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Aspects of sports ecology and wildlife biology in high mountain regions of the Alps
Interactions between outdoor sports and rock ptarmigans (*Lagopus mutus helveticus*) in arctic alpine zones

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Abstract

In this project sports ecology combines sports sciences and wildlife biology for research in high mountain regions. The relationship of sports and nature is the main theme of sports ecology. The example of rock ptarmigans shows interactions between outdoor sports and wildlife. Abundance and parts of behaviour like attraction, habituation, sensitisation and avoidance are examined to show effects. Philosophical aspects of sports ecology make us think about the value of wilderness. The educational part of sports sciences and several other institutions like protected area management can realise the results. The basic research is done in the area of Nationalpark Hohe Tauern.

Keywords

Sports ecology; sports sciences; wildlife biology; outdoor sports; natural resources and wilderness; rock ptarmigans; effects; abundance; behaviour; symbols of wilderness; didactic of sports; education; protected areas management

Introduction and project aims

The coincidence of sports and nature is a sensible complex. Natural resources and wilderness are limited, intrinsic values. They are resources for a harmonic development of humans. Health, fitness and quality of life are related to biodiversity and natural evolution.

The growing number of outdoor sports activities in protected areas shows that sportsmen are attracted by values like natural resources and wilderness.

Sports ecology, as a part of sports sciences tries to discuss scientific basics for a harmonic development of sports and nature. In the presented project the example of rock ptarmigans shall show us interactions between outdoor sports and wildlife. The educational part of sports sciences and several other institutions like protected areas management can realise the results.

Methods

Study area

The basic study area was the Weißsee area around Alpinzentrum Rudolfshütte, upper Stubachtal, Granatspitz- und Glocknergruppe, Nationalpark Hohe Tauern (ÖK 153, 47°80´ N, 12°37´O). Some data about the behaviour of ptarmigans are collected in different parts of the Alps like Radstätter Tauern and Sextener Dolomiten.

General study time

The basic study time was the seasons of recreational use in the time of 7. 5. 2000 21. 10. 2000, 18. 1. 2001 - 9. 9. 2001, completed in summer 2002 and winter 2003 / 2004.

Methodical design

The methodical design uses methods to examine outdoor sports and methods of wildlife biology to examine rock ptarmigans. The combination leads into questions of sports ecology.

One part of the methodical design is to examine area use by outdoor sport activities and the behaviour of sportsmen and visitors. It is separated in seasonal and daily use and several kinds of human behaviour.

With rock ptarmigans, abundance, sports ecological abundance and scanned samples of animal behaviour are examined.

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The assumption for these examination is the proximity of infrastructure like ski slopes, ski touring tracks, off piste skiing possibilities, ice climbing areas, hiking paths, rock climbing areas, alpine huts etc. and their use by sportsmen and visitors.

Distances of reaction between rock ptarmigans, infrastructure or humans are the basic for the data. The combination of distances of reaction and samples of behaviour are used to show effects like attraction, habituation, sensitisation or avoidance.

Sports ecological methods are descriptive. They also relate to philosophy and didactic of sports and outdoor education.

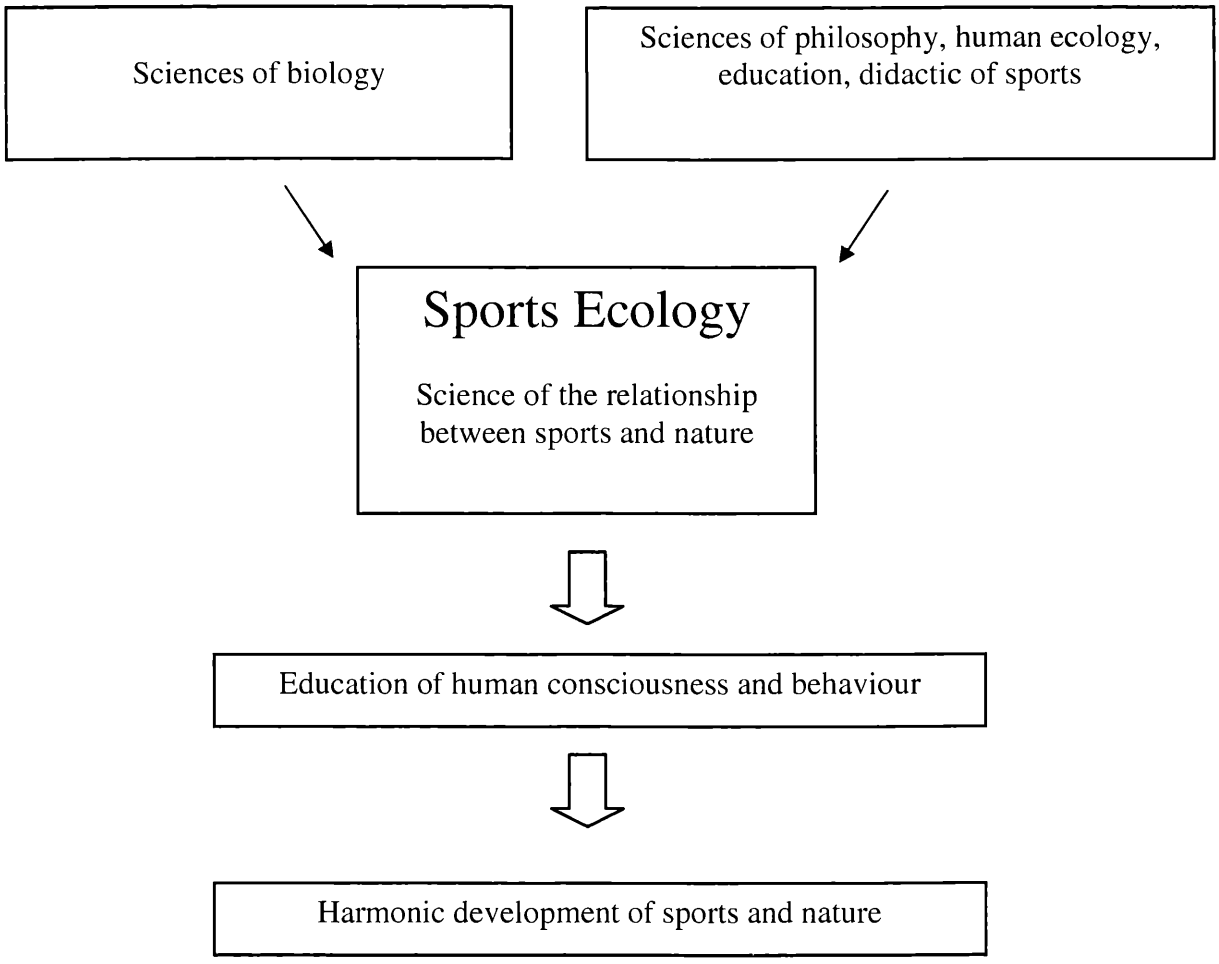

Fig. 1: Model of scientific parts and aims of sports ecology

Results and Discussion

In the Weißsee area visitors and alpine courses cross the ranges of ptarmigans. Between summer- and winter seasons there are some months without recreational use.

The "ecological abundance" of ptarmigans in the observed area was *4,04 territories/km²*. This value does not significantly differ from other regions of the Alps.

Compared with the high recreational use of the area no obvious negative effects on the abundance of ptarmigans were observed. This does not mean, that there could not be a higher quantity than *4,04 districts/km²* if the tracks were not used that much.

The sports ecological abundance and the ecological abundance of ptarmigans per track use show that during the studied periods the seasonal and daily use of outdoor activities had no direct connection to distribution and behaviour of ptarmigans.

May and June are the critical months because during this period, the animals begin to build their nests and to brood during a time of low recreational use. If the ptarmigans have been successful with breeding and the recreational season in their districts starts suddenly, normally they do not leave their nests or territories. So habituation is one of the possibilities for successful breeding.

Early habituation of juvenile ptarmigans is probable because some of the breeding areas and nests were close to tourist infrastructures.

The migration of the birds in higher regions of the area is natural and a connection to outdoor sports was not evident.

During the period of research no impact from outdoor activities on autumnal mating, territories or social structure could be found.

A lot of observations of breeding- and resting places were close to tourist infrastructure. Habituation of ptarmigans appears very probable. The loyalty of ptarmigans to their home ranges and successful experiences in these places are possible reasons for this behaviour.

If ptarmigans had a special interest in tourist infrastructure this could not be through experience, although the distances between the birds and tourist infrastructure did not demonstrate sensitisation or avoidance. Loss of home range area is possible because of the ski slopes and buildings. The activities of two ptarmigans close to a ski slope showed that even skiers under defined conditions caused no disturbance. These birds did not show any reaction of sensitisation or avoidance. It seems that this could also be habituation.

Measuring distances of reaction, consequences from outdoor activities on the behaviour of ptarmigans could clearly be recognised. From situation to situation ptarmigans used the most effective and economical reaction. Flying was less often recognised than all other reactions. A general sensitisation against or a special interest in human beings could not be recognised. Most of the reactions were forms of avoidance and habituation. Only aeroplanes and dogs out of lead excited the animals very early.

Rock ptarmigans are good indicators of habituation of wildlife towards humans but they are no indicators for borders of tolerance against outdoor activities.

Ptarmigans are symbols of wilderness in the Alps. They give sports ecology the chance to use educational values for a development of sports, natural resources and wilderness in harmony.

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