	Environmental non-governmental organisation
EV	-	Existence-value
GDP	-	Gross Domestic Product
HJP	-	Himalayan Jungle Project
IIA	-	Independent of irrelevant alternatives
IID	-	Independently and identically distributed
IUCN	-	The World Conservation Union
LR	-	Likelihood ratio
MFS	-	Minor Field Study
MRS	-	Marginal rate of substitution
NOAA	-	National Oceanic and Atmospheric Administration
NTFP	-	Non-timber forest product
NWFP	-	Northwest Frontier Province
OLS	-	Ordinary least square
OV	-	Option-value
PC	-	Payment card
PCDP	-	Palas Conservation and Development Project
PD	-	Participatory development
QOV	-	Quasi option-value
Rs	-	Pakistan rupee (1 Rs equals c 0.018 US dollars in November 2004)
RUT	-	Random Utility Theory
TV	-	Total value
UNESCO	-	United Nations Educational, Scientific and Cultural Organisation
UV	-	Use-value
WTA	-	Willingness to accept
WTP	-	Willingness to pay

1 INTRODUCTION

1.1 Presentation of the problem

In recent decades, environmental non-governmental organisations, governmental institutions and other actors from the First World have increasingly taken action to preserve nature values in the Third World (Campbell & Vainio-Mattila 2003). The opposite case, Third World actors taking action in the First World, is virtually non-existent. The phenomenon can be seen as evidence of divergent social preferences concerning environmental goods between poor and rich people, as described by the Environmental Kuznet's Curve. In line with this, empirical evidence suggests that environmental goods in general have a high income-elasticity of demand. (Kriström & Riera 1994, Perman et al 1999, Olsson 2001). This is especially true for goods that contain amenity values, like animals or landscapes, as described in the Krutilla-Fischer model.

As First World interventions in poor countries aimed at protecting the environment and affecting environmental politics have increased critical voices have been raised. Because of divergent preferences between poor and rich people, the objectives of environmental protection and the views on what development is desirable could differ between external institutions taking action and local people affected by that action. Hence there is a risk that people in poor countries are partly deprived of their possibilities of controlling the environment within their territories – even though it happens with good intentions. Steps to prevent these negative aspects of Third World environmental protection have been developed, e.g. community-based conservation, but there seem to be considerable problems implementing such strategies properly (Brown 2003, Campbell & Vainio-Mattila 2003). Biodiversity conservation in the Third World is still mostly undertaken on the terms of First World actors.

To identify differences in preferences between local people and external actors could be an important first step for understanding this dilemma. Do rich people assign higher values to environmental goods in the Third World than poor people do, due to divergent preferences as described by the Environmental Kuznet's Curve? Or do poor local communities, directly affected by and dependent on their surrounding environment, assign higher values than do external actors? Maybe poor local communities assign high values to instrumental environmental features that provide them with physical benefits, so called use-values, while external actors assign high values to inherent environmental features, so called existence-values?

This paper aims at exploring these questions. A community-based conservation project in a Himalayan valley acts as a reference point. A field study was conducted in the Palas Valley in northern Pakistan, where the Palas Conservation and Development Project (PCDP) operates.

More specifically, the main questions at issue are as follows:

- Does the valuation of certain environmental goods in the Palas Valley differ between the local Palasi people and the PCDP staff?
- If so, what are the implications in regard to the legitimacy of the PCDP?
- Can any general conclusions concerning the problems involved in community-based conservation be drawn from this study?

1.2 Disposition

Chapter 2 begins with a review of participatory development and of the critique aimed at nature protection in the Third World in general and at community based conservation in particular. Then two theories explaining divergent preferences between poor and rich people, the Krutilla-Fischer model and the Environmental Kuznet's Curve, are presented along with Amartya Sen's concept of citizen commitment. Finally the basic theories behind environmental valuation are briefly reviewed.

In chapter 3 the Palas Valley and the PCDP are presented in order to provide background information about the setting for the study.

In chapter 4 the practical implementation of the survey is presented. The characteristics of the sample are discussed. The preference-eliciting methods used are motivated and described in detail.

In chapter 5 the results are presented. Possible biases are also discussed.

In chapter 6 the validity of the results is assessed. Their implications for nature protection in the Third World in general and for the PCDP in particular are discussed. At the end of the chapter (section 6.3), a list of policy implications for future action in the Palas Valley can be found.

Chapter 7 ends the paper with a few conclusions.

2 THEORETICAL BACKGROUND

2.1 Critique on nature protection in the Third World

In recent decades, various First World actors such as environmental non-governmental organisations (ENGOS) and governmental aid agencies have increasingly taken action to protect the environment in the Third World. In particular, the amount of funding aimed at protecting threatened species has increased (Campbell & Vainio-Mattila 2003). This has attracted critical voices. Some researchers even consider it a new form of colonisation, because Third World countries are partly deprived of the possibilities of using the nature within their territories. The term to denote this – eco-colonialism – is being used increasingly in social science (synonymous terms are environmental colonialism and eco-imperialism).

There exists no established definition of eco-colonialism. The term has been used in many contexts where uneven power relationships between First and Third world actors are expressed in environmental issues, perhaps most frequently regarding phenomena like debt for nature swaps and ENGOS buying rain forest areas to prevent logging (e.g. Mowforth & Munt 2003, Grainger 2001). The most extreme forms of eco-colonialism were pursued by the colonial powers in Africa during the late 19th and early 20th century. Big national parks were created without the consent of local populations who were often expelled (Nelsson 2003, Honey 1999). Today, the direct administrative power of the colonial states is replaced by deep economic and political dependencies, which still makes eco-colonialism a relevant concept. One of the most prominent scholars representing the post-development movement, Wolfgang Sachs, argues that environmental concern in the Third World has become a means to justify development on First World terms (Sachs 1999).

The rapid rise of eco-tourism as a profitable business has strengthened the economic incentives to protect nature in the Third World. Genuine eco-tourism implies travelling in a socially and environmentally sustainable manner. However, today the term has become a label that is put on any tourism aimed at nature destinations. The concept has been used to justify unfair treatment of local populations, e.g. through bans on firewood collection and “zoofication” (Mowforth & Munt 2003). Neumann (1998) describes the linkages between eco-tourism and eco-colonialism in Tanzania. The incomes generated from the tourists are welcome, but the local communities do not share the motives of the tourists and environmental actors: *“Of all the inherited colonial institutions, wildlife conservation was least understood within African culture.”* (p 141)

2.2 Community-based conservation

To involve local communities in development work has become a keystone in the development discourse. The phenomenon is called participatory development (PD) (synonymous terms are new development and people-centred development), while local participation in nature protection specifically is denoted community-based conservation (CBC) (a synonymous term is new conservation). PD is widely considered a paradigm shift, from “forced” development as prescribed by neo-classical growth models to a development based on a dialogue between development institutions and local communities (e.g. Chambers 1997). CBC implies a change from conservation based on nature reserves with limited access to conservation based on sustainable management of natural resources (Brown 2003).

Participation is a multidimensional concept, and as such hard to grasp. Rudqvist (1991, p 1) mentions three fundamental dimensions of PD:

- Beneficiary participation in different phases of the project cycle (planning, implementation, monitoring and evaluation).
- Beneficiary participation in the different project tasks (construction, operation, maintenance and management).
- Level of beneficiary participation with regard to decision making and control over project resources, functions and benefits.

The level of participation can be measured on a five-grade scale as follows (based on Rudqvist 1991 and Mikkelsen 1995):

- 1 Passive participation (beneficiaries receive information, e g through education).
- 2 Active participation (beneficiaries provide information and viewpoints to project planners and staff).
- 3 Beneficiaries select between different development options provided by the project.
- 4 Beneficiaries have decision power with respect to some or all project aspects (“development on demand”).
- 5 Beneficiaries initiate project tasks and share responsibility for the management of the project and control project resources.

Some empirical studies have shown that CBC can be successful (e g Mehta & Kellert 1998, Dhar et al 1999). However, there are critical voices. Brown (2003) argues that *“new conservation could be thought of as an attempt to re-label and re-package conservation and to get people on board existing strategies”*(p 89). Campbell & Vainio-Mattila (2003) argue that a major problem in CBC is that the objectives are not people-centred as in other PD projects. Even if CBC attempts to combine human development and nature protection, the latter aspect has priority in trade-off situations. Oates (1999) even argues that CBC implies eco-colonialism in a new disguise:

“international conservation planners [now] stress the need to “empower” local people. This form of paternalism seems to be an entrenched feature of Third World development and implemented by highly educated middle-class Westerners. The project planners and managers generally maintain (or improve) their own lifestyles, while displaying attitudes that seem to be colored both by colonial-style paternalism toward people they regard as the benighted peasants of the Third World, and by guilt for the perceived wrongdoing of their colonial antecedents. This pursuit of a mixture of material and sociopolitical aims has become endemic in Third World conservation projects initiated by Westerners and, as I have argued, has its roots in the liaison that developed in the 1970s between international conservation and development organizations.” (p 234)

Knudsen (1999) shows that CBC has been problematic to apply in a Pakistani context. The creation of the Khunjerab National Park in the Northern Areas failed to recognise the interests of affected locals even though a co-management approach was tried.

2.3 Does wealth affect environmental concern?

There is empirical evidence that income and valuation of environmental goods are correlated. In this section, some models describing differing preferences between rich and poor people are presented.

2.3.1 The income elasticity of environmental goods

According to most studies, the income elasticity regarding environmental quality is positive, but less than one (Kriström & Rioera 1994).

The Krutilla-Fischer model acknowledges the positive correlation between income and valuation of environmental goods. It assumes that goods produced by exploiting natural resources have close substitutes and that the substitution possibilities will increase with time and technological progress, while the natural resources themselves lack close substitutes. Also, environmental services that do not exploit natural resources (such as recreation) are assumed to have a high income elasticity of demand, which implies that their values will grow over time as income levels increase (Perman et al 1999). Therefore, the services provided by untouched resources are assumed to increase in value over time, while the value of the exploited resource is constant or declining.

2.3.2 The Environmental Kuznet's Curve

Another model that incorporates differing preferences concerning the environment between rich and poor people is the Environmental Kuznet's Curve (EKC). It visualises the relation between the gross domestic product (GDP) and environmental damage as a U turned upside down. Poor societies have a limited industrial activity and thus cause little harm to the environment. As they start to develop and GDP rises, environmental damage increases until, at some level of welfare in terms of GDP, it starts to decrease again. This decrease can be explained by a combination of increasing production efficiency and changes in social preferences (Brännlund & Kriström 1998). Technological progress enables choices between increased production and improved environmental quality. As production increases the marginal utility from consumption decreases, while the marginal utility from environmental quality increases. Hence, people's preferences change in favour of environmental quality.

The empirical evidences of the EKC are mixed. It seems that it is fairly accurate regarding the correlation between GDP and "the Brown Environmental Agenda", i.e. problems associated with urbanity, but less so in regard to global and diffused problems such as carbon dioxide emissions. The model has been criticised for not taking into account rich countries "exporting" environmental problems to poor countries, e.g. by allocating polluting production to the Third World. Also, the model cannot be applied to irreversible damages to the environment, or to accumulated persistent pollution (Perman et al 1999, Brännlund & Kriström 1998).

Some evidence for the EKC may also be found when looking at environmental aid to poor countries. Tarp & Hjertholm (2000) summarise features that distinguish aid for environmental purposes from other types of aid:

“First, the distribution of benefits and costs from environmental protection are often aligned such that developing countries are less keen than developed countries to undertake environmental improvement. A low level of environmental protection might be optimal from the point of view of developing countries and imposition of environmental and labour standards can undermine developing countries’ “comparative advantage” in labour and natural resources. Second, developing countries have higher marginal utility of wealth and lower marginal utility of environment as compared to donors. Third, preferences for environmental goods and amenities may differ between countries due to cultural reasons. Fourth, priorities may also differ for reasons related to lack of knowledge of short- and long-run consequences and costs” (p 372)

These differences in objectives between donors and recipients could explain why the phenomenon of fungibility is not a critical issue in environmental aid (ibid). Aid fungibility arises when a donor-financed project would have been implemented by the recipient even in the absence of external funding, and thus unintentionally diverts resources to other, perhaps unwanted, projects.

2.3.3 Commitment

Other factors than the income elasticity of environmental goods might explain why rich countries tend to spend more money on abating environmental problems as described by the EKC. According to classical microeconomic theory human consumers maximise their own utility, also in regard to environmental goods. However, Sen (1987) argues that human preferences are affected by what is considered to be good for the society as a whole, even though this may not increase the personal utility of the individual. Sen denotes the phenomenon commitment - an expression of the citizen role of the individual. The feeling of commitment may differ between poor and rich countries, perhaps depending on educational levels, trust in the state etc, and this could explain differences in preferences regarding the environment.

2.4 Valuing the environment

Eliciting people’s preferences regarding the environment is often difficult, as environmental goods are usually not traded in markets. However, over the last few decades, techniques for valuing the environment have evolved. These techniques are not uncontroversial, and some commentators argue that it is impossible to measure the environment in monetary terms in a reasonable way and that the sense of objectivity given by “price tags” put on environmental goods is dangerous (Perman et al 1999, Jakobsson & Dragun 1996). Nevertheless, the field of environmental valuation is well established within economics today, as shown by the vast literature on the subject. This section provides an overview of the theories behind the main techniques.

2.4.1 Why value the environment?

The original and still most prominent reason for valuing environmental goods is to improve cost-benefit analyses (CBA). Negative and positive environmental effects from human activities should be internalised in order to allocate resources efficiently (Brännlund & Kriström 1998). Valuation of environmental goods for inclusion in CBA has been performed for some thirty years. More recently, two other reasons have emerged. The first is national accounts acknowledging environmental values, e g “green GDP”. The second is the need for basic data when establishing fines in court cases concerning illegal destruction of the environment (Perman et al 1999).

In this paper, the valuation of the environment by two groups – the Palasi locals and the PCDP staff – is compared. As yet, such comparative studies seem rare. However, Olsson (2001) presents a major survey in which willingness to pay (WTP) to avoid environmental problems is compared over seven countries.

2.4.2 Underlying ethics and principles

Behind the techniques for valuing the environment lies normative welfare economic theory. This in turn is based on utilitarianism as expressed in the writings of David Hume, Jeremy Bentham and John Stuart Mill (Perman et al 1999). Utilitarianism is a consequentialist theory of moral philosophy – it states that only the outcomes of an action determine its moral worth. The fundamental concept of utility maximisation is derived from this axiom.

To identify the optimal (utility maximising) consumption of an environmental good, and measure utility changes (expressed as changes in consumer surplus) from changes in the supply of this good, the supply and demand functions must be known. The demand for a good at a market can be derived from a consumer's marginal WTP for it. However, environmental goods are rarely traded at markets. Hence, the marginal WTP for them must be measured in other ways.

Also, environmental goods are often genuinely public, i.e. they are characterised by non-rivalry and non-excludability. This means that the demand is equal to the aggregate marginal willingness to pay for them, as an increase in the supply accrues to all consumers.

2.4.3 Fundamental problems

Welfare economics is concerned with social wellbeing, that is aggregation of individual utilities. In order to aggregate meaningfully over individual measures of utility, those must be cardinal. However, measures of individual utility are intrinsically ordinal. A way round this problem is so called compensation tests, but they are usually hypothetical and no actual compensation accrue to parties who are negatively affected by a project (Perman et al 1999).

There are methods for eliciting people's preferences regarding the environment that do not require cardinal measures of utility. One is the simple ranking technique adopted in this study (see 4.4). By letting respondents place environmental goods in order of perceived importance it is possible to draw conclusions about the preferences regarding these goods.

Other major problems in welfare economics are uncertainty and risk, not least in regard to the environment. Ecosystems are complex, and the supply functions of many environmental goods are poorly known because of threshold effects, irreversibility and lack of data.

2.4.4 Different measures of utility change

Changes in consumer surplus can be interpreted as monetary measures of utility changes. When using Marshallian, or uncompensated, demand functions this only applies under certain strong assumptions, e.g. that the marginal utility from increased income must be constant. Hicksian, or compensated, demand functions do not require such assumptions. While a Marshallian demand function describes the relation between demanded quantity and price given that income and other prices are held constant, a Hicksian demand function describes the same relation given that the utility of the consumer is held constant. Hence a Hicksian demand function compensates for the income effect, and solely measures the substitution effect on demand from a change in price.

There are two Hicksian measures of utility changes from a rise or fall in price. Compensating variation equals the change in income that would compensate for a change in price, leaving the consumer at the same level of utility. Equivalent variation equals the change in income that affects the utility of the consumer to the same extent that a certain change in price would have done (Brännlund & Kriström 1998).

Regarding environmental goods, the demand functions describe the relation between demanded quantity and a valuation of the quality or quantity of the good (e.g. water quality or the numbers of a certain species), rather than the relation between demanded quantity and price. The supply of a genuinely public environmental good is indivisible. This means that compensating and equivalent variation measures can not be used. They are replaced by compensating surplus and equivalent surplus measures respectively (Perman et al 1999).

2.4.5 *What is being valued?*

The environment provides humans with four main services (based on Perman et al 1999, p 400):

- Life-support services (L)
- Resource inputs to production (I)
- Sinks for the assimilation of wastes generated in production and consumption (W)
- Amenity services (A)

Which are then the values arising from these services? The total value (TV) of an environmental good can be subdivided into four categories (based on Perman et al 1999, p 402):

- Use-value (UV) arises from the actual and/or planned use of the service. An environmental good can provide use-values even if it is not used up (e.g. recreation). This category can be subdivided into direct use-values and indirect use-values. The latter refers to the life-support services that are “indirectly” used by humans.
- Existence-value (EV) arises from knowledge that the service exists and will continue to exist, independently of any actual or prospective use by the individual. EV can be subdivided on the basis of the object of this altruism. Philanthropic motives concern the provision of the good for contemporary humans, while bequest motives concern provision for future human generations. Concern for non-human entities is referred to as intrinsic values. This concept is controversial from a classical economic point of view, which is based on a strictly anthropocentric utilitarianism.
- Option-value (OV) relates to willingness to pay to guarantee the availability of the service for future use by the individual.
- Quasi option-value (QOV) relates to willingness to pay to avoid an irreversible commitment to development now, given the expectation of future growth in knowledge relevant to the implications of development.

Thus, $TV = UV + EV + OV + QOV$. Sometimes EV, OV and QOV are lumped into a single category of non-use values. One, some or all categories may be zero for some individuals. OV and QOV arise only where there is incomplete knowledge of future conditions (which is usually the case regarding the environment).

To exemplify the concepts of services and values, Table 1 shows eleven environmental forest goods along with the services they provide and the values arising from these services.

Environmental good	Service	Values
Timber	I	UV
Standing trees	A	EV, OV, QOV
Minerals	I, L	OV, QOV, UV
Flora	A, I, L	EV, OV, QOV, UV
Fauna	A, I, L	EV, OV, QOV, UV
Protection against flooding	L	OV, QOV, UV
Protection against earthquakes	L	OV, QOV, UV
Protection against erosion	I, L	OV, QOV, UV
Local climate	L	OV, QOV, UV
Water quality	I, L, W	OV, QOV, UV
Carbon fixation	L, W	OV, QOV, UV

Table 1. Benefits from a mountain forest. The list is arbitrary and can naturally be expanded.

3 THE PALAS VALLEY AND THE PCDP

3.1 The Palas Valley and its people

The Palas Valley lies east of the Indus river among the front ranges of the western Himalayas in the Kohistan District of the Northwest Frontier Province (NWFP), Pakistan (see Figure 1). Altitudes range from c 1000 to 5151 m and the topography is mostly rugged and precipitous. The main river, the Musha'ga, c 75 km long, meets the Indus at 73°05'E, 35°08'N. Lower altitudes experience dry sub-tropical conditions, higher altitudes temperate conditions. Summers are generally warm to hot, winters are cold. Estimated mean annual precipitation is 900 mm to 1350 mm, falling mostly as winter snow. The Palas Valley receives sporadic summer rains, being somewhat sheltered from the monsoon by mountains to the south (PCDP 2004).



Figure 1. The black arrow points to the Palas Valley, which lies east of the village “Patan” (Pattan).

The forests of the Western Himalayas - particularly the temperate forests - have been identified as a global priority for the conservation of biodiversity. Surveys between 1987 and 1995 showed that Palas contains important remaining tracts of these temperate forests. The valley lies within the West Himalayan Endemic Bird Area as recognised by the global ENGO Birdlife International, extending from northern Pakistan and adjacent parts of Afghanistan to western Nepal. Palas supports the world's largest known population, c 300 pairs, of the globally threatened Western Tragopan pheasant (*Tragopan melanocephalus*) along with six other of the eight Western Himalayan endemic bird species. The Western Tragopan is classified as “vulnerable” according to the IUCN (The World Conservation Union), which means that it is facing an extremely high risk of extinction in the wild in the medium term future. The world population is estimated to c 2500 pairs. The valley also contains many rare or threatened mammal species of the Western Himalaya, including Kashmir Grey Langur (*Presbytis entellus*), Brown Bear (*Ursos arctos*), Black Bear (*Selenarctos thibetanus*), Wolf (*Canis lupus*), Common Leopard (*Panthera pardus*), Leopard Cat (*Felis bengalensis*), Musk Deer (*Moschus crysogaster*) and Markhor (*Capra falconeri*). Many other species occur, many in abundance. Palas also exhibits a rich diversity of reptiles, amphibians and invertebrates. Palas is also an area of considerable botanical importance. Surveys have so far identified over 400 plant species, including three species new to science and many rarities; the total number of plant species probably exceeds 600. The valley contains the largest known population of the threatened West Himalayan Elm (*Ulmus wallichiana*) (PCDP 2004b). The high environmental values of Palas have led to proposals to include it in the UNESCO (United

Nations Educational, Scientific and Cultural Organisation) World Heritage list (Klaus Euler pers comm).

The main threat to the nature in Palas today is unsustainable forestry carried out by locals (on a small scale) and the forest industry. A logging ban was lifted in 2001 and inadequate governmental forestry policies resulted in extensive clearing (Iqbal 2002). The ban was reimposed in 2004 but still illegal logging is pursued, especially in the lower part of the valley (Kuz Palas). The upper part (Bar Palas) lacks the physical infrastructure needed for extraction of timber and consequently contains larger environmental values. Illegal hunting poses another threat to many rare species, including the Western Tragopan and the Musk Deer (Ashraf 2003).

Apart from three districts in Baluchistan, Kohistan is the least developed of the 64 districts of Pakistan (PCDP 2001). Until the 1970s, the Palas Valley was more or less isolated from the outside world. After a major earthquake in 1974 external aid was needed, and the construction of the Karakoram Highway increased contacts with other parts of the country. Only a small share of the valley is used for agriculture, but the inhabitants are heavily dependent on the local natural resources. The traditional lifestyle involves seasonal migrations, and most of the population move annually with their livestock between winter villages and summer pastures. Crop yields are low due to poor seeds, inadequate irrigation and fertilisers, poor cropping practices, pests and diseases. The staple crop maize is supplemented by milk products from goats, cows and buffalo, and by cultivated and wild vegetables. Livestock plays an important role in cycling nutrients from the forests and rangelands on to the agricultural land, and they are an insurance against crop failure, but it is of poor genetic stock, and suffers uncontrolled diseases. The people of Palas are not self-sufficient but buy food to meet shortages, particularly prior to the harvest. The people tend towards a strictly orthodox Sunnite interpretation of Islam (PCDP 2004b). There are several primary schools, but teachers are rarely present; the nearest middle and high schools are in Pattan. The literacy rate is low - probably around 12% for men and 3% for women (Iqbal 2002). A striking feature of the Palasi society is the severity of inter-family disputes. These can persist for years, and disrupt agriculture and livestock herding (Knudsen 2001).

The physical infrastructure is poorly developed in the valley (PCDP 2004). The lower parts of Kuz Palas are accessible for vehicles on two roads – Pattan to Sherial Nullah (c 22 km) and Pattan to Sherakot (c 20 km) - but most settlements are between one and three days' walk from the road-head. The upper parts and Bar Palas can only be reached by foot on narrow paths, which are mostly in poor condition and arduous. Electricity and sanitation is lacking in most parts, although generators are increasingly used. There are a few dispensaries in Palas, but medical supplies are very limited and the nearest doctor is in Pattan. There is no tapped drinking water or gas supply. There is one single rest house in the valley (in Sherakot).

3.2 The Palas Conservation and Development Project

3.2.1 Project history and objectives

After the discovery of the strong Western Tragopan population in Palas in 1989, Birdlife International took an interest in the area and initiated the Himalayan Jungle Project (HJP) in 1991. After the completion of the first phase of this project in 1994, an inception year was supported by the European Commission in order to consolidate the work and prepare further action. The successor of the HJP is the PCDP. It started in 2001, funded by the European Union and implemented by the government of the NWFP together with Birdlife International

(which works as a technical assistance agency). The PCDP extends and expands the work and approach of the HJP, aiming “to safeguard biodiversity in Palas by enabling local communities to tackle the linked causes of poverty and incipient natural resource degradation, through an integrated and participatory approach to conservation and development” (PCDP 2004b). This main goal of the PCDP is to be fulfilled through the following four main objectives (PCDP 2001 pp 9-14):

- 1 To catalyse and facilitate the establishment and/or strengthening of viable community organisations that sustain participation in conservation and development.
- 2 To safeguard biodiversity and optimise the flow of local, national and global benefits from the management and sustainable use of natural resources, involving:
 - Planning and implementation of biodiversity conservation and environmental awareness programs, and their extension to other areas of Kohistan in collaboration with the Kohistan Wildlife Unit;
 - Participatory forest management, including setting aside from commercial timber harvesting forests of highest biodiversity value (core zones); sustainable use of remaining forests (sustainable use zones); conservation of biodiversity and sustainable use of non timber forest products in all forests;
 - Sustainable agricultural development for improved nutrition and income generation;
 - Improved livestock and rangeland management.
- 3 To foster the local economy and facilitate natural resource management through the rehabilitation and development of basic infrastructure.
- 4 To develop and sustain improvements in health, nutrition and sanitation, particularly among women and children.

3.2.2 Local participation

The most obvious evidence of local project participation is the PCDP field staff, most of whom are Palasi locals. Many locals are also involved through various workshops and through education given by the project (i.e. passive participation).

The formation of community-based organisations (CBOs), i.e. village-based councils, is the most prominent result of the first objective concerning participation mentioned above. So far 41 out of 44 proposed CBOs have been formed (Klaus Euler pers comm). The CBOs are supposed to provide a democratic basis for community development, and to complement the traditional “jirga” system for decision making. They may also enable political mobilisation through the planned formation of an all-valley CBO federation.

As yet it is uncertain to what extent the formed CBOs function as supposed. However, they constitute the main medium for communication between the locals and the project management. Councils between PCDP staff and CBOs take place on a monthly basis, and monthly and annual PCDP work plans are shared with the CBOs.

In regard to the dimensions of PD mentioned in 2.2 the beneficiaries have been involved in all project cycles. However, the first six month’s work plan was not participatory, and no mid-term review was undertaken (Klaus Euler pers comm). Apart from the employed field staff, the beneficiary participation in the maintenance and management of PCDP is quite low. The locals are, however, often involved in the construction of various infrastructure (so called

“contract development” – the PCDP provides inputs and locals do the construction work). The level of beneficiary decision-making is mainly of “conditional development on demand” type – the PCDP fulfils the demands of locals on the condition that certain steps to protect the environment are taken. Indeed, many members of the PCDP staff describe the idea of the project as “trading development for environmental protection”. Also, beneficiaries can often choose between different development options provided by the project, or affect them (naturally they can also reject them). They do not have any formal decision power over the main project objectives and can not control project resources.

3.2.3 Local attitudes towards the PCDP

Sahibzada (2002) briefly summarises his impressions of the local attitudes towards the PCDP at the beginning of the project:

“People have misconceptions about the nature of the PCDP and the work its staff is doing. [...]There is miscommunication, scepticism and suspicions among the community. The interaction between the project and communities seems inadequate.”(p 12)

That locals see the PCDP as an external actor is shown by the fact that it is widely known as the “angrez (foreigners’) project” in Palas (Fazalur Rehman pers comm). In general, younger people are more aware of the environment in Palas and thus more open to the project interventions (Sahibzada 2002).

4 METHOD

In order to answer the questions at issue in this paper, a field study within the Minor Field Study (MFS) program of the Swedish International Development Cooperation Agency, Sida, was designed and carried out during June and July 2004. Its main purpose was to elicit the preferences among locals and the PCDP staff concerning the environment in Palas.

The study is based on interviews with locals and the PCDP staff. It consists of four main parts, which are dealt with in detail in sections 4.3 to 4.6:

- Qualitative questions concerning opinions on the PCDP.
- A ranking question on Palasi environmental goods.
- A contingent valuation (CV) question on the Western Tragopan.
- A choice experiment (CE) on different possible scenarios in the Palas Valley.

4.1 Implementing the study

Considering the low literacy rate in Palas, doing interviews was the only viable option for implementing the study.

A disadvantage when doing personal interviews is the risk of interviewer bias. On the other hand, a high response rate is likely. Also, there is a possibility for the interviewer to explain and clarify uncertainties that would otherwise result in erroneous answers. The latter was assumed to be important in this case, as some questions were rather abstract. All questions were formulated so as to be as straightforward as possible. Also, the questions assumed to be most sensitive were placed at the end.

Two questionnaires, one aimed at locals and one at the PCDP staff, were prepared in English before departure to Pakistan. Before starting the study they were discussed with the PCDP staff, and minor changes were made. They were then translated into Urdu and presented to the interpreter along with the English version. An informal evaluation was made after the five first interviews, and it was concluded that the questions worked sufficiently well. The questionnaires can be found in Appendix 1.

As the security situation at the time of the study did not allow any interviews with locals in the valley, the respondents were collected at the bazaar of the Pattan village where Palasi locals handle their business and contacts with governmental institutions and the outside world.

In order to make it easier for the respondents to speak their minds, the interviews were conducted in a closed room with only the interviewer, the interpreter and the respondent present.

During the interviews with PCDP field staff and locals, questions were translated into the local language of Shina, and the answers were translated back into English and noted by the interviewer. A few locals as well as some members of the PCDP staff who were fluent in English were interviewed in English without the interpreter. No tape recorder was used, as the answers were mostly short and straightforward.

4.2 Sample

85 people from the Palas Valley population and 23 people from the PCDP staff were interviewed. While the latter group constitutes a major proportion of the "PCDP population" of interest, 85 locals are far too few to be representative for the total Palasi population of c 60 000 people (PCDP 2002). See Table 2 for differences between known parameters of the population and the sample. The sample parameters are derived from questions 1 to 5 in the questionnaires (see Appendix 1).

Parameter	Population	Sample
Share of women	c 55%	0%
Avarage household size (persons)	c 6.4	7.3
Avarage monthly per capita income (Rs)	c 1000-2000	4409.3
Avarage age (years)	no data	32.4
Involvement in PCDP activities	no data	47.1%

Table 2. Parameters of sample and population from Palas (the figures of the population are based on PCDP 2002, but they should be considered rough estimates). The income is expressed in Pakistan rupees (Rs).

The Palasi society is strictly patriarchal, and foreigners who interact with local women risk violent repercussions. Hence, interviewing women was impossible.

As interviews could not be held in the valley, the sample suffers from what Chambers (1983) calls "road side bias" – it consists of middle-aged men in relatively good health, in general wealthier and more well-educated than the average Palasi local. See Figure 2 (next page) for details on the main occupations of the respondents. The agricultural sector is under-represented, while teachers, shopkeepers and students are over-represented.

The lack of women, the elderly and peripheral people in the sample limits the possibilities of drawing general conclusions from the results. However, one can (perhaps cynically) argue that the patriarchal structure of the society makes the preferences of other people than grown men less important for the development in the valley. Also, a question concerning monetary valuation of the environment can only be posed to people with an income, which excludes most Palasi women.

The main advantage of collecting the respondents at the Pattan bazaar was the geographical coverage. People from 26 villages out of a total 44 in the valley were interviewed (see Appendix 2). Given the limited time available it would not have been possible to interview people in more than 10 villages inside the valley. The PCDP activities have been unevenly distributed across the valley, and the sample includes people from involved as well as neglected areas. However, a large proportion of the respondents had been somehow involved in PCDP activities, mostly through CBOs, councils or workshops. This should be kept in mind when interpreting the results.

The PCDP staff sample can be divided into two main groups: field staff and bureaucratic staff. The former group consists mainly of Palasi people, while the latter group in general are residents of bigger cities.

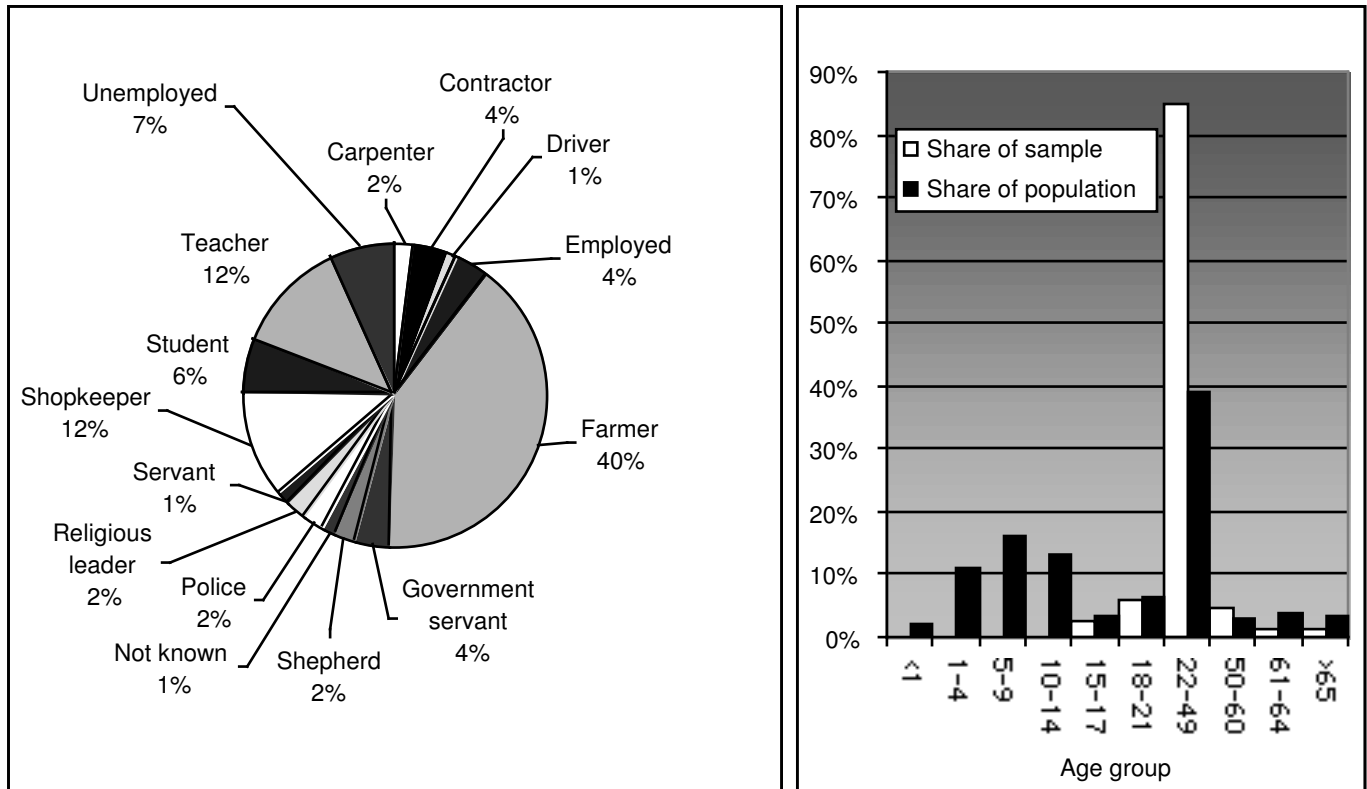


Figure 2. Occupations of respondents in Palasi local subsample (left) and age distribution in sample compared to Palasi population (right). The arbitrary age groups are a result of lack of proper data from the population, and the shares should be considered rough estimates (based on PCDP 2002).

4.3 Opinions on the PCDP

The questions in this section are numbered 6A to 6F in the questionnaire aimed at locals (local questionnaire) and 6 to 10 in the questionnaire aimed at the PCDP staff (staff questionnaire), see Appendix 1. These qualitative questions served two main purposes. First, the opinions on the PCDP might affect the answers to the valuation questions, and should thus be controlled for. Second, the questions reveal if there are differing views on what constitutes the most important objectives of the PCDP, on the level of local participation and on how successful the project has been in different areas of intervention.

When analysing the results, the answers are classified into different categories. This means that answers with slightly different meanings might be treated as synonymous when the results are presented (see chapter 5).

4.4 Ranking environmental goods

To get an idea of whether the respondents consider certain environmental goods in the Palas more important compared to others, they were asked to rank six goods (question 7 in the local questionnaire and question 11 in the staff questionnaire, see Appendix 1). These goods differ with respect to the ecological services they provide as well as to the proportions of non-use and use-values (see Table 3 and below).

Environmental good	Ecological services	Values
Western tragopan	A, I	EV, OV, UV
Morel mushroom	I, L	OV, UV
Wild honey	I	OV, UV
Musk deer	A, I	EV, OV, UV
Leopard	(A) (I)	EV, OV, UV (+ & -)
Black bear	A, I	EV, OV, UV (+ & -)

Table 3. Six environmental goods in the Palas Valley.

- Western Tragopan. This pheasant is assumed to contain both use-values and non-use values. The former are based on the beauty of the bird, an amenity service, as well as hunting. The only known market-based valuation of the bird is the price of a skin from a male, which is between 300 and 500 Rs.
- Morel mushroom. The different species of this mushroom (in particular *Morchella esculenta* and *Morchella conica*) belong to the Palasi non-timber forest products (NTFPs). NTFPs are considered the most important income source by the locals, ahead of (in order of importance): livestock, wage labour, agriculture, commercial timber logging, government service, trade, handicrafts and grazing tax (PCDP 2002). Morel Mushrooms are sold locally. The total yearly market value was estimated at 5.5 million Rs in 1992 (PCDP 1992), making the mushrooms by far the most important NTFP ahead of medicinal herbs and wild honey. While providing considerable resource and life-supporting services, the mushrooms are assumed to contain negligible existence-values.
- Wild honey. This NTFP is collected in the woods and sold. The total market value was estimated at 1 million Rs in 1992 (PCDP 2002), a figure that puts wild honey well behind Morel mushrooms in economic importance. This and the fact that the locals rarely consume the honey should give it a lower ranking than the mushrooms.
- Musk Deer. This is a globally threatened species due to habitat loss and hunting. It is hunted because of its large abdominal scent gland from which musk can be extracted for use in perfumes (Ashrad 2003). In addition to the obvious use-value from hunting, it is assumed to contain measurable existence-values. It probably offers some amenity services as well.
- "Leopard" (*Panthera sp*). This predator was included in the question as an example of an environmental good containing almost nothing but existence-values, as very few people have had physical contact with it. However it is assumed to contain some negative use-values for the Palasi people as it occasionally kills livestock. At first, Snow Leopard (*Panthera uncia*) was specified in the question, as it is one of the world's most endangered mammals with a restricted range including northern Pakistan. After discussions with the PCDP staff, this was changed to unspecified leopard, as the locals probably are not aware of the differences between Snow Leopard and Common Leopard (*Panthera pardus*). Also, while the latter is known to exist in the valley, the presence of the Snow Leopard is yet to be confirmed.
- Black Bear (*Ursus thibetanus*). The Asiatic Black Bear is classified as vulnerable. It is hunted for its fur and for use in bear bating (a game where dogs are unleashed on a tethered bear until it succumbs). As the bear frequently raids maize fields it is assumed to contain also considerable negative use-values from the locals' point of view.

Apart from the main purpose of eliciting the respondents' preferences, the ranking question also had other aims. First it was supposed to remind the respondents of other environmental goods that might be worth protecting, and thus help avoid "symbolic bias" as proposed in Bennet & Blamey (2001). The ranking question was therefore placed before the CV question (which also meant that the ranking of Western Tragopan was not affected by the information given to the respondent in the CV-question). Second, the local market value for Morel mushroom and wild honey has been estimated. Hence the internal ranking between these two goods gives an indicator of the validity of the question, as well as a cardinal reference point for the rankings of the remaining four goods. More importantly, it enables an evaluation of the results from the CE and CV questions.

4.5 Contingent valuation of the Western Tragopan

The questions concerning the valuation of the Western Tragopan are numbered 9 to 12 in the local questionnaire and 17 to 20 in the staff questionnaire (see Appendix 1).

The Western Tragopan is close to the concept of a genuine public environmental good. There may, however, be some rivalry involved in hunting the bird. The Palas locals' perceived use-value of the bird is assumed to be rather small, apart from the monetary value that can be obtained from selling male skins. Its place in the eco-system is distantly linked to humans, so its ecological services are probably negligible. The elusive habits of the bird make it hard to spot; however, those who have seen the bird or heard its cat-like call may have experienced amenity-based use-value. Members of the PCDP staff probably experience use-values as they gain satisfaction from working to protect the bird. However, existence-values are assumed to comprise a major part of peoples' total valuation of the bird. Therefore, an indirect measure of the valuation of the bird (that is a measure which is based on actual demand for priced goods that are closely linked to the environmental good, e.g. complementary goods) would be erroneous, as only direct methods include existence-values.

In this study the direct method of CV was used. There is extensive literature on CV studies, and the procedure for implementing the method is fairly straightforward and standardised (e.g. see Perman et al 1999 and Brännlund & Kriström 1998).

4.5.1 Scenario

The hypothetical scenario on which the valuation was contingent is a total extinction of the Western Tragopan from the Palas Valley. According to the scenario the amount of the valuation in monetary terms will be used in a PCDP project to protect the bird. The scenario corresponds to that used by Fredman (1995) in a CV study of the White-backed Woodpecker (*Dendrocopos leucopos*) in Sweden. How the hypothetical scenario is stated is crucial for the validity of the measure. The following criteria are important:

- The scenario has to be consistent with underlying microeconomic theory.
- The scenario has to be relevant for the implementations of policies, which means that it has to reflect a specific allocation problem.
- The scenario has to be realistic.
- The scenario has to be easy to understand.

Since this study is a comparison of the valuation between two groups of people rather than a cost-benefit analysis, the criterion concerning relevance for policy implementation perhaps is of less importance. However, the scenario reflects a natural resource allocation problem, namely the choice between protecting the bird or increasing forest harvesting.

4.5.2 Information given to the respondents

The amount of information given to the respondent prior to the questions on valuation affects the answers. This may result in information dependency bias. It has therefore been suggested that environmental valuation studies should be restricted to people who are familiar with the problem at issue, because imperfect information results in erroneous answers and suboptimal solutions. Olsson (2001) suggests that existence-values are more sensitive to new information than are use-values. In this study, a picture of Western Tragopan was shown to all respondents, and the locals were informed about its status.

4.5.3 WTP or WTA?

In the case of environmental quality deterioration a WTP question is posed to reveal the willingness to pay to avoid the deterioration - the maximum amount that the respondent is willing to give away and still experience a greater level of utility than if the deterioration had happened. This is the Hicksian compensated measure of utility change called equivalent surplus (see 2.4.4). A willingness to accept (WTA) question is posed to reveal the minimum compensating amount that the respondent is willing to accept if the deterioration takes place (that is if the bird is exterminated), to experience the same level of utility as before the deterioration. This Hicksian compensated measure is the compensating surplus (see 2.4.4).

The choice between WTP and WTA questions in the case of deterioration in environmental quality is dependent on how the entitlements to use the environmental good are defined. A WTP question implies that the respondent is not entitled to the initial use (or utility level), so he or she must pay to avoid the deterioration. A WTA question implies that the respondent is entitled to the initial use (or utility level), so he or she must be compensated if the deterioration takes place.

In this case, the entitlements are not easily defined. One might say that the Palasi locals are entitled to use the nature of the valley, but at the same time they affect the nature by their actions. An entitlement to use wild animals in any way can only be realised if there is an obligation to protect the animals, as entitlements are worth nothing without corresponding obligations. In regard to measures of intrinsic existence-values the entitlements of the respondent are insignificant, as the measure concerns the good's right to exist.

In practice, the choice between WTP and WTA questions is often determined by the fact that WTA questions result in much bigger figures than do WTP questions. This is mainly due to two phenomena. First the indifference curve between income and a good is not linear but strictly convex. This means that for a decrease in the provision of a good a bigger compensation (i.e. an increase in income) is required than in the opposite case – a decrease in income to prevent a decrease in the provision of the same good. Again, this is insignificant when measuring existence-values. Second, it is an established fact in psychology that people in general state bigger compensation demands for the loss of a good than willingness to pay to acquire the same good. According to the prospect theory developed by Kahneman & Tversky (1979), people underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty. This tendency, called the certainty effect, contributes to risk

aversion in choices involving sure gains and to risk seeking in choices involving sure losses. In addition, people generally discard components that are shared by all prospects under consideration. This tendency, called the isolation effect, leads to inconsistent preferences when the same choice is presented in different forms, and also between WTP and WTA. The isolation effect could apply to existence-values as well as use-values. In this study a WTP question was used, mainly to avoid the drawbacks of the WTA approach.

4.5.4 Open-ended or closed questions?

Another choice that has to be made when designing a CV study is between closed and open-ended WTP (or WTA) questions. When faced with an open-ended question, the respondent states whatever amount he or she finds suitable. A closed question means that the respondent is given a bid that is to be accepted or rejected. The respondent can then be given a second bid (the size of which is dependent on the first answer) to identify the actual WTP more accurately. The National Oceanic and Atmospheric Administration (NOAA) panel recommended closed questions in its influential report on the Exxon Valdez oil spill in 1989 (Perman et al 1999). However there is still debate on which method gives the most valid results (Brännlund & Kriström 1998).

The advantages of closed WTP questions are their similarity with the pricing in a market economy. Consumers are used to deciding whether to accept or reject given prices rather than to stating their actual WTP. The NOAA panel suggested that closed questions are less prone to trigger strategic answering. However, this has not been proven unambiguously. A drawback of closed questions is the fact that the exact WTP is not revealed when posing a closed question, only an interval within which the actual WTP lies. To compute means and other properties of the WTP for a good, rather advanced statistical methods are required, along with strong assumptions about the distribution etc. Other drawbacks include starting point bias. This means that answers are affected by the size of the first bid, and so called yeah saying, which means that it is "too easy" for a respondent to accept bids, given that they are hypothetical. Indeed, responses to closed WTP questions have recently been shown to systematically exceed their open-ended counterparts. Inflated benefit values are not innocent, as they will provide overprovision at the expense of other desirable goods if applied to CBA (Vredin Johansson 1999). Albeit endorsed by NOAA, closed questions are thus prone to counteract the important objective of "conservative design" (i.e. avoiding overestimating valuations) as expressed by the panel. In this comparative study closed questions were not suitable, as the general difference in income between the locals and the PCDP staff was considerable. Such differences make it hard to establish a proper bidding level.

A third option, which by some researchers is considered superior to both open-ended and closed questions, is the Payment Card (PC) method. It can be thought of as a hybrid between the former two methods. A range of bids is given to the respondent, who is asked to choose the one closest to his or her WTP. The PC method thus avoids the simple "yes or no" procedure of closed questions, but also the difficulties involved in picking a WTP "out of the blue" (Reaves et al 1999). A lognormal bid distribution is preferred when designing the PC, which implies many bids in the lower parts of the range and few in the upper parts. To avoid range bias it is important that the range is not truncated.

In this study, the choice of method stood between PC and open-ended questions. After a few interviews, it became clear that open-ended questions were best suited for the context. Those respondents who were given a PC stated an "own" valuation anyway. The similarity to a free

market economy provided by closed questions might be of less importance for the quality of the responses in the social setting of this study, where informal bargaining is common.

4.5.5 Identifying existence-values

To get an idea of the extent to which the respondents expressed existence-values in their WTP, all respondents were asked if they had seen the Western Tragopan. Respondents who had not seen the bird were asked if they would like to see it, and if they would appreciate the existence of the bird in Palas even if they never saw it. Respondents who had seen the bird were asked if they would appreciate the existence of the bird even if they never saw it again. No attempt to separate different kinds of existence-values (see 2.4.5) was made, as this would have made the study too extensive to manage.

4.6 Choice experiment

4.6.1 Experimental design

A CE is a choice modelling (CM) approach to environmental valuation. CM is based on Random Utility Theory (RUT) (Bennet & Blamey 2001). In a CE, a hypothetical choice situation is constructed where the respondent is confronted with different scenarios (or alternatives) forming a choice set. The scenarios diverge with respect to levels of common attributes. The respondent is asked to state which scenario he or she prefers (i.e. to make a discrete choice). According to the RUT framework, the indirect utility function for each respondent $U(i)$ can be decomposed into two parts: a deterministic element (V), which is typically specified as a linear index of the attributes (X) of the j different scenarios in the choice set, and a stochastic element (e), which represents unobservable influences on individual choice:

$$U_{ij} = V_{ij}(X_{ij}) + e_{ij} = bX_{ij} + e_{ij}$$

Thus, the probability that any particular respondent prefers option g in the choice set to any alternative option h can be expressed as the probability that the utility associated with option g exceeds that associated with all other options (Hanley, Mourato & Wright 2001, p 439):

$$P[U_{ig} > U_{ih} \forall h \neq g] = P[V_{ig} - V_{ih} > (e_{ih} - e_{ig})]$$

The overall design of the CE is constructed to control for the correlation between the attributes. This makes it possible to value each attribute separately. If one attribute is monetary, marginal rates of substitution (MRS) between it and other attributes result in a monetary valuation of the latter.

The aim of the CE used in this study was to see how the respondents handled the trade-off between biodiversity conservation and more extensive extraction of natural resources through logging and hunting, in particular if any differences between the PCDP staff and the Palasi locals could be identified. The number of tourists visiting the valley was also included as an attribute. In total, five attributes were chosen. Of these, four take on three levels, while one takes on two levels (see Table 3). No monetary attribute was included, as putting costs to the scenarios was assumed to decrease the realism of the choice sets and hence the validity of the answers. Also, monetary attributes were not necessary considering the comparative aim of the CE.

Attribute	Levels
Commercial logging	Forbidden everywhere/Allowed in sustainable zones/Allowed everywhere
Black Bear population	Exterminated/Present level/125% the present level
Western Tragopan population	Exterminated/Present level/200% the present level
Number of tourists/year	0/10 (presumably present level)/500
Hunting	Forbidden for threatened species/Allowed for all species

Table 4. Levels of attributes in choice experiment

The full factorial for this test thus contains $3^4 \times 2^1 = 162$ possible scenarios and $162^2 = 26\,244$ possible choice sets, each containing one status quo scenario and two alternatives. As no respondent can evaluate such a big number of choice sets, a fractional factorial consisting of 27 scenarios, including the one describing the status quo, was chosen using the following criteria (based on Alpizar, Carlsson & Martinsson, 2001, p 16):

- Orthogonality. This means that the level of the attributes should not be correlated. However this criterion was somewhat compromised in order to keep the scenarios reasonably realistic.
- Level balance. Each attribute level occurs roughly at the same frequency throughout the design (small deviations, i.e. one level occurring on up to three instances more than another, were allowed for in order to maintain realism).
- Minimal overlap. No attribute level was allowed to occur more than twice in each choice set.
- Utility balance. This criterion is difficult to satisfy, as it requires knowledge of the distribution of the parameters. A subjective judgement was made in order to create a balance.

The cost of reducing the number of scenarios is loss of statistical efficiency, as it has to be assumed that some interaction effects between attributes are insignificant. This assumption is however regarded as reasonable, especially for interactions of more than two attributes (Vredin Johansson 1999). Utility balance makes the choices harder for the respondents. The gain in statistical efficiency might hence be offset by losses in response efficiency (Bennet & Blamey 2001).

Still, 27 scenarios were considered too many for each respondent to evaluate. Therefore randomisation was applied when implementing the experiment. Randomisation means that each respondent is presented with a few random choice sets within the fractional factorial. In this study, each respondent was presented with two to five choice sets (i.e. five to eleven scenarios). The randomisation was controlled for so as to acquire an equal representation of all scenarios in the overall CE. Randomisation requires the assumption that preferences are equal over all respondents, unless differences are explicitly controlled for when analysing the results (Bennet & Blamey 2001).

Like CV studies, a CE is capable of measuring existence-values, and is superior to a CV in that it can value multidimensional scenarios conveniently. This can be done using the CV method as well, but it requires repeated questions and thus is more tedious. Many of the biases attached to the CV method are more easily avoided using CEs, including protest bidding and "yeah saying" (Hanley, Mourato & Wright 2001). However, a potential drawback

is the fact that the respondent may find it difficult to keep track of several scenarios, each with different levels of several attributes. Fatigue may cause rule-of-thumb bias, which means that the respondent chooses scenarios that are "sufficiently good" rather than "the best". Lexicographic ordering is one such rule-of-thumb strategy. It means that, for simplicity reasons, a respondent's choices are entirely based on the level of a single attribute. This strategy, which causes bias, must not be confused with genuine lexicographic preferences, i.e. that a respondent really considers one attribute of decisive importance irrespective of the levels of other attributes (Alpizar, Carlsson & Martinsson, 2001).

The risk of fatigue, due to respondents' difficulties in keeping track of the attribute levels in the scenarios they are presented with, was assumed to be considerable in this study, as the low literacy rate among Palasi locals required oral presentations. Most CE studies to date seem to be implemented by mail surveys. No doubt having the choice sets written down makes it easier for the respondent to properly compare the scenarios and make rational choices. To avoid this problem a symbolic picture for each attribute level, and plastic cards illustrating each scenario by using these pictures, were created. The meaning of the symbols was explained to the respondents, who then compared the three plastic cards representing each choice set.

For an example of a choice set along with a symbolic illustration and a table with all scenarios used in the CE, see Appendix 3.

4.6.2 Modelling choices

There are several ways of analysing discrete choice responses from CEs, and the choice is mainly dependent on the distributional assumptions of the error terms. In the field of environmental valuation, various types of logged odds (logit) models seem to dominate.

The conditional (or standard) logit model imposes several restrictions on the coefficients of the model. Two of these are of relevance in this study. First, the coefficients of the independent variables are assumed to be the same for all respondents. Second, the error terms (denoted e_{ij} in 4.6.1) are assumed to be independently and identically distributed (IID) with an extreme value (Weibull) distribution:

$$P(e_{ij} \leq t) = F(t) = \exp(-\exp(-t))$$

This means that error components of different scenarios can not be correlated. Further, this leads to the "independence from irrelevant alternatives" (IIA) property, which predicts that a change in one attribute of an alternative changes the probability for other alternatives proportionately so that the ratios of probabilities remain unchanged (Greene 2003).

The random parameter (or mixed) logit model relaxes the restrictions mentioned above. As the name indicates the parameters are allowed to vary randomly over respondents, which means that no IIA assumption is needed. Also, the dependence of unobservable variables over choices is explicitly modelled.

In this study, a conditional logit model was used to analyse the results from the CE. The IIA assumption of this model is particularly inappropriate when the attributes are close substitutes (Laitila 2001). In this case however, the attributes can not be regarded as substitutes. Furthermore, if a variable that explains a large proportion of the taste variation in the sample

is controlled for, in this case whether the respondent belongs to the Palasi locals or to the PCDP staff, the IIA assumption is less problematic (DeMaris 1998).

The specification of the conditional logit model, using the same notation as in 4.6.1, is

$$P[U_{ig} > (U_{ih}) \forall h \neq g] = \frac{\exp(\mu x_{ig})}{\sum_j \exp(\mu x_{ij})}$$

where μ is a scale parameter, inversely proportional to the standard deviation of the error distribution. It is usually assumed to be unity as it can not be separately identified (Hanley, Mourato & Wright 2001). The model is estimated using conventional maximum likelihood procedures.

5 RESULTS

In this chapter, the answers to questions 6 to 12 in the local questionnaire and question 6 to 16 in the staff questionnaire are presented (see Appendix 1). The answers to questions 13 to 15 in the local questionnaire and questions 17 to 19 in the staff questionnaire are not dealt with in this paper.

5.1 Opinions on the PCDP

The answers to question 6B in the local questionnaire and question 6 in the staff questionnaire (“Do you think that the situation in Palas improved or worsened since the start of the PCDP?”) are shown in Figure 3.

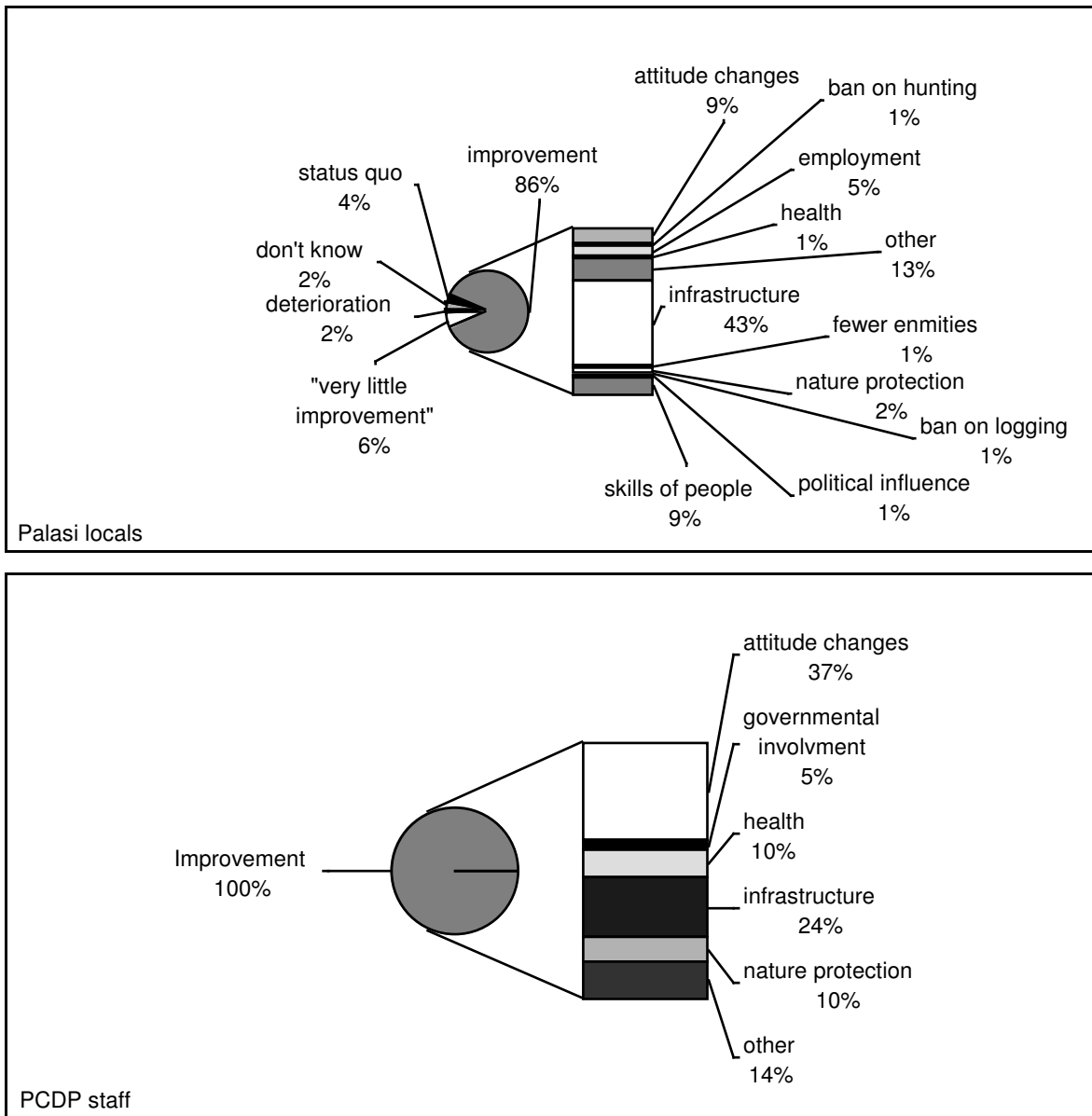


Figure 3. Opinions on development in Palas among locals and the PCDP staff.

A strong majority in both sub-samples think that the situation has improved. While the PCDP staff considers attitude changes to be the most important improvements, locals in general

stress different improvements in infrastructure (roads, bridges, water channels, electricity, sanitation etc). Two locals stated that the situation had worsened since the start of the PCDP, and both said that this was due to increasing enmities over various project benefits among people. On the other hand, one local said that there were fewer enmities now as the PCDP project had united people in the development process.

The answers to question 6D in the local questionnaire and question 8 in the staff questionnaire (“Which objective do you think is of most importance for the PCDP?”) are shown in Figure 4.

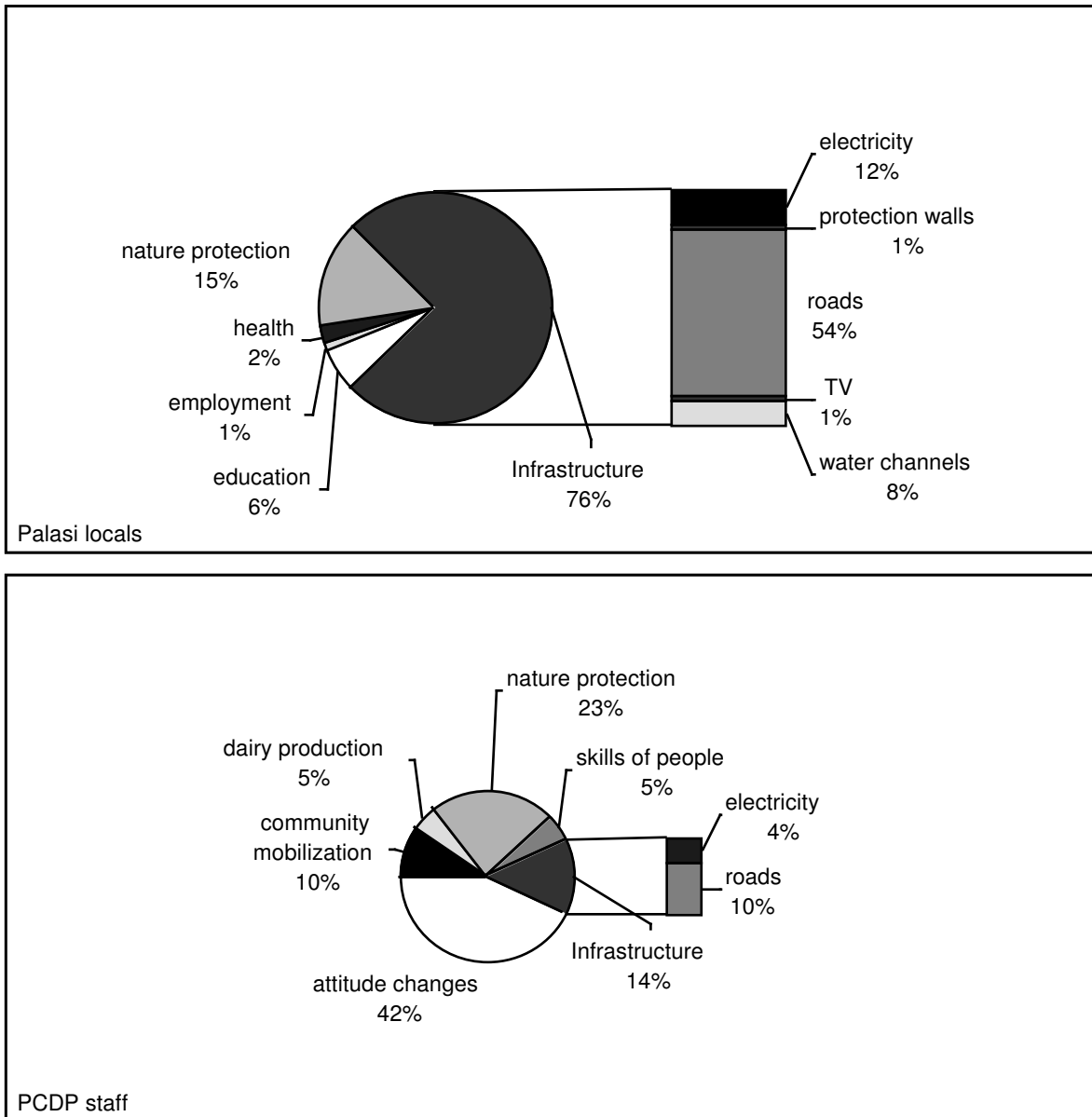


Figure 4. Opinions on most important PCDP objectives among locals and the PCDP staff.

There is a large difference in focus between the two sub-samples – locals stress physical infrastructure, in particular roads, while the PCDP staff in general sees attitude changes as more important. The category “attitude changes” is however hard to interpret, as it implies a means to achieve something, presumably better environmental protection and increasing development opportunities. Also, some of the categories concerning infrastructure can be seen as a means of changing attitudes by making the valley more open to the outside world (which

was the motivation given by the person who stated “television” as the most important PCDP objective). The size of the category “education” can be attributed to the large proportion of teachers in the Palasi local sub-sample.

The answers to question 6C in the local questionnaire and question 7 in the staff questionnaire (“Do you think that the PCDP listens to the opinions of the locals?”) are shown in Figure 5.

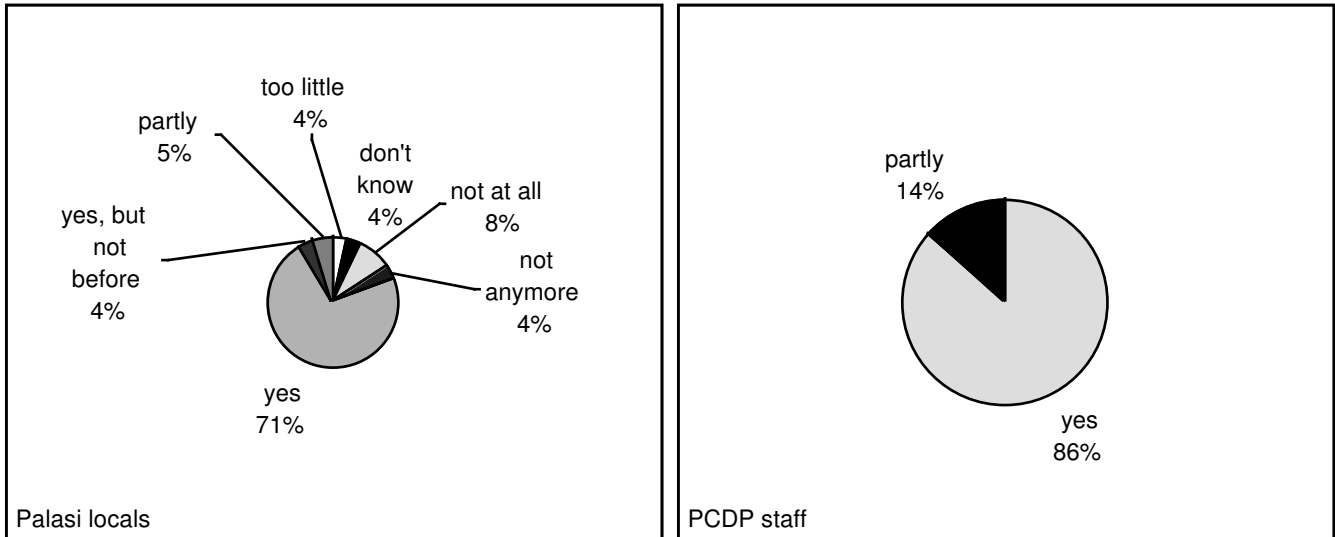


Figure 5. Opinions on local influence in the PCDP work among locals and the PCDP staff.

A strong majority of both sub-samples consider the local influence sufficient, although many locals stressed that councils should meet more frequently than once a month.

The answers to question 6E in the local questionnaire and question 9 in the staff questionnaire (“Do you think that the PCDP intervenes in areas in which it should not?”) are shown in Figure 6.

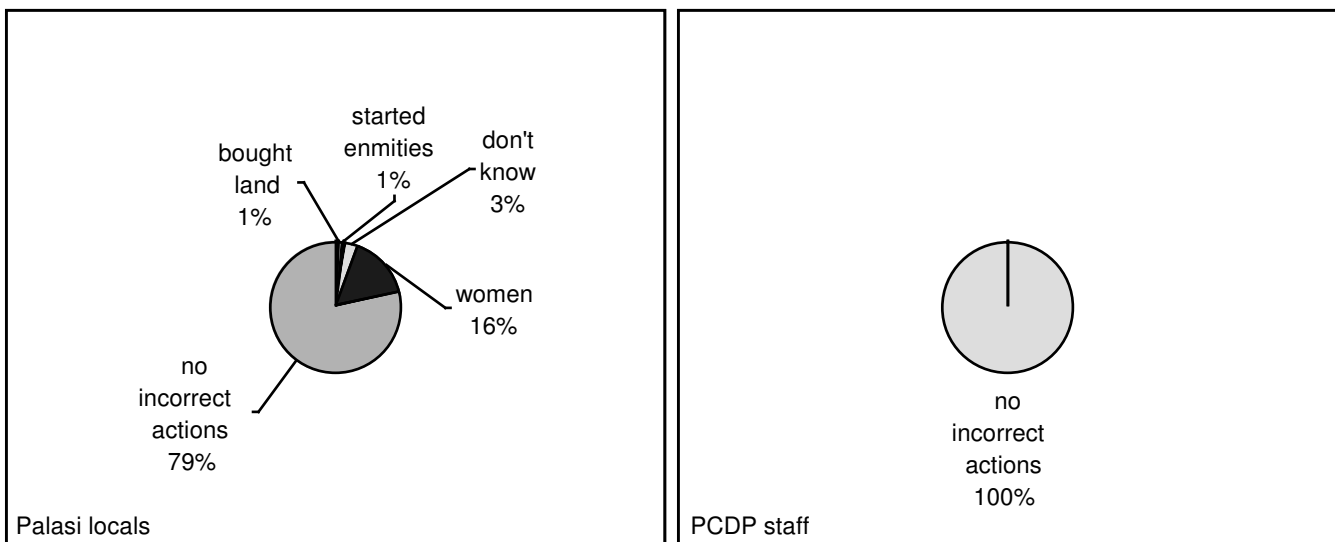


Figure 6. Opinions on incorrect PCDP actions among locals and the PCDP staff.

As can be seen, all members of the PCDP staff and most locals do not consider that PCDP has ever acted incorrectly. A majority of the criticism concerned the women’s health camp that

was arranged in the village of Sherakot. Some of the respondents claimed that the PCDP staff had been taking pictures of the women. It is not known whether this was really the case. Two of the locals dismissed the claims as nothing but rumours.

The answers to question 6F in the local questionnaire and question 10 in the staff questionnaire (“Do you think that the PCDP could improve its work somehow?”) are shown in Table 5.

Suggestions	No locals	No PCDP staff
don't know	3 (4%)	0
no suggestions	44 (59%)	18 (78%)
should be a shina-speaking person representing the Palasi people in PCDP	2 (3%)	1 (4%)
should employ locals also for other positions than field staff	1 (1%)	0
should employ more locals	2 (3%)	0
should focus more on construction work	1 (1%)	1 (4%)
should focus on education	1 (1%)	0
should focus on abating illegal logging	2 (3%)	0
should focus on join CBO:s into one big committee	1 (1%)	0
should ignore personal interests of small but influential Palasi minority	4 (5%)	1 (4%)
should not waste funds on travels	4 (5%)	1 (4%)
should pick people for training inside the valley, not only in Pattan	1 (1%)	0
should also pick up illiterate people for training	1 (1%)	0
should prioritize construction work over employing locals	1 (1%)	0
should prioritize construction work over training	1 (1%)	0
should provide materials but leave construction work to locals	1 (1%)	0
should set up head office inside valley	1 (1%)	0
should work more through CBO:s	2 (3%)	0
should work through the religious leaders	2 (3%)	0
should spend more time in valley	0	1 (4%)

Table 5. Suggestions on how to improve PCDP actions. Some respondents gave more than one suggestion.

In addition to the suggestions above, twelve respondents from the local sub-sample expressed suspicion about the use of project funds. There are apparently rumours that an established proportion of the total PCDP funding is to be used for practical development works in the valley. However there exists no such rule, although the project has a specific budget structure that reflects how much is to be used for practical development work (Klaus Euler pers comm).

5.2 Ranking environmental goods

The answers from the ranking questions were analysed by comparing the average rankings of the six environmental goods with each other and between the two sub-samples. The highest ranking was given the score 1, the second highest score 2 etc. If the respondent stated that some goods were equally important, they were given the same score (i.e. all goods were given the score 1 if the respondent considered them all equally important).

As the rankings are not normally distributed (see Appendix 4), and the PCDP staff sub-sample is much smaller than the Palasi local sub-sample, the non-parametric Mann-Whitney *U*-test was used when checking for significant differences. The results can be seen in Tables 6, 7 and 8.

Environmental good	Avarage ranking locals	Avarage ranking PCDP staff	Significance of difference
Western Tragopan	1.39	1.00	0.0078
Morel mushroom	1.52	1.82	0.0061
Wild honey	1.63	1.86	0.0398
Musk Deer	1.71	1.68	0.8716
Leopard	2.04	1.82	0.1799
Black Bear	2.08	1.95	0.5737

Table 6. Ranking of six Palasi environmental goods in the two sub-samples, and significance of differences in ranking (p-values) between the sub-samples (values in inverted cells are not significant if $\alpha=0.1$). The goods are listed in order of average ranking in the Palasi local sub-sample.

	Western Tragopan	Morel mushroom	Wild honey	Musk Deer	Leopard	Black Bear
Western Tragopan	-					
Morel mushroom	0.2576	-				
Wild honey	0.0046	0.1000	-			
Musk Deer	0.0017	0.0428	0.5716	-		
Leopard	0.0000	0.0000	0.0001	0.0018	-	
Black Bear	0.0000	0.0000	0.0000	0.0008	0.7559	-

Table 7. Significance of differences (p-values) of rankings of six Palasi environmental goods in local sub-sample (values in inverted cells are not significant if $\alpha=0.1$).

	Western Tragopan	Morel mushroom	Wild honey	Musk Deer	Leopard	Black Bear
Western Tragopan	-					
Morel mushroom	0.0000	-				
Wild honey	0.0000	0.6973	-			
Musk Deer	0.0000	0.3092	0.1596	-		
Leopard	0.0000	0.9614	0.6877	0.3912	-	
Black Bear	0.0000	0.3406	0.5174	0.0772	0.3681	-

Table 8. Significance of differences (p-values) of rankings of six Palasi environmental goods in PCDP staff sub-sample (values in inverted cells are not significant if $\alpha=0.1$).

As can be seen, in both sub-samples the Western Tragopan was given the highest average ranking, but the locals rank it significantly lower than the PCDP staff does. Notably, all respondents in the PCDP staff sub-sample ranked the bird as the most important good. While wild honey and Morel mushroom were given significantly higher rankings by the locals compared to the PCDP staff, the differences in rankings of Musk Deer and Black Bear are highly insignificant. The difference in ranking of Leopard is also insignificant if $\alpha=0.1$.

The differences in rankings within the Palasi sub-sample are significant in all but three cases: the difference between the Western Tragopan and the Morel mushroom is insignificant, as is the difference between wild honey and the Musk Deer and between Leopard and the Black Bear.

The differences in ranking within the PCDP staff sub-sample are all insignificant if $\alpha=0.1$, except for the higher ranking of Western Tragopan compared to all other goods and the higher ranking of Musk Deer compared to Black Bear. However the insignificant differences might still be worth considering, as a high proportion of the PCDP staff population was included in the sample.

In order to detect order bias, i.e. that the order in which the goods are presented to the respondent affects the results, the sample was divided into two groups. These groups were supposed to have been given the alternatives in different order. However in practice this

method did not work out, as most respondents asked the interpreter to repeat certain goods once.

Although not asked for, many respondents gave reasons for their rankings. The motives are summarised in Table 9.

Environmental good	Reasons for high rankings		Reasons for low rankings	
	Locals	PCDP staff	Locals	PCDP staff
Black bear			dangerous (18) unimportant (2)	Widespread (2)
Leopard	income from hunting (1)		dangerous (16) unimportant (1)	
Morel mushroom	medical effects (3) income (8)			
Musk Deer	income from hunting (5)	rare (3)		
Western Tragopan	harmless (2) hunting (4) beautiful (1) key to development (4) rare (3)	rare (6)	unimportant (2)	
Wild honey	income (4)		unimportant (1)	

Table 9. Stated motives for high and low rankings in the two sub-samples.

5.3 Contingent valuation of the Western Tragopan

All respondents knew about the Western Tragopan. 49% of the locals and 50% of the members of the PCDP staff had seen the male (respondents who claimed to have seen the female only were not included, as some clearly had confused it with the rather similar Koklas Pheasant (*Pucrasia macrolopha*)¹. In the PCDP staff sub-sample all respondents stated that they would appreciate the existence of the Western Tragopan irrespective of whether they ever saw it (again). In the Palasi local sub-sample the same was true for 97.5% of the respondents. Many locals expressed suspicion about the PCDP work to protect the Western Tragopan, wondering if there were any hidden objectives. However, 96% of the locals agreed that protecting the bird was a righteous objective, although 6% stated that too many human and monetary resources were used for this. 3% of the locals had no opinion on this objective, and 1% disagreed with it.

Before analysing the WTP questions, box-plots from the two sub-samples were drawn in order to identify outliers – very high or low stated WTP in relation to monthly income (see Figure 7). Nine observations from the Palasi local sub-sample were omitted, as well as one observation from the PCDP staff sub-sample. Also, respondents who stated a WTP despite having no income, in total seven people from the Palasi local sub-sample, were not included.

¹ Many Palasi locals consider the Western Tragopan to be three different species: "jijil" (the male), "mach jijil" (the female) and the "jijil that glows" (the male displaying florescent breast feathers during courtship).

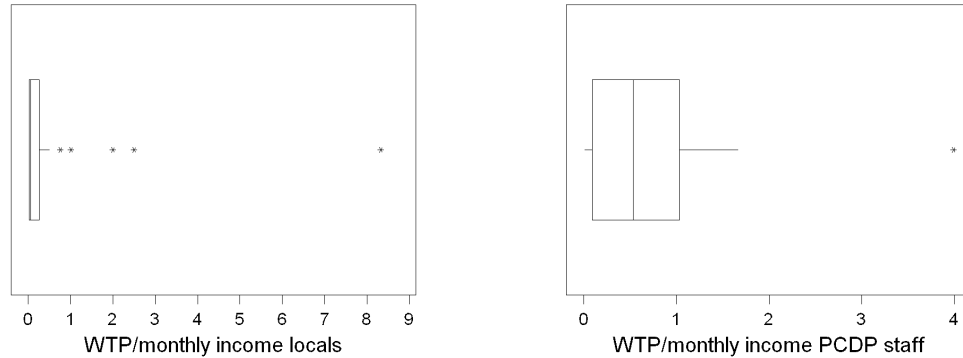


Figure 7. Box-plots on WTP/income ratios among Palasi locals and the PCDP staff. The vertical line inside the box marks the median ratio value, and the box frames the second and third quartile of values (note that the median line almost converges with the line that marks the lower boundary of the second quartile in the left box-plot). The whiskers are drawn to the most extreme value within 1.5 times the range of the second and third quartiles (i.e. the box). Values beyond this range are considered outliers and are marked with *.

The average WTP was 375 Rs in the Palasi local sub-sample and 6295 Rs in the PCDP staff sub-sample.

To roughly estimate the Palasi people's total monetary valuation of the Western Tragopan, the average WTP of the sample (assumed to be representative for people having an income in the population) was divided by the average number of dependants (assumed to have no income and hence no WTP). The result is a per capita WTP of c 50 Rs, and a total aggregate valuation of c 3 million Rs for the whole population (60 000 people), keeping in mind the difficulties involved in aggregating expressions of ordinal utility (see 2.4.3). Assuming that there are 300 pairs of Western Tragopan in the valley, a valuation based on the market price of male skins would be $300 \times c 400 \text{ Rs} = c 120\,000 \text{ Rs}$.

The WTP results were also analysed using multiple regression with stated WTP as the dependent variable. The explaining variable of interest in this study is the dummy variable describing the respondent as either "Palasi local" or "PCDP staff" (the name of the variable is "PCDP" in the Minitab output below). To get a correct estimation of the coefficient of this dummy, eight other variables assumed to be correlated with WTP were controlled for:

- Monthly income ("Income" and "Income 2" in the Minitab output below). In regard to the Palasi locals, monthly monetary income must be regarded a proxy for actual wealth. As many respondents rely on subsistence livelihoods, this variable probably systematically underestimates the real assets held by locals. However, no plausible way to control for this was identified.
- Age ("Age"). In general, CV-studies show a negative correlation between age and WTP for environmental goods (i.e. Reaves et al 1999, Jakobsson & Dragun 1996, Olsson 2001).
- Main occupation ("NonFarm"). A distinction was made between agriculturists (farmers and herdsman) and others.
- Number of dependants ("Depends"). This variable should be negatively correlated with WTP, as any income is shared by more people (Jakobsson & Dragun 1996).

- Opinion on development in Palas since the start of the PCDP (“Impr” and “NoImpr”). This dummy variable, taking on the levels “improved”, “not improved” and “worsened”, was controlled for in order to detect protest bidding. As the money in the hypothetical scenario is paid to the PCDP, so-called payment vehicle bias could emerge if the respondent’s opinion of the PCDP affected the WTP.
- Opinions on local influence in PCDP (“Influ”). This dummy variable took on the levels “local influence” and “no local influence”. It was included for the same reason as the “Impr” and “NoImpr” variables.
- Physical experience of Western Tragopan (“SeenWT”). Also a dummy variable, taking on the levels “seen the bird” and “have not seen the bird”.
- An interaction variable between age and income (“Age*Income”).

Considering the low literacy level in Palas, it is likely that members of the PCDP staff are more educated than are locals in general. Educational level could be correlated with WTP, but the variable was not controlled for as it probably would have caused a multicollinearity problem. The same applies to the respondents’ place of residence. Olsson (2001) showed that people with urban residence have higher WTP for environmental goods providing certain amenity services such as recreation. This can be explained by larger marginal utilities from such services among urban dwellers. However, place of residence was not controlled for as many on the PCDP staff come from urban areas whereas all Palasi locals must be considered rural residents.

When trying to find the best model, three different approaches were used:

- 1 All possible regressions including the “PCDP” independent dummy were tested, and the model with the highest adjusted R^2 value was chosen. (Two different models had a value of 79.8, and the model containing fewer independent variables was chosen.)
- 2 Multiple regression was applied to the full model. Then the least significant variables were omitted one by one, which increased the adjusted R^2 value. The procedure was stopped when the R^2 value was at its highest.
- 3 The Minitab Stepwise regression routine was applied to the whole model, with a threshold level (α) set to 0.15 for inclusion/exclusion of variables (for details on how this routine works see Aczel & Saunderrandian 2002, p 585; Figure 11-45).

Scatter-plots on the relation between WTP and the independent variables were drawn in order to discover non-linearity and heteroskedasticity. The relation between WTP and income is non-linear - R^2 increases when using a non-linear functional form compared to linear regression. Therefore a 2nd order polynom was used in the multiple regression model.

When looking at the scatter-plots, there appears to be heteroskedasticity in the relation between WTP and the “Age” and “Depends” variables, although it is not certain as there are few observations in the upper parts of the WTP range. In case of heteroskedasticity, the coefficients are still unbiased (although not BLUEs, i.e. Best Linear Unbiased Estimators) using an ordinary least square (OLS) regression but the T-statistics (and hence p-values) are

not correct. To test for heteroskedasticity in a more formal way, a Breusch-Pagan test was applied to the models derived in approaches 1 and 2 (i.e. the independent variables were regressed on the squared residuals from the original regressions). In both cases the F-value was positive and highly significant ($p < 0.0001$), implying correlation between the size of the residual and one or more independent variables. To correct for this, T-statistics and p-values for the variables were recalculated using White's heteroskedasticity-robust estimator of variance,

$$\widehat{Var}(\hat{\beta}_j) = \frac{\sum_{i=1}^n \hat{r}_{ij}^2 \hat{u}_i^2}{SSR_j^2}$$

(where u_i denotes the i^{th} residual from the original regression, r_{ij} is the i^{th} residual from regressing the independent variable j on all other independent variables, and SSR_j is the sum of squared residuals from that regression, see Wooldridge 2003, p 260, for details), and the results are given below together with the usual T-statistics and p-values from the Minitab output of approach 1 and 2. Before deriving the standard error by taking the square root of the variance estimation above, it was multiplied by $n/(n-k-1)$ (where n = number of observations and k = number of independent variables) in order to obtain the usual OLS standard errors in the case of homoskedasticity.

The outputs from the three procedures are given below (the T- and p-values within brackets are calculated using White's variance estimator).

Approach 1:

The regression equation is						
WTP = - 2253 + 934 PCDP + 205 Age - 86.8 Depends + 45 Influ +0.000006 Income 2						
+ 0.387 Income + 344 SeenWT - 20.3 Inc*Age						
73 cases used 34 cases contain missing values						
Predictor	Coef	SE Coef	T		P	
Constant	-2253	1214	-1.86		0.068	
PCDP	933.7	709.4	1.32	(1.08)	0.193	(0.289)
Age	204.9	166.0	1.23	(0.87)	0.222	(0.402)
Depends	-86.77	43.18	-2.01	(-1.22)	0.049	(0.224)
Influ	44.6	600.6	0.07	(0.12)	0.941	(0.901)
Income 2	0.00000577	0.00000396	1.46	(0.92)	0.150	(0.211)
Income	0.3865	0.2170	1.78	(1.16)	0.080	(0.253)
SeenWT	343.6	418.6	0.82	(0.79)	0.415	(0.420)
Inc*Age	-20.34	19.82	-1.03	(-0.69)	0.309	(0.507)
S = 1714 R-Sq = 82.0% R-Sq(adj) = 79.8%						
Analysis of Variance						
Source	DF	SS	MS	F	P	
Regression	8	857507218	107188402	36.47	0.000	
Residual Error	64	188082880	2938795			
Total	72	1045590098				
Source	DF	Seq SS				
PCDP	1	336012512				
Age	1	48541077				
Depends	1	63579832				
Influ	1	198930				
Income 2	1	395705955				
Income	1	8302751				
SeenWT	1	2071413				
Inc*Age	1	3094748				

Approach 2:

The regression equation is

$$\text{WTP} = -961 + 1601 \text{ PCDP} + 32.0 \text{ Age} - 70.6 \text{ Depends} + 0.127 \text{ Income} + 0.000010 \text{ Income 2}$$

77 cases used 30 cases contain missing values

Predictor	Coef	SE Coef	T		P	
Constant	-960.6	714.6	-1.34		0.183	
PCDP	1601.3	645.5	2.48	(1.92)	0.015	(0.082)
Age	31.96	19.82	1.61	(1.50)	0.111	(0.142)
Depends	-70.63	41.07	-1.72	(-1.66)	0.090	(0.099)
Income	0.12739	0.09666	1.32	(1.14)	0.192	(0.267)
Income 2	0.00001000	0.00000248	4.03	(2.66)	0.000	(0.010)

S = 1705 R-Sq = 80.6% R-Sq(adj) = 79.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	5	856789014	171357803	58.93	0.000
Residual Error	71	206466632	2907981		
Total	76	1063255646			

Source	DF	Seq SS
PCDP	1	352749540
Age	1	48014746
Depends	1	62202313
Income	1	346549195
Income 2	1	47273219

Approach 3:

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is WTP on 11 predictors, with N = 73
N(cases with missing observations) = 34 N(all cases) = 107

Step	1	2	3
Constant	268.5	-951.5	-697.2
Income 2	0.00002	0.00001	0.00001
T-Value	15.04	3.18	3.60
P-Value	0.000	0.002	0.001
Income		0.286	0.191
T-Value		3.17	1.83
P-Value		0.002	0.072
PCDP			1197
T-Value			1.73
P-Value			0.089
S	1875	1766	1742
R-Sq	76.12	79.12	79.98
R-Sq(adj)	75.78	78.52	79.11
C-p	14.1	5.6	4.6

Compared to other WTP studies the adjusted R^2 values are unexpectedly high in all three approaches, while quite few variables are highly significant. This could be attributed to multicollinearity, i.e. strong correlation between two or more independent variables. However, regressing the independent variables against each other did not reveal any such correlations. Instead, the high adjusted R^2 value is linked to the strong correlation between monthly income and WTP. Around 65% of the total variation around the average WTP for the whole sample is

explained by this variable only. This leaves little “room” for other variables to explain any variation. Indeed many respondents stated WTP as a proportion of their income, usually between 10 and 25%. Omitting the income variables would perhaps improve the estimates of some of the other coefficients, but it would also make the comparison between the two sub-samples much more difficult as the average difference in income between the PCDP staff and the locals is considerable.

When interpreting the coefficients, it is important not to solely focus on their statistical significance (T- and p-values), but also consider their economic significance expressed as size. Although not significant using approach 1 (but clearly so in approaches 2 and 3), the “PCDP” dummy assigning the respondents to either sub-sample has a big impact on WTP. Members of the PCDP staff are willing to pay between 900 and 1600 Rs more to save the bird from extinction than locals, keeping other variables fixed.

Significantly positive, the coefficient of the “Income” variable predicts people to be willing to pay somewhere between 0.13 and 0.4 Rs more for each 1 Rs increase in income. Significant using approach 1 and 3 and slightly insignificant using approach 1, the “Income 2” variable indicates an increasing marginal effect of income on WTP. Almost or slightly insignificant when using the heteroskedasticity-robust measures, the coefficient of the “Depends” variable predicts people to be willing to pay somewhere between 70 and 90 Rs less for each additional dependant they support.

The dummy variable “SeenWT” has an insignificant, positive, large coefficient, and was omitted in approaches 2 and 3. The coefficient of “Age” is also positive and quite large. However it is insignificant, especially when looking at the heteroskedasticity-robust measures. The interaction variable “Income*Age” predicts the positive effect of income on WTP to decrease as a person gets older. But this variable is also insignificant.

The coefficients of the variables “Influ”, “NoImpr”, and “Impr” are all highly insignificant and the latter two were not included in any approaches. The coefficient of the dummy “NonFarm” has a negative sign and is rather big, which suggests that agriculturists have a higher WTP. The coefficient is however insignificant, and the variable was omitted in all approaches.

5.4 Choice Experiment

The conditional logit model was done using the statistical software Limdep. The levels of all attributes were considered discrete, and so they were dummy coded using the status quo scenario as a baseline option (i.e. logging forbidden everywhere, populations of Black Bear and Western Tragopan stable, ten visiting tourists per year, hunting of threatened species forbidden, see Appendix 3).

Only one personal characteristic was controlled for, namely the dummy assigning the respondent to either sub-sample. The main reason for this was that since personal characteristics are constant across choice occasions for each respondent they can only be entered into the model as interaction terms, i.e. interacted with the attribute levels or alternative specific constants (Bennet & Blamey 2001). Therefore the number of parameters increases markedly for each additional characteristic included, and this increases the number of degrees of freedom and reduces statistical efficiency. Also, the income variable was

assumed to have little effect on the choices of the respondents, as no monetary variable was included.

Alternative specific constants are useful when analysing choices between labelled (named) scenarios, as their coefficients describe effects on the choices that are not linked to the attributes (e.g. the label of the scenario). In this case, the alternatives are not labelled, but generic, which makes alternative specific constants of little use. The dummy assigning the respondent to either sub-sample was interacted with the attribute levels in order to see if each attribute had a different effect on the choices of the PCDP staff compared to the choices of the locals.

Below is the Limdep output after omitting the most insignificant variables ($p > 0.8$):

```

--> clogit; lhs=choice, NIJ
      ; rhs=szlogg, logga, bext, wtx2, wtext, tour500, notour, hunta,
      szloggs, loggas, bexts, wtexts, huntas $
Normal exit from iterations. Exit status=0.

+-----+
| Discrete choice (multinomial logit) model |
| Maximum Likelihood Estimates              |
| Model estimated: Nov 01, 2004 at 00:20:46PM. |
| Dependent variable                       Choice |
| Weighting variable                       None |
| Number of observations                    225 |
| Iterations completed                      7 |
| Log likelihood function                   -152.4318 |
| Log-L for Choice model =                  -152.43178 |
| R2=1-LogL/LogL* Log-L fncn R-sqrd RsqAdj |
| No coefficients   -247.1878 .38334 .36499 |
| Response data are given as ind. choice. |
| Number of obs.= 225, skipped 0 bad obs. |
+-----+

+-----+-----+-----+-----+-----+
|Variable | Coefficient | Standard Error |b/St.Er. |P[|Z|>z] |
+-----+-----+-----+-----+-----+
|SZLOGG   | 1.456646592 | .82220314      | 1.772    |.0765
|LOGGA    | 1.242684154 | .80487537      | 1.544    |.1226
|BEXT     | -.4420786044 | .33402652      | -1.323   |.1857
|WTX2     | .8700007140 | .96460735      | .902     |.3671
|WTEXT    | -.4887618508 | 1.0061792      | -.486    |.6271
|TOUR500  | -.6627337072 | .89525229      | -.740    |.4591
|NOTOUR   | -1.599232148 | .86353156      | -1.852   |.0640
|HUNTA    | .1468565401 | .39431095      | .372     |.7096
|SZLOGGS  | 2.774541200 | .77323265      | 3.588    |.0003
|LOGGAS   | 1.867103449 | .77347110      | 2.414    |.0158
|BEXTS    | -.9603351416 | .68556585      | -1.401   |.1613
|WTEXTS   | -1.830549482 | .73376517      | -2.495   |.0126
|HUNTAS   | -1.532984803 | .76823878      | -1.995   |.0460

```

The notation used is the following: SZLOGG = logging allowed in sustainable use zones only; LOGGA = logging allowed everywhere; BEXT = Black Bear exterminated from valley; WTX2 = population of Western Tragopan doubles in the valley; WTEXT = Western Tragopan exterminated from valley; TOUR500 = 500 tourists visit the valley each year; NOTOUR = no tourists visit the valley each year; HUNTA = hunting allowed for all species; SZLOGGS = effect on SZLOGG from being in the PCDP staff sub-sample; LOGGAS = effect on LOGGAS from being in the PCDP staff sub-sample; BEXTS = effect on BEXT

from being in the PCDP staff sub-sample; WTEXTS = effect on WTEXT from being in the PCDP staff sub-sample; HUNTAS = effect on HUNTA from being in the PCDP staff sub-sample.

The omitted variables are: BX125 = 25% increase in Black Bear population (small highly insignificant coefficient with negative sign); effect on BX125 from being in the PCDP sub-sample (highly insignificant coefficient with positive sign); effect on WTX2 from being in the PCDP sub-sample (ditto); effect on TOUR500 from being in the PCDP sub-sample (ditto); effect on NOTOUR from being in the PCDP sub-sample (highly insignificant coefficient with negative sign).

There are no simple interpretations of logit coefficients, as they express the natural logarithm of an odds (i.e. the ratio of the probability that a discrete dependant variable will take on the value 1 to the probability that it will take on the value of 0). In this study, the coefficients describe the change in the logged odds for a scenario to be chosen from a change in the level of a certain attribute. MRS between attributes can be obtained by taking the negative ratio of two coefficients. However in this case such MRS values provide little relevant information because the attributes are not continuous, but take on discrete levels.

The R^2 value reported in the output above (0.38334) is McFadden's pseudo R-square measure $1 - L_{ur}/L_0$, where L_{ur} is the log-likelihood function in the estimated (unrestricted) model and L_0 is the log-likelihood function in the model with only an intercept. If the attributes have no explanatory power, then $L_{ur}/L_0 = 1$ and R^2 is zero. In CM, R^2 values between 0.2 and 0.4 are considered adequate (Bennet & Blamey 2001, p 62).

A logit model equivalent to F-tests for OLS models is the likelihood ratio (LR) statistic. It is twice the difference in the log-likelihoods between the unrestricted and restricted model, $LR = 2(L_{ur} - L_r)$. LR has an approximate chi-square distribution under a null hypothesis, where degrees of freedom equal the number of exclusion restrictions (Wooldridge 2003, p 559).

In this case the LR test statistic is $2((-152.4318) - (-247.1878)) = 189.512$ with 13 degrees of freedom (the number of excluded coefficients when comparing the estimated model with a model with no coefficients). It is highly significant ($p < 0.01$).

The results indicate that both locals and members of the PCDP staff consider logging in sustainable use zones desirable, but the latter more so. The same applies to a hypothetical scenario in which logging is allowed everywhere. The coefficients of the attribute level describing extermination of Black Bear are both negative but clearly bigger in the PCDP staff sub-sample. Both are slightly insignificant. The coefficient of the attribute level describing the doubling of the Western Tragopan population is positive but insignificant. The difference between the sub-samples is highly insignificant. Whereas the coefficient of the attribute level describing the extermination of the Western Tragopan is quite small and insignificant in the local sub-sample, the PCDP staff clearly finds this attribute level undesirable. The hypothetical prospects of 500 yearly tourists and of no yearly tourists both resulted in negative coefficients, although the coefficient of the former attribute level was insignificant. The differences between the sub-samples were highly insignificant. The prospects of allowed hunting resulted in a small positive, but highly insignificant coefficient in the local sub-sample, while the members of the PCDP staff find this attribute level much more undesirable.

Controlling for lexicographic preferences is difficult, and beyond the scope of this study. However an ad hoc internal test was constructed, aimed at indicating lexicographic preferences in favour of the Western Tragopan compared to other attributes in the PCDP staff sub-sample. One scenario (numbered 6B, see Appendix 3), describing the doubling of the Western Tragopan population (a desirable development) combined with assumed worst case levels of the other attributes from the PCDP staff's point of view, was included. Six respondents from the PCDP staff sub-sample were presented with this choice set, and four of them chose this scenario. Based on this, lexicographic preferences can not be ruled out. Assuming their presence, it is difficult to say if they are genuine or results of rule-of-thumb strategies. The ranking question (see 5.2) could be interpreted as an indication that they are genuine.

A crucial assumption in a CE is that of stable preferences among the respondents. Testing for this would make the CE too extensive to manage within the frames of this study. However, spot checks were made during the implementation by presenting the same choice set twice to random respondents (three in the PCDP staff sub-sample and eight in the Palasi local sub-sample). None of these respondents changed their choices. This indicates that the assumption can not be rejected. Indeed it seems reasonable, as it would be surprising if respondents changed their preferences during the short time between exposures to the choice set. However, changed choices would perhaps indicate that the options were not considered properly.

5.5 Possible biases influencing the results

Some biases could be controlled for during the study and when computing the results (they are mentioned in the previous sections). Apart from these a number of other potential systematic errors might have affected the results. These are briefly summarised below.

- Strategic behaviour. According to conventional economic theory, based on the notion of people as rational utility maximisers, a respondent may give so-called strategic answers to CV-questions, rather than stating actual WTP or preference (see Carson, Flores & Meade 2001 for an in-depth review). This behaviour is linked to how likely the respondent thinks it is that his or her answers will affect real policies. Considering the outline of this study, it should be rather clear that the questions are hypothetical and so the incentives for strategic behaviour should be small.
- Warm-glow. This means that the answers can be interpreted as an act of sympathy towards the idea in the CV-question or CE-scenario rather than actual WTP or preference. This kind of bias can be linked to the "citizen commitment" discussion (see 2.3.3) and the social values of the society in which the respondent lives. It is possible that the two sub-samples expressed warm-glow to different extents.
- Part-whole bias. Included in this bias are both symbolic bias (synonymous terms are framing and embedded effects) and scope effects. Symbolic bias means that a single environmental good is valued higher than a group of environmental goods in which the single good is included. E.g. Jakobsson & Dragun (1996) reported that the WTP for preserving the threatened Australian mammal Leadbeater's Possum (*Gymnobelideus leadbeateri*) constituted 25% of the WTP for preserving all threatened species (including the Possum) in the area concerned. Since this study is comparative, symbolic bias is of little importance under the assumption that it is not correlated with the variable assigning

the respondent to either sub-sample. Also, the ranking question will hopefully counteract symbolic bias, as it reminds the respondents of other threatened species (see above). Scope effects mean that the WTP for an environmental good is inelastic with respect to changes in the supply of the good. The CE results suggest that the respondents are not insensitive to changes in the supply of the Western Tragopan, whereas scope effects regarding Black Bear can not be excluded.

- Hypothetical bias. This means that the respondent overstates his or her WTP, as there is no actual payment taking place. This kind of bias was clearly present in those respondents stating a positive WTP despite having no income. Omitting such answers, along with outliers in regard to the WTP/income ratio, has hopefully decreased the influence of hypothetical bias on the results.
- Interviewer bias. This could have been a problem if respondents from the Palasi local subsample interpreted the interviewer as a PCDDP representative or employee, or someone with the authority to fulfil personal demands, as it could have created incentives for strategic behaviour. To avoid this, it was clearly stated at the beginning of the interview that the interviewer was a student totally independent of the PCDDP. The possibility that courtesy towards the interviewer affected the answers is assumed to be negligible, considering the subject of the questions.
- Interpreter bias. As only one interpreter was available, this kind of bias could not be controlled for. The language barrier seemed to cause only minor problems during the interviews², as the quantitative nature of the questions made both them and the answers short and straightforward.

² E.g. the English word “question” can be interpreted both as “question” and “demand” when translated into Shina. Hence when the respondents were asked if they had any questions at the end of the interview, many started making personal demands.

6 DISCUSSION

6.1 Are the results valid?

By comparing the results of the different preference-eliciting approaches with each other, with external data, and with underlying theories, it is possible to get an idea of their internal validity.

Looking at the ranking question, the higher rank of Morel mushrooms compared to wild honey was expected and reasonable considering the higher market value of the former good (see 4.2). Assuming that the aggregate local valuation of the Western Tragopan derived from the CV question (see 5.3) is accurate the high rankings of the bird make sense – its value is not far from the yearly market value of Morel mushrooms. The results from the CE also support the high ranking and valuation of the Western Tragopan.

In general, the results from the CV question are consistent with underlying theories and empirical studies. As expected, the effect of income on WTP was positive. The derived income elasticity of demand for the existence of the Western Tragopan is less than 1 (between 0.13 and 0.4), as is usually the case in empirical studies of demands for environmental goods. The results indicate that marginal WTP increases with income, as suggested by the EKC, but the few observations in the upper part of the WTP range make it impossible to draw safe conclusions. No support for the general theory that WTP decreases with age can be found. The negative correlation between number of dependants and WTP was expected. Payment vehicle bias can probably be ruled out, as no correlation was found between WTP and opinions on the PCDP in terms of improvements and local influence (the positive coefficient of the variable “NoImpr” was even quite large).

Although insignificant the large positive coefficient of the “SeenWT” variable should perhaps be considered, as it seems likely that respondents with physical experience of the Western Tragopan value its existence higher – maybe as much as c 350 Rs keeping other variables fixed.

As the scenario on which the WTP is contingent does not specify any number of Western Tragopans in the valley, a compensating surplus measure for changes in the supply of the bird can not be derived, as utility and demand functions can not be drawn. However, the estimation of the Palasi population’s aggregate valuation of 3 million Rs can be interpreted as a compensating surplus for the unspecified “existence” of the bird.

Looking at the CE, all coefficients but one have expected signs. Surprisingly, the PCDP staff showed preferences in favour of allowing logging everywhere in Palas. This could be explained in several ways. The attribute was perhaps considered of less importance compared to the others in the CE. This could have resulted in a positive coefficient in this particular experimental design. The biggest and most significant coefficient was the positive effect of belonging to the PCDP staff on the probability of choosing a scenario where logging is allowed in sustainable use zones only.

Both sub-samples seemed to consider the hypothetical changes in tourist flows as undesirable. One interpretation is that the society is not prepared for large-scale tourism, but not hostile to small flows.

While being beyond the scope of this study, examining the external validity of the results, i.e. how well they predict real behaviour, could be a task for future studies aiming at a better understanding of how the Palasi locals view their natural environment.

6.2 How do the preferences diverge?

The results of this study show that the preferences differ substantially in a number of ways between the PCDP staff and Palasi locals – the benefactors and beneficiaries of interest in this study.

It is evident that locals rank the goods providing inputs to production and consumption, i.e. Morel mushroom and wild honey, higher than do the PCDP staff. This is not surprising as these services accrue to locals to a greater extent than to the staff. The higher ranking of Musk Deer among the PCDP staff might be worth considering although insignificant, as the two sub-samples presumably assign different kinds of values to it (existence-values among the PCDP staff and use-values from hunting among locals). The low rankings of Black Bear and Leopard among locals are clearly linked to their negative use-values as predators, which presumably makes protection of these species a very difficult task.

The Western Tragopan was given the highest average ranks in both sub-samples albeit not significantly higher than Morel mushroom among locals. Assuming that all relevant variables affecting WTP for the Western Tragopan have been controlled for, the difference between locals and the PCDP staff must be attributed to divergent preferences between the sub-samples. The staff clearly assigns existence-values to the bird, as they stated appreciation for the existence of it irrespective of whether they ever saw it (again). Presumably, the locals also assign some existence-values to the Western Tragopan. However it seems that what is perhaps most accurately categorised as “instrumental indirect use-values” derived from the “key to development” role of the bird, as expressed by some respondents, are more important. The direct use-value derived from hunting is probably considerable as well, but hunters also stated that they would appreciate the existence of the bird even if they never encountered it again.

In regard to possible future scenarios outlined in the CE, the PCDP staff considers biodiversity losses and hunting as more undesirable than locals do. The attributes describing these features seemed to have rather small effects on the local’s choices.

6.3 Are divergent preferences problematic?

What do the divergences in preferences between the PCDP staff and locals imply? Are they problematic at all? Different views on the importance of various matters seem to be an inevitable part of human interactions. In this case they are not surprising considering the differences in socio-economic characteristics between the two sub-samples. However, the way divergent preferences are handled is crucial for successful co-operation, certainly also in regard to conservation and development. Two factors are of major importance when bringing different views into line with each other: communication and power relationships. Both can be related to CBC in the Third World in general and to the situation in Palas in particular.

Communication is essential for understanding other people’s preferences. The PCDP main goal to safeguard the biodiversity in the valley draws heavily on the notion of existence-values, which is well established in the First World today. As indicated by the results from this study, the understanding of this concept could be less developed among the Palasi locals.

As shown by the locals' questions about "hidden objectives" behind the protection of the Western Tragopan, they find it hard to see any benefits (i.e. use-values) accruing to the PCDP staff from the existence of the bird. This suspicion, the rumours concerning various aspects of the project and the differing views on what the project should focus on between the PCDP and its beneficiaries could be attributed to flaws in the communication between the project management and the locals. The underlying ethics behind a CBC project must be understood by the beneficiaries to make it legitimate, preferably before the project starts. In this case, communicating abstract notions of existence-values to a large target population with a low literacy rate is no doubt very difficult.

Power is an intrinsic part of development, as increasingly recognised by various aid agencies. To quote Göran Hydén (2004): "*Development is to force someone to do something they would not otherwise have done*". The uneven power relationship between the PCDP and Palasi community makes the approach of the project problematic from an ethical point of view. The PCDP has financial resources to fulfil many demands of the Palasi people. However, meeting some of these, e.g. building more roads in order to improve convenience and security (through decreased possibilities for ambushes), could compromise the main project goal to safeguard the biodiversity in the valley, as improved infrastructure is likely to increase logging activities. Most probably, increased felling would be devastating for the people of the valley in a medium to long term perspective, as the forests provide vital protection from floods, erosion and earthquakes. Still, the approach taken implies a "we know what is best for you" stand that does not fit the definition of genuine CBC. The power relationships between benefactors and beneficiaries could probably be evened by deepening the participation, e.g. by including locals in the project management and letting them control project resources. But again, this could compromise the main project objectives given the preferences of the locals as elicited in this study. Also, in practice such a policy would probably be difficult to realise considering the low educational level of the locals in general and the risk of internal power struggles.

Could these problems apply to CBC in the Third World in general? There is little reason to doubt that most Third World conservation projects today have good intentions in regard to local communities, aiming at helping poor countries to avoid the mistakes made in terms of environmental degradation during the early stages of industrial development in the First World. Nevertheless, bringing resources to poor countries and spending them in ways other than those in which local communities would have done is problematic. Given that the preferences of benefactors and beneficiaries diverge, deepening the participatory approach as far as conceivable by assigning decision power and control over resources to the beneficiaries is impossible without compromising the original objectives. Here lies a paradox, at least in a semantic sense. In the deepest form of participation, development projects transform into nothing but donors of untied funds. Therefore, it can be suggested that per definition development projects can not be completely participatory without losing their *raison d'être*, and that CBC is a contradiction in terms as long as preferences affecting project objectives diverge between benefactors and beneficiaries.

From a more pragmatic point of view, the picture of the PCDP is quite different from the abstract ethical context above. Albeit not having a purely anthropocentric main objective the project is clearly people-centred, as shown by the broad variety of measures undertaken to improve the daily lives of its beneficiaries (for an overview, see www.palasyvalley.org). Criticising a project because it originates from concern over a threatened bird rather than the well-being of humans makes little sense in terms of guidance for future action (rather it

merely adds to the vast flow of “radical” academic papers on the ethics of this subject). However, from a global point of view, a presumed trend, where poor people living in areas containing high environmental values are reached by trickle-downs from First World resources aimed at nature protection to a greater extent than others, is disturbing.

The results of this study indicate that a strong majority of these believe that the situation in the valley has improved because of the project interventions. Also, a majority think that the project pays enough attention to the views of the locals, and even if some respondents were suspicious, almost all agreed with the objective to protect the Western Tragopan. Given the large target population of the project and the difficult social setting in which it operates this must be considered a good record.

Members of the PCDP staff are clearly aware of the dilemmas outlined above, as shown by the fact that most considered “attitude changes” among locals to be the most important PCDP objective. As yet education has not been included in the project interventions, but in summer 2004 a workshop was held with Palasi teachers in order to incorporate environmental issues in the primary education.

Changing people’s preferences is a delicate ethical matter. In this case, it probably requires a long term open-minded approach, with the aim of making the views of the PCDP and the locals converge rather than obtaining local consent for the original project objectives. Educational efforts only are likely to be insufficient or maybe even counterproductive considering the proud and independent attitude among the Palasi people. Arguments expressed as concrete examples of benefits from biodiversity, e.g. small-scale eco-tourism, are probably indispensable. As indicated by some respondents, the religious leaders of the valley have a key role to play because of their authority. A successful workshop on “Islam and Conservation” was conducted in March 2004 (PCDP 2004a). The religious leaders interviewed in this study were positive to future project interventions.

The implicit notion of “trading development for environmental conservation” among the PCDP staff could possibly hamper the convergence in views, as it implies negotiations where both parties strive to make good bargains for themselves. Also, the communication is likely to be less sincere in such negotiations. Rather, the project should put much effort into increasing honesty in the relation to the locals, as it is a crucial component in the present project setting and will remain so until, ideally, the commitments to environmental protection made by the Palasi locals are completely voluntary.

6.4 Policy implications

At the time of writing, it is uncertain to what extent the PCDP will continue to operate in Palas after 2004, as the main donor, the European Union, will cut its funds from January 2005. However it seems likely that some future activities will take place. Drawing from the results of this study (see e.g. 5.1.5), the following might be worth considering in regard to continued action in the valley:

- In order to avoid suspicion and rumours concerning the project, much effort should be put into honestly explaining to the beneficiaries not only the project objectives, but, more importantly, the motives and ethics behind these objectives. In particular the understanding of existence-values among the beneficiaries is probably necessary for

protection of goods that contain negative use-values, such as Common Leopard and Black Bear.

- In regard to the point above, tying a Shina-speaking (rather than Urdu-speaking) independent representative of the Palasi community to the project could improve communication and increase its credibility as perceived by locals.
- In order to avoid rumours regarding project resources, passive participation could be introduced e g by giving the community insight to parts of the accountancy. Also, cutting down on expenditures considered wasteful by locals, i e travels and hotel stays during workshops, could improve project goodwill.
- The prospects of limited logging in sustainable use zones seem attractive to the Palasi locals, which gives arguments for carrying out the strategy as stated in the second main PCDDP objective (see 3.2.1).
- The results give strong arguments for continued efforts to protect the Western Tragopan population in the valley, as the locals clearly consider it an important good for various reasons.
- Launching limited “pilot tourism” in the valley, e g showing small groups of birdwatchers the Western Tragopan, could be an important step to create immediate local awareness of the income possibilities from biodiversity.
- Drawing from the strong wishes to see the Western Tragopan among those respondents who had not yet done so, and the results from the CV question, showing the bird could be a way of creating understanding for the work to protect it among locals and increase the job motivation of the staff. However, the risk of revealing to hunters where it can be found should be considered.

7 CONCLUSIONS

This study identifies a number of divergences in preferences between Palasi locals and the PCDP staff. In particular, the locals stress physical infrastructure as the most important project objective, while the PCDP stresses attitude changes. Also, the notion of existence-values seems to be less developed among locals than among the PCDP staff. This could result in legitimacy problems in regard to project objectives. Also, divergent preferences can possibly hamper the participatory approach, as sharing management could compromise original project objectives. This conclusion could be applied to CBC in general.

However, this study concludes that divergent preferences should not be regarded a reason for discarding the concept of CBC, as proposed by some scholars, although it is clearly an obstacle.

In regard to the PCDP, the results show that most locals seem content with its interventions, that they think that the situation in Palas has improved since the start of the project, and that the PCDP listens to their opinions.

There are measures that can be taken to reduce the problems created by divergent preferences. In particular, it is crucial that the beneficiaries of a project understand the objectives and the underlying ethics behind these objectives. Therefore honest communication between benefactors and beneficiaries should be regarded a keystone in nature conservation in the Third World.

From a methodological point of view, this study concludes that CV and CE are useful tools for analysing differences in preferences between benefactors and beneficiaries of CBC projects. If visualisations of the scenarios are used, the latter approach seems to be applicable also in areas where literacy rates are low.

References

- Aczel A D, Sounderpandian J, 2002, *Complete Business Statistics* (5th edition), McGraw-Hill Irwin, Boston
- Alpizar F, Carlsson F, Martinsson P A, 2001, *Using Choice Experiments for Non-Market Valuation*, Working Papers in Economics no 52, Department of Economics, Göteborg University, Gothenburg
- Arshad M, 2003, *Species recovery plan and scientific research studies*, PCDP Consultancy report no 11
- Ashraf S, 2003, *Potential Habitat Mapping for Key Species of the Palas Valley - GIS based Potential Habitat Modeling*, PCDP Consultancy report no 8d
- Bennet J, Blamey R (eds), 2001, *The Choice Modelling Approach to Environmental Valuation*, Edward Elgar, Cheltenham/Northampton
- Brown K, 2003, *Three challenges for a real people-centred conservation*, *Global Ecology & Biogeography* 12: 89–92
- Brännlund R, Kriström L, 1998, *Miljöekonomi*, Studentlitteratur, Lund
- Campbell L M, Vainio-Mattila A, 2003, *Participatory Development and Community-Based Conservation: Opportunities Missed for Lessons Learned?*, *Human Ecology* 31 (3): 417-437
- Carson R T, Flores N E, Meade N F, 2001, *Contingent Valuation: Controversies and Evidence*, *Environmental and Resource Economics* 19 (2): 173-210
- Chambers R, 1983, *Rural Development – Putting the Last First*, Longman, Harlow
- Chambers R, 1997, *Who's Reality Counts – Putting the First Last*, ITDG publishing, London
- DeMaris A, 1998, *Logit Modelling – Practical Applications*, *Quantitative Applications in the Social Sciences* no 86, Sage, New Dehli
- Dhar U et al 1999, *People's participation in Himalayan biodiversity conservation: A practical approach*, *Current Science India* 76 (1): 36-40
- Euler K, *personal comments June-July 2004*, contact: palas@comsats.net.pk
- Fredman P, 1995, *Endangered Species – Benefit estimation and policy implications*, *Licentiate thesis*, Swedish University of Agricultural Sciences, Umeå
- Grainger A, 2001, *Tropical moist forests and development*, in Desai V, Potter R B (eds), *The companion to Development Studies*, Arnold, London
- Greene W H, 2003, *Econometric Analysis* (5th edition), Pearson Education, Upper Saddle River NJ
- Hanley N, Mourato S, Wright R E, 2001, *Choice modelling approaches: A superior alternative for environmental valuation?*, *Journal of Economic Surveys* 15 (3): 435-462
- Honey M, 1999, *Ecotourism and sustainable development – Who owns paradise?*, Island Press, Washington
- Hydén G, 2004, *Speech at University of Lund 040917*
- Iqbal M, 2002, *An updated review of logging practices in the valley*, PCDP Consultancy report no 32
- Jakobsson K M, Dragun A K, 1996, *Contingent Valuation and Endangered Species*, Edward Elgar Publishing Ltd, Cheltenham/Brookfield
- Kahneman D, Tversky A, 1979, *Prospect Theory: An Analysis of Decision under Risk*, *Econometrica*, 47 (2): 263-292

- Knudssen A, 1999, *Conservation and Controversy in the Karakoram: Khunjerab National Park, Pakistan*, Journal of Political ecology 6:1-30
- Knudsen A, 2001, *Boundaries of Belongingness in the Palas Valley, Pakistan*, Dr Polit Dissertation, Faculty of Social Science, University of Bergen, Bergen
- Kriström B, Riera P, 1994, *Is the income elasticity of environmental improvements less than one?*, Environmental and Resource Economics 7: 45-55
- Laitila T, 2001, *Val av färdmedel vid arbetsresor – En analys av bensinprisets betydelse*, Transportforskningsenheten (TRUM) 2001:1, Umeå University, Umeå
- Mehta J N, Kellert S R, 1998, *Local attitudes toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area*, Environment Conservation 25 (4): 320-333
- Mikkelsen B, 1995, *Methods for development work and research: guide for practitioners*, Sage, New Dehli
- Mowforth M, Munt I, 2003, *Tourism and sustainability – Development and new tourism in the third world*, Routledge, London
- Nelson R H, 2003, *Environmental Colonialism: "Saving" Africa from Africans*, Independent Review 8 (2): 65-87
- Neumann R P, 1998, *Imposing Wilderness: Struggles over Livelihood and Nature Preservation in Africa*, University of California Press, Berkeley/Los Angeles
- Oates J F, 1999, *Myth and Realities in the Rain Forest: How Conservation Strategies are Failing in West Africa*, University of California Press, Berkeley/Los Angeles
- Olsson B T, 2001, *Multi-nation contingent valuation - A comparative study of ranking and values of environmental problems*, EEU working paper 2001:13, Göteborg University, Gothenburg
- PCDP 2001, *Overall Workplan, Overall Targets, Overall Budget 1 July 2001 – 31 December 2005*, available at www.palassetvalley.org
- PCDP 2002, *Baseline report from data collected during Himalayan Jungle Project*
- PCDP, 2004a, *Quarterly Progress Report 1st January 2004 – 31st March 2004*, available at www.palassetvalley.org
- PCDP 2004b, www.palassetvalley.org, webpage visited 041025
- Perman R, Ma Y, McGilvray J, Common M, 2003, *Natural Resource and Environmental Economics*, 3rd ed, Pearson Education Ltd, Harlow
- Reaves D E, Kramer R A, Holmes P A, 1999, *Does question format matter? Valuing an endangered species*, Environmental and resource economics 14: 365-383
- Rehman F, *personal comments June-July 2004*, contact: fazalurrehmanpak@yahoo.co.uk
- Rudqvist A, 1991, *Fieldwork Methods for Consultations and Popular Participation*, Popular Participation Programme Working Paper No 9, Department of Social Anthropology, Stockholm University, Stockholm
- Sachs W (ed), 1999, *The Development Dictionary*, Witwaterstrand University Press, Johannesburg
- Sahibzada N A, 2002, *Design Messages and Action that Link Conservation and Development*, PCDP Consultancy report no 7
- Sen A, 1987, *On Ethics and Economics*, Blackwell, Oxford

Tarp F, Hjertholm P (eds), 2000, *Foreign aid and development: lessons learnt and directions for the future*, Routledge, London

Vredin Johansson M, 1999, *Economics without markets: four papers on the contingent valuation and stated preference methods*, working paper, Department of Economics, Umeå University, Umeå, available at <http://swopec.hhs.se/umnees/abs/umnees0517.htm>

Wooldridge J M, 2003, *Introductory Econometrics – A Modern Approach* (2nd edition), Thomson South Western, Mason

Appendix 1

Questionnaire for interviews with locals

(The interviewer introduced himself as an independent [not PCDP] actor and explained the aim of the interview, how the results were to be used, and that the respondent would remain anonymous. Then the respondent was asked if he had any questions before starting.)

- 1 Sex
- 2 Age
- 3 Place of residence in the Palas Valley
- 4 Profession
- 5 Number of dependants in family
- 6 Do you know of the PCDP and its work?
 - A If yes: are you involved in any PCDP activities?
 - * If yes: which?
 - B Do you think that the situation in Palas has improved or worsened since the start of the PCDP?
 - * If worsened: in what way?
 - * If improved: in what way?
 - C Do you think that the PCDP listens to the opinions of the locals?
 - D Which objective do you think is of most importance for the PCDP?
 - E Do you think that the PCDP intervenes in areas in which it should not?
 - * If yes: what areas?
 - F Do you think that the PCDP could improve its work somehow?
 - * If yes: how?
- 7 Rank the following Palasi environmental goods according to importance:
 - Western Tragopan
 - Morel mushroom
 - Snow leopard
 - Wild honey
 - Musk Deer
 - Black Bear
- 8 Choice experiment. I will describe three scenarios to you: one that describes the present situation and two hypothetical ones. Which do you prefer?

(A picture of the Western Tragopan was shown and its status was described).
- 9 Have you ever seen the Western Tragopan?
 - A If yes: would you miss it if it disappeared? Would you appreciate the existence of the bird even if you never saw it again?
 - B If no: would you like to see the bird? Would you appreciate the existence of the bird even if you will never see it?
- 10 Suppose that the bird was to be extinct. The PCDP launches a project that will save it. Would you be willing to pay anything if you knew that the money would save the Western Tragopan?
 - A If yes: how much?
- 11 What is your monthly income?
- 12 Do you think it is right that the PCDP is trying to protect the bird?
 - A If yes: why?
 - B If no: why not?
- 13 Would you like it if more tourists visited the valley?
- 14 Do you believe that other people in Palas would object if more tourists visited the valley?
- 15 Do you think that female tourists can also visit the valley?

(The respondent was asked if he had any additional questions or further comments. Any unclear points were solved.)

Note that the answers to questions 13 to 15 are not dealt with in this paper.

Questionnaire for interviews with the PCDP staff

(The interviewer introduced himself as an independent [not PCDP] actor and explained the aim of the interview, how the results were to be used, and that the respondent would remain anonymous. Then the respondent was asked if he had any questions before starting.)

- 1 Sex
- 2 Age
- 3 Place of residence
- 4 Profession/role in PCDP
- 5 Number of dependants in family
- 6 Do you think the situation in the Palas Valley has improved or worsened since the start of the PCDP?
 - A If worsened: in what way?
 - B If improved: in what way?
- 7 Do you think that the PCDP listens to the opinions of the locals?
- 8 Which objective do you think is of most importance for the PCDP?
- 9 Do you think that the PCDP intervenes in areas in which it should not?
 - A If yes: what areas?
- 10 Do you think that the PCDP could improve its work somehow?
 - A If yes: how?
- 11 Rank the following Palasi environmental goods according to importance:
 - Western Tragopan
 - Morel mushroom
 - Leopard
 - Wild honey
 - Musk Deer
 - Black Bear
- 12 Choice experiment. I will describe three scenarios to you: one that describes the present situation and two hypothetical ones. Which do you prefer?

(A picture of the Western Tragopan was shown and its status was described.)

- 13 Have you ever seen the Western Tragopan?
 - A If yes: would you miss it if it disappeared? Would you appreciate the existence of the bird even if you never saw it again?
 - B If no: would you like to see the bird? Would you appreciate the existence of the bird even if you will never see it?
- 14 Suppose that the bird was to be extinct. The PCDP launches a project that will save it. Would you be willing to pay anything if you knew that the money would be used to save the Western Tragopan?
 - A If yes: how much?
- 15 What is your monthly income?
- 16 Do you think it is right that the PCDP is trying to protect the bird?
 - A If yes: why?
 - B If no: why not?
- 17 Would you like it if more tourists visited the valley?
- 18 Do you think that the people of Palas would object if more tourists visited the valley?
- 19 Do you think that female tourists can also visit the valley?

(The respondent was asked if he had any additional questions or further comments. Any unclear points were solved.)

Note that the answers to questions 17 to 19 are not dealt with in this paper.

Appendix 2

Place of residence	Share of population	Share of sample
Bad Arkot, Kuz Palas	?	9%
Bar Banda, Kuz Palas	?	1%
Bar Bozhiet, Kuz Palas	?	1%
Bas Seriat, Kuz Palas	?	1%
Gadar, Bar Palas	?	6%
Goherabad, Kuz Palas	?	1%
Gulibagh, Kuz Palas	?	1%
Guliber, Kuz Palas	?	7%
Haran, Kuz Palas	?	6%
Hazerbat, Kuz Palas	?	1%
Hokum Abbat, Kuz Palas	?	1%
Kaliar, Bar Palas	?	5%
Kar Kuzeriel, Kuz Palas	?	1%
Kundur, Bar Palas	?	1%
Kunsher, Kuz Palas	?	9%
Nav Abar, Bar Palas	?	1%
Paro, Bar Palas	7%	7%
Ser Khesavat, Kuz Palas	?	2%
Serde, Bar Palas	?	1%
Shared, Bar Palas	3%	1%
Shelkanabad, Kuz Palas	6%	2%
Sheragizabut, Kuz Palas	?	1%
Sherakot, Kuz Palas	9%	15%
Sherial, Kuz Palas	8%	7%
Sherkanavar, Kuz Palas	?	6%
Shukizer, Bar Palas	?	1%
Unspecified, Kuz Palas	-	1%
Total Kuz Palas	?	72%
Total Bar Palas	?	28%

Place of residence for respondents in Palasi sub-sample and people in Palasi population (based on PCDP 2002).

Appendix 3

Choice set 1	Status quo	1B	1C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging A Black Bear E Western Tragopan x2 Tourists 500 Hunting A	Commercial logging SZ Black Bear x1.25 Western Tragopan E Tourists 0 Hunting A
N choices (locals/PCDP staffs)	2/4	7/1	3/1
Choice set 2	Status quo	2B	2C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging A Black Bear E Western Tragopan x2 Tourists 0 Hunting A	Commercial logging SZ Black Bear x1.25 Western Tragopan E Tourists 500 Hunting FE
N choices (locals/PCDP staffs)	3/0	4/1	2/5
Choice set 3	Status quo	3B	3C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging SZ Black Bear E Western Tragopan E Tourists 0 Hunting A	Commercial logging A Black Bear x1.25 Western Tragopan x2 Tourists 500 Hunting A
N choices (locals/PCDP staffs)	1/0	0/0	9/6
Choice set 4	Status quo	4B	4C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging SZ Black Bear x1.25 Western Tragopan x2 Tourists 0 Hunting FE	Commercial logging A Black Bear E Western Tragopan E Tourists 500 Hunting A
N choices (locals/PCDP staffs)	2/1	3/4	2/0
Choice set 5	Status quo	5B	5C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging A Black Bear x1.25 Western Tragopan E Tourists 0 Hunting FE	Commercial logging SZ Black Bear E Western Tragopan x2 Tourists 500 Hunting A
N choices (locals/PCDP staffs)	1/1	1/0	7/4
Choice set 6	Status quo	6B	6C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging A Black Bear E Western Tragopan x2 Tourists 0 Hunting A	Commercial logging F Black Bear x1.25 Western Tragopan E Tourists 500 Hunting A
N choices (locals/PCDP staffs)	6/2	2/4	1/0
Choice set 7	Status quo	7B	7C
	Commercial logging F Black Bear S Western Tragopan S Tourists 10 Hunting FE	Commercial logging SZ Black Bear E Western Tragopan x2 Tourists 0 Hunting A	Commercial logging A Black Bear x1.25 Western Tragopan E Tourists 500 Hunting A
N choices (locals/PCDP staffs)	3/1	4/5	2/0

Continued on next page.

Choice set 8	Status quo	8B	8C
	Commercial logging F	Commercial logging SZ	Commercial logging A
	Black Bear S	Black Bear x1.25	Black Bear E
	Western Tragopan S	Western Tragopan x2	Western Tragopan S
	Tourists 10	Tourists 500	Tourists 0
	Hunting FE	Hunting A	Hunting A
N choices (locals/PCDP staffs)	2/0	7/5	0/0
Choice set 9	Status quo	9B	9C
	Commercial logging F	Commercial logging A	Commercial logging SZ
	Black Bear S	Black Bear x1.25	Black Bear E
	Western Tragopan S	Western Tragopan x2	Western Tragopan E
	Tourists 10	Tourists 0	Tourists 500
	Hunting FE	Hunting FE	Hunting A
N choices (locals/PCDP staffs)	1/1	5/5	3/0
Choice set 10	Status quo	10B	10C
	Commercial logging F	Commercial logging SZ	Commercial logging A
	Black Bear S	Black Bear x1.25	Black Bear E
	Western Tragopan S	Western Tragopan x2	Western Tragopan E
	Tourists 10	Tourists 0	Tourists 500
	Hunting FE	Hunting A	Hunting A
N choices (locals/PCDP staffs)	3/0	6/5	2/1
Choice set 11	Status quo	11B	11C
	Commercial logging F	Commercial logging SZ	Commercial logging A
	Black Bear S	Black Bear x1.25	Black Bear E
	Western Tragopan S	Western Tragopan x2	Western Tragopan E
	Tourists 10	Tourists 10	Tourists 0
	Hunting FE	Hunting FE	Hunting A
N choices (locals/PCDP staffs)	0/0	9/6	2/0
Choice set 12	Status quo	12B	12C
	Commercial logging F	Commercial logging A	Commercial logging SZ
	Black Bear S	Black Bear S	Black Bear x1.25
	Western Tragopan S	Western Tragopan E	Western Tragopan x2
	Tourists 10	Tourists 0	Tourists 500
	Hunting FE	Hunting A	Hunting FE
N choices (locals/PCDP staffs)	1/0	0/0	9/6
Choice set 13	Status quo	13B	13C
	Commercial logging F	Commercial logging F	Commercial logging A
	Black Bear S	Black Bear x1.25	Black Bear E
	Western Tragopan S	Western Tragopan E	Western Tragopan x2
	Tourists 10	Tourists 0	Tourists 500
	Hunting FE	Hunting FE	Hunting FE
N choices (locals/PCDP staffs)	3/0	0/0	8/4

Overview of scenarios forming choice sets in CE, and response frequencies in both sub-samples. Notation: A = allowed (all species/zones) S = population stable x1.25 = 25% increase in population x2 = 100% increase in population FE = forbidden to hunt endangered species F = forbidden SZ = allowed in sustainable use zones only 0/10/500 = number of tourists visiting the valley per year E = exterminated in the valley

Attribute	Frequency of level in design
Commercial logging	A=13 SZ=11 F=15
Black Bear	S=14 E=12 x1.25=13
Western Tragopan	S=14 E=12 x1.25=13
Tourists	10=14 0=13 500=12
Hunting	FE=21 A=18

Frequency of attribute levels in CE design.

Example of choice set in CE (choice set 1)

Which of the following scenarios do you prefer?

Status quo:

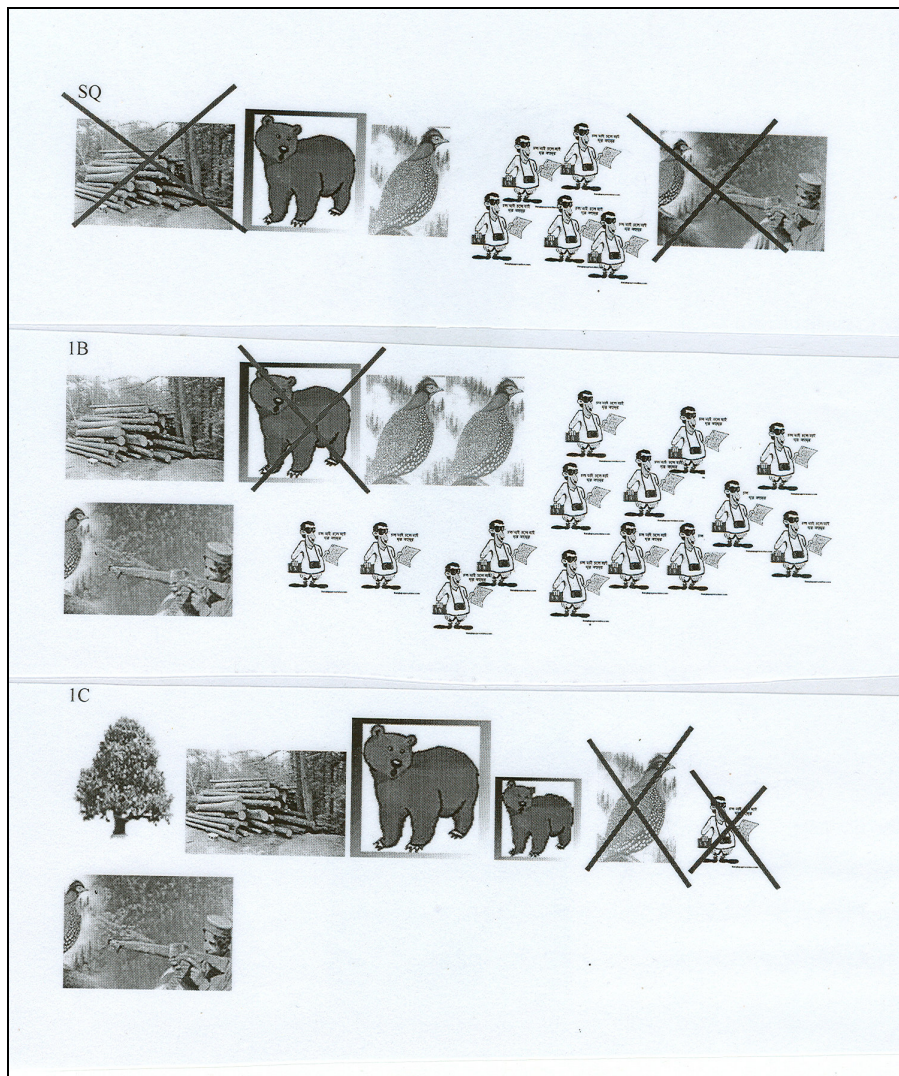
- 1 Commercial logging is forbidden in both core zones and sustainable use zones
- 2 The Black Bear population is stable
- 3 The Western Tragopan population is stable (around 300 pairs)
- 4 10 tourists visit the valley each year
- 5 Hunting of threatened animals is forbidden

B:

- 1 Commercial logging is allowed in both core zones and sustainable use zones
- 2 The Black Bear is exterminated in the valley
- 3 The Western Tragopan population doubles (to 600 pairs)
- 4 500 tourists visit the valley each year
- 5 All hunting allowed

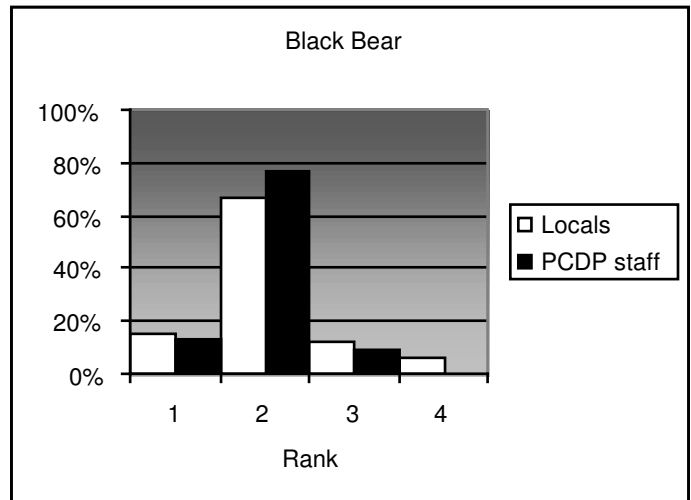
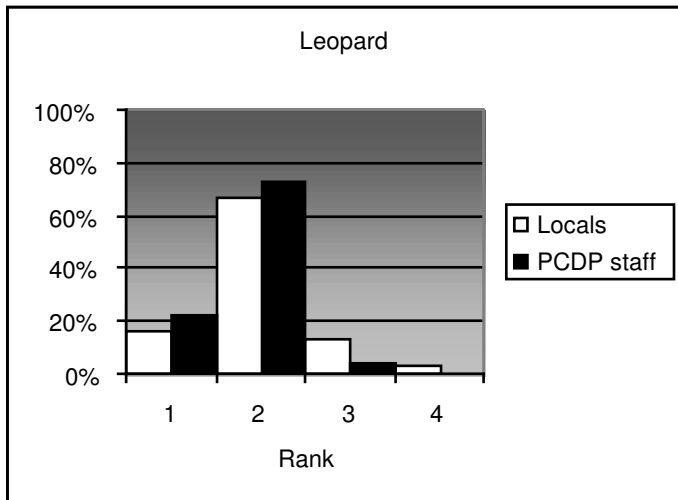
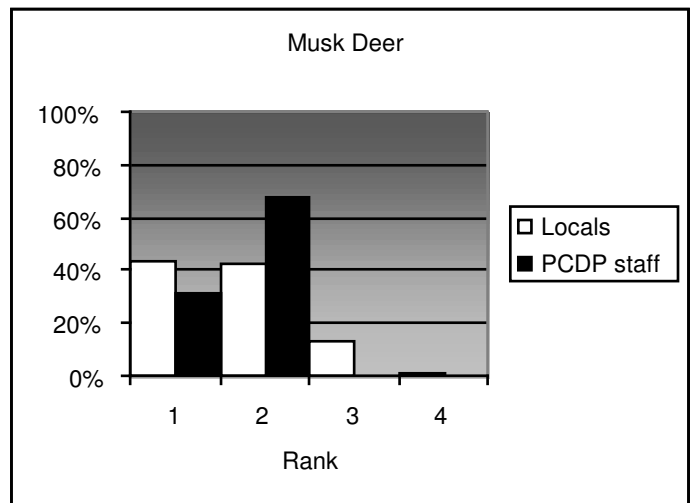
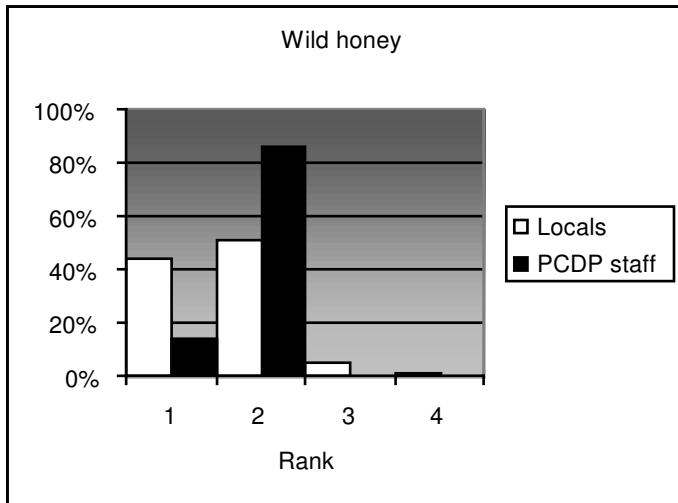
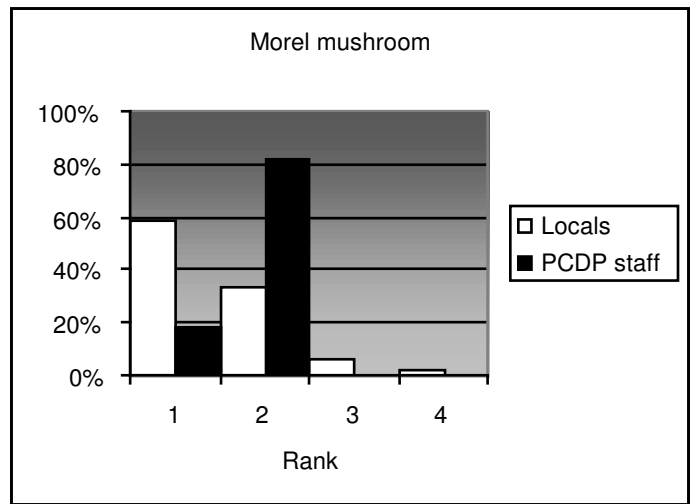
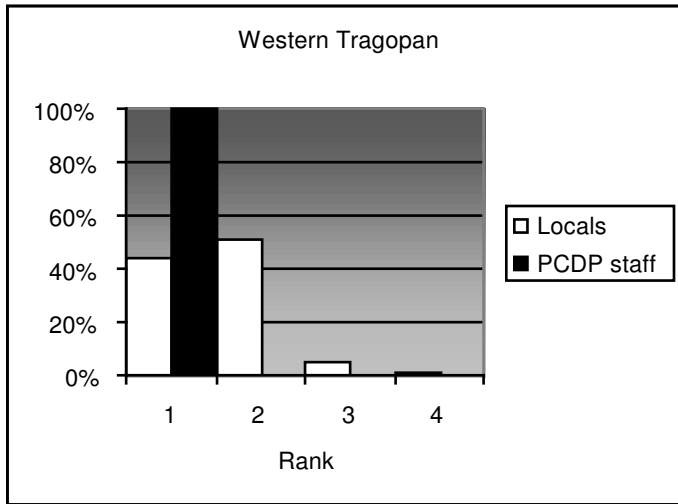
C:

- 1 Commercial logging is allowed in sustainable use zones only
- 2 The Black Bear population increases by 25%
- 3 The Western Tragopan is exterminated in the valley
- 4 0 tourists visit the valley each year
- 5 All hunting allowed



Visualisation of choice set 1 in CE.

Appendix 4



Ranking frequencies in both sub-samples.