Modeling Factors Impacting on Marl Gullies Length Development and Defining their Contribution to Sedimentation (Case study: DarbKhazine Basin of Khuzestan Province)

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Abstract

Gully erosion is one of the aprogressive forms of soil degradation in ranges and agricultural lands which is a warning sign of land degradation and progressive erosion. Monitoring effective factors of gully length development over time is a necessity for sustainable development in watersheds. In this research, the advancement of ٣٠ headcuts were assessed through digital interpretation of multi-temporal aerial photos, photometric methods, field observations and GIS data analysis over two periods of ١٩٦٤-١٩٩٣ and ١٩٩٣-٢٠١٣, and its contribution to sediment suspended and bed load, using sediment balance model which was carried out on DarbKhazine basin. Moreover, the stepwise regression analysis procedure was applied to extract the effective factors on gully head advancement (such as topography, physio-chemical soil attributes and morphology of gully). The results indicated that the mean of gully head advancement over the periods of ١٩٦٤-١٩٩٣, ١٩٩٣-٢٠١٣ were measured ٠,٣٧, ٠,٦٥, respectively which implies on average, ٧٧ percent have increased. Further, regression analysis revealed by ٩ main factors and R ٩٥٪, as the model indicated among main factors, the Na, EC and organic matter factors with R^2 , ٠,٨٣ and R , ٠,٩١ leave the most effect on gully head advancement. The gully sediment balance showed that two-thirds and one-third of sediment discharge are formally suspended load and bed load, respectively. This topic is useful as a suitable criterion to distinguish active gullies in order to prioritize conservation activities.

Key words: Edaphic Modeling, Gully, Sediment balance, Photogrammetric, DarbKhazine

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Comparing Regional Analysis Methods of Estimation of the Peak Flow in Some Watersheds of Isfahan-Sirjan and Yazd-Ardakan Basins

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Abstract

Main problems in flood frequency analysis are limited number of gauging stations and recorded data, together with the inaccurate at-site estimations in the study area. These problems have caused increasing application of regional methods. Regional analysis seems to be a useful method for estimating peak flow at an area of no data or low-recorded length. Regional flood frequency analysis relies on physical and climatic characteristic of basins and applies statistical method to study flow records. The methods of regional analysis are numerous that the selection of each one of them in any study area depends on data length, climatic factors, data type and expected return periods. In this study, four techniques of regional analysis were used to evaluate the priority and importance to estimate the peak flow for different return periods. The Hybrid, Multiple regression, L-moments and Canonical Correlation Analysis are the four approaches applied for some watersheds of Isfahan–Sirjan and Yazd-Ardakan Basins. A number of ١٦ stations were selected and their data were analyzed to find out peak flow. The results of this analysis were compared to the Hybrid and Multiple regression approaches using RRMSE and MAE statistics. The results showed better performance of the CCA method rather than other methods in all return periods. After CCA, Multiple regression methods were selected to estimate the peak flow (Model ٢, ٣). Therefore, CCA method can be adopted as regional flood frequency method for the study area.

Keywords: Hybrid, L-moments, Multiple-regression, Regional flood frequency analysis, CCA

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Status and Trend of Dust Storms in Iran from ١٩٨٥ to ٢٠٠٥

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Abstract

The phenomenon of dust storm causes a number of damages such as aggravation of heart or lung disease, air and land traffic. Occurrence of dust storm has been growing inrecent years and has created many problems in some cities of Iran. Dust storms of Iran arise either from internal or external sources. In this paper, Climatology of dust storms in Iran is compiled based on observational data of ١١٢ meteorological stations from ١٩٨٥ to ٢٠٠٥. Results show that the total number of dust stormy days varies from ١١ to ٣٨٣٣. Accordingly, we have identified five types of cities; ١- less than ٤٩٢ days; ٢- from ٥٨٨ to ١١٥٣ days; ٣- from ١٢٤٣ to ١٧٥٧ ٤ days; from ٢٠٠٧ to ٢٢٣٩ ٥ days; ٥- more than ٣٨٣٢ days. Afterwards, we examined each of them separately. The first group is fixed. Cities of this group are located mostly in North, East and Center of Iran. The second group contains three parts:First, an ascending trend to ١٩٩٢ and then a descending part to ١٩٩٨ and again,an ascending part to ٢٠٠٥. Cities of second group are located in the southern pasrt of the country. The third group contains four parts: First, a down trend to ١٩٩٠ and then an ascending part to ١٩٩٣ and again, a descending part to ١٩٩٨ and finally, a branch of the ascending to ٢٠٠٥. Cities of the third group are located almost in the southwest. The cities of the fourth group are located in Sistan&Baloochestan province and are affected by the١٢٠-day wind. The occurrence of dust storm in the fourth group is ascending. Finally, using GIS and interpolation systems, we have plotted dust storm zone classification map of Iran from ١٩٩٨ to ٢٠٠٥.

Keywords: Dust, trend line, K- means clustering, Iran.

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Assessing the Impacts of Rangeland Management Projects on Social Capital of Rural Households in Mahneshan County

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Abstract

Assessment of rangeland management projects enables policy makers and planners to understand their impacts from different environmental, social, human, and economic aspects. The aim of this research is to assess rural households' perspective regarding the impact of rangeland management projects on their social capital. Using a survey methodology, respondents were asked to assess the indicators before and after the implementation of the projects. A randomized multi-stage sampling technique was utilized to select a sample of ۲۰٤ out of ۱۲۸۰ rural pastoralists in Mahneshan County of Zanjan Province. Data was collected utilizing a structured interview technique and questionnaire. From pastoralists' points of view, these projects have had considerable impacts on increasing relationships, collaboration, and social norms for collective actions. They have also been slightly effective in terms of reducing emigration, increasing job opportunities and participation in decision-making. Nevertheless, these projects had no effect in establishing or strengthening non-governmental organizations. Therefore, planning for rangeland management projects necessitates more attention to improving their effectiveness and their social institutionalization potential.

Keywords: Assessment, Social Capital, Mahneshan County, Rangeland Management, Rural Household Perspective

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Analysis of the Surface Water Quality Parameters Using Multivariate Statistical Techniques (Case Study: Aji-Chai Watershed)

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Abstract

One of the most important dynamic ecosystems is river, awareness of spatio-temporal water quality changes of which is necessary. In this research, we studied the spatiotemporal water quality changes using three techniques of Cluster analysis (CA), Discriminant analysis (DA) and Principal Component analysis (PCA) in the Aji-Chai watershed over ۱۹۸۱-۲۰۱۰. Applying clustering, we identified three homogeneities clusters. Stations which were labeled in the first cluster showed that they are located in the upstream of Aji-Chi River. In comparison with other stations, these stations showed better water quality and the lowest changeability. DA methods significantly determined the three functions which described about ۷۳,٥۰, ۲۰,۳۰ and ۳,٤۰٪ of total variances. In the other word, in general three functions described the ۹۷,۲۰٪ of the total variances. Also the DA methods revealed the HCO-۳, SAR, Na+, SO٤۲- and Ca۲+ were the most important parameters affecting upon water quality, based on which it's possible to seperate homogenous clusters. Finally, the results of PCA showed that the first two factors were the most important factors of water quality changes in the Aji-Chai River Watershed. These factors described about ۷۸,۷٥ and ۱٤,۷۱٪ of the variances, respectively.

Key words: Multivariate methods, Surface water quality, cluster analysis, Aji-Chai Watershed

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Comparison of Some Effective Environmental Factors in Distribution of *Dactylisglomerata* L. and *Thymus kotschyanus* Boiss and Hohen. in South of Ardabil Province

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Abstract

The aim of this study was identifying the effects of environmental factors on the distribution of *Dactylisglomerata* and *Thymus kotschyanus* in rangelands of Khalkhal and Kosar counties in the southern part of Ardabil province. From ۱۱۱ selected sites, random systematic sampling was done using five ۱m² plots along a ٤۰ m transect. In all sites, land cover parameters including stone and gravel percentage, bare soil, litter, and density of selected species were recorded. Soil samples were taken from the ۰ to ۳۰ cm of soil surface of each transect. Soil parameters including pH, organic carbon, potassium, phosphorus, electrical conductivity, Sand, Clay, and Silt were measured. One way ANOVA was used to study the significance of relationship between the effective environmental factors on the presence and absence of the selected species. Duncan's test was used to compare the measured factors. To determine the importance of measured variables on the distribution of selected species and grouping of sampling sites, canonical discriminant analysis was used. Results showed that variables of elevation, slope, temperature, rainfall, stone, gravel, litter, electrical conductivity are significantly different when species exist in contrast to the time that it does not exist ($p < ۰٫۰۱$). *D. glomerata* is mostly distributed on north aspect, and on sloppy areas, and the areas with the high litter, clay and organic matter, and *T. kotschyanus* is mostly distributed on west aspect, and on the areas with the high amount of sand, stone and gravel, and silt that create a good condition for the growth of this species. According to the results of canonical discriminant analysis, two functions with ۷۷٫۸ and ۲۲٫۲٪ and they explained totally ۱۰۰٪ of the variance of data, and generally ۹٤/٤٪ of grouped cases, were correctly classified. Overall, the results of canonical discriminant analysis show that electrical conductivity, litter, precipitation, temperature, elevation, potassium, silt and bare soil are the most important variables in the distribution of *D. glomerata and T. kotschyanus*. Considering these results, better decisions can be made about management, restoration, and reclamation of rangelands.

Key words: Environmental factors, Species distribution, discriminant analysis, Khalkhal, Kosar, *Dactylisglomerata*, *Thymus kotschyanus*

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Analysis of Actors' Position and Social Capital of Beneficiaries in Co_ Management of Socio_Ecologic Systems (Study Area: *Hagholkhaje* Village, Mayamey District, Semnan Province)

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Abstract

Social capital is the prerequisite of co_management. Evaluation of social capital for achieving community-based management is therefore of capital importance. Detection of key actors in local communities for co_management of natural eco_systems is as well quite important. These people are generally regarded as local leaders and they have the potential to play a key role in co_management. Social Network Analysis method was applied and macro level and micro level indexes of rangeland users' network in traditional boundary of Hagh-ol-Khaje in Mayamey District were analyzed as a way for measuring the social capital and recognizing influencial local leaders. It was found out that the level of social capital of beneficiaries based on trust tie was moderate and based on collaboration tie it was low. Sustainability of ties and network balance were as well weak and trust and collaboration ties were not optimally established. Low speed of exchange in trust and collaboration ties and lack of unity among beneficiaries are other important challenges in rangeland co_management. Gh_Gh and Es_Sa were recognized as the corest actors among Hagholkhaje rangeland users. These people can play important role in co_managements because of their authority and social influence and they can act as gatekeepers connecting governmental institutions and other users for sustainable rural development.

Key Words: Social Capital, Key Actors, Socio- Ecologi Systems, *Hagholkhaje* Village

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Groundwater Quality Analysis for Drinking and Agricultural Purposes-a Prerequisite for Land Use Planning in Arid and Semi-arid Regions of Iran

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Abstract

Groundwater resources play central role in meeting domestic and agricultural demands of residents in arid regions. Owing to rapid urbanization, water use and land use has changed considerably. Overexploitation of wells posed a huge burden on available water resources. Degradation of water resources along with an increase of salinity has adversely affected water resources. Hence, current paper focuses on determination of water quality of the wells of nine provinces of Iran which are influenced by water shortage. In this regard, WQI is a suitable index for analyisis and classification of data. To provide a holistic influence from individual water quality parameters on total water quality, water quality index (WQI) is employed. In other words, WQI is average weight of multiple parameters. Apart from WQI which has been used for drinking purposes, Wilcox has been used for agricultural water quality analysis. After identification of water quality conditions, sustainable settlement of population should be considered. Environmental planning and management, policy making, obtaining conclusive strategies and land use planning should be taken into account after providing water quality maps. Generation of water quality maps is an effective step for optimal operation of groundwater resources as well as for decision making. In present study, most of aquifers have been identified of low water quality (WQI=۲۰۰-۳۰۰).

Keywords: Groundwater, Water quality, Geographical Information System, Wilcox, Water Quality Index

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Assessment of Livestock Pressure and its Impact on Desertification Hazard
(Case Study: Miyandehi Feizabad, Khorasan Razavi)

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Abstract

Desertification refers to land degradation in arid, semi-arid, and dry sub-humid region. It is a global environmental problem with political and socio-economic consequences. Land degradation occurs as a result of impoverished vegetation cover that may lead to a progressive and irreversible reduction of the biological or economic productivity. Overgrazing may cause degradation of soil and vegetation. Degradation of vegetation and soil in dry lands, sometimes called desertification, is thought to be a serious threat to the sustainability of human habitation. Therefore, the intensity of grazing can serve as an index of environmental pressure. The Miandehi region, located in the Northeast Iran, has been selected as a test area to assess livestock pressure. Present paper assessed the pressure of livestock within the studied area using GIS. FAO-UNEP model (١٩٨٤) proposes the use of a ratio of potential carrying capacity to present livestock density as an estimate of pressure of livestock. This method has been adopted with some modifications for the present study. Therefore, maps of the hazard of pressure of livestock were prepared after overlying and calculating different parameters in GIS. According to the final map of pressure of livestock in Miandehi region, areas of no hazard, slight hazard, severe hazard and very severe hazard comprised respectively ٢١,٣, ٥,٦, ٩,٨ and ٦٣,٣ % of the study area. Results showed that areas under very severe hazard dominate Miandehi (٦٣,٣ % of total land).

Key words: Livestock pressure, desertification vegetation cover, forage production, GIS.

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The Effect of Data Length, Study Span, and Number of Stations on Variability of Rainfall Erosivity Factor in Different Time Scales in Iran

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Abstract

Regarding the undeniable role of rainfall erosivity factor in initiating water erosion, studying its different aspects is important in optimal soil and water resources management. It is taken in to account in many soil erosion estimation models which are used for soil and water conservation. However, the impact of data length, study span, and the number of stations on variability of rainfall erosivity factor has been understudied. The present study therefore is an attempt to investigate the temporal variation of Wischmeier and Smith's rainfall erosivity factor at different time scales and also the effect of data length, study span, and number of stations upon rainfall erosivity factor is scrutinized. Accordingly, the results of the present study with ٧٠ stations, data span of ٢٠ years and different study periods were compared with those obtained for another study with ١٨ stations and ٢٣ years of data span. Rainfall erosivity factor of over ١٢,٠٠٠ storm events was calculated in present study and mean values for different time scales were compared using t-Test. Results showed that the maximum and the minimum values of monthly rainfall erosivity factor in the country were different from each other. Besides, the results of t-Test showed significant difference between the calculated values of rainfall erosivity factor in some months ($p<٠.٠٥$) and seasons ($p<٠.٠٥$). Nonetheless, the difference between annual rainfall erosivity factor was not significant ($p<٠.٠٥$).

Keywords: EI٣٠, R factor, Rain intensity, Rainfall kinetic energy, Temporal variation, Time scales

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Determining the Most Important Criteria and Indicators Impacting upon Land Degradation and Desertification

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Abstract

Nowadays, land degradation and desertification are serious and complex problems that have turned into a worldwide crisis in the world. Using evaluative systems to study degradation and adopting an appropriate strategy to deal with this phenomenon is necessary and important. The first step in the study of land degradation and desertification is determining criteria and indicators that affect upon this process. Therefore, in this study the importance and priority of a considerable number of criteria and indices that influence upon land degradation and desertification were examined. Accordingly, ٨ criteria and ٤٩ indicators were chosen based on questionnaires and expert panel and they were evaluated based on eight metrics. We weighted suitable criteria for evaluation indicators with the help of Shannon entropy method, and then by using the TOPSIS method (one of Multiple Attribute Decision Making Methods) we determined the most effective indicators on land degradation and desertification for management and dealing with this phenomenon. The results show that among the evaluation criteria and indices that should be considered for a benchmark or index, a scale, has the highest weight and importance, and being sensitive to change, has the minimum weight and importance.The results of the prioritization and ranking criteria and indicators based on TOPSIS model indicates that the severity of exploitation of water resources in the factor of water with the ٠٫٧٩ efficiency, has the most effect and the use of facilities and personal management in the management factor with the ٠٫١١ efficiency has less effect in land degradation and desertification.

Key words: Land Degradation, Desertification, Criteria and Indices, Shannon Entropy, TOPSIS Model

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Predicting Spatial Change Trend of Land Use based on the Cellular Automaton-Markov Model in Kessillian Watershed

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Abstract

Land use Changes have recently been increasing due to anthropogenic and climatic factors. Natural resources management critically needs land use maps and simulation of its changes for understanding the interaction and relationship between humans and natural phenomena, as well as for making premium decisions. Accordingly, present study has dealth with simulation of future changes land use of Kessillian watershed. Hence, land-use and land cover maps of the catchment was prepared by using multi-period Landsat images captured in ۱۹۸۶, ۲۰۰۰, and ۲۰۱۱. Then, applying cellular automaton and Markov model, the land-use/land cover condition in ۲۰۱۱ was predicted ۰٫۹ using ROC. Thereafter, this model was run for simulating land-use/land cover changes in ۲۰۳۰. According to the results of detection and simulation of changes, forest land reduction trend will continue but the area of rangelands and inhabited areas will expand. Agricultural lands will not seriously change due to steep slope and low fertility after several consequent plantings. In most cases, maximum changes occurred around the forest and rangeland areas and changes will decrease far from these margins. Markov model can precisely show the land changes in the area via time period and can anticipate the future of them. Therefore, this model can be applied in order to manage the land.

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Preference Value of Plant Species Grazed by Sheep during Grazing Season in KhoshkeroodSaveh Rangelands (Case study: Cross-Breed Sangsari-Afshar)

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Abstract

Defining the preference value of plant species is necessary for planning and management of livestock and rangeland. The purpose of this study was to investigate the preference value of plant species grazed by sheep during the grazing period in Khoshkeh rood Saveh Rangeland of Markazi Province using species selection index.

Production and consumption data of species in and out of the enclosure was collected over six months of grazing season for three years to calculate the species selection index. Maximum preference values for *Poasinaica* (in whole grazing season) and *Salsolalaricina* (especially November and December) and minimum preference values for *Cousiniacylindracea* (in whole grazing season and especially in dry years) was recorded. Reduction in rainfall in ٢٠٠٨ increased the percentage of utilization and preference index of species. As in April ٢٠٠٨, *Artemisia sieberi* with preference index ٢ was a relatively palatable species and *Noaeamucronata* and *Stachysinflata* with preference index over ٢،١ were considered quite palatable species. Salsola*laricina* in November and December in all the years with preference index over ١،٤ was considered as relatively palatable species.

Salsolalaricina is a critical resource for livestock of steppe rangelands throughout the year, especially from mid-November to mid-March. So that in this time, this species has higher palatability than other species accompanied and with proper grazing management should be prevented from excessive utilization.

Key Words: preference value, grazing behavior, species preference index, steppe, KhoshkrudSaveh

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Comparison of the Efficiency of Support Vector Regression and K-Nearest Neighbor Methods in Suspended Sediment Load Estimation in River (Case Study: LighvanChay River)

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Abstract

Estimation of suspended sediment load or specifying the damages incured as a result of inattention to such estimation is one of the most important and fundamental challenges in river engineering and sediment transport studies. Given the importance and role of sediment in the design and maintenance of hydraulic structures such as dams, as well its significance in planning for efficient tilization of downstream river and also conservation of nutrients at the upstream of river, many attempts have been made to estimate suspended sediment load of rivers and numerical methods have been developed in this regard. But due to the high cost of most procedures or lack of adequate precision in most common experimental methods, a new method is needed that can estimate suspended sediment load with the greatest possible precision. In this study, the amount of suspended sediment load of Lighvan River has been estimated through support vector regression and k-Nearest neighbor methods. Results indicated the appropriateness of both data mining techniques applied in this study. Among examined methods in this study, the support vector regression method predicted the amount of suspended sediment load in LighvanChay River with representing evaluation indexes such as (CC=٠٫٩٥٩, RMSE=٤٣٫٥٤٧(ton/day)) more accurately than K-nearest neighbor method.

Keywords: k-nearest neighbors, LighvanChayriver, data mining, support vector regression, suspended sediment load.

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Studying the Effects of Using Zeolite on Performance of Pasture Species: Cymbopogonolivieri, Medicago sativa, and Medicagoscutellata

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Abstract

To evaluate the effect of zeolite on the growth of plants in drought conditions. *Cymbopogonolivieri, Medicago sativa, Medicagoscutellata* in three zeolite levels (٢ g, ٤ g and zero in a kilogram potting soil) with ١٥ repetitions was considered. After ensuring the germination of plants, ٧-day irrigation tension was applied to them. It was found out that following the first tension, the effect of zeolite in improving viability and mitigation of drought tension will appear and it is observed that in ٢٠٪ and ٤٠٪ Zeolite treatments, the percentage of viability and germination of plants is much more in comparison with control group. Gradually, following applying tensions, the average number of remaining saplings decreased in control treatments. The highest percentage of residual base, the whole plant length, stem fresh weight, and dry weight of zeolite was observed in Cymbopogonolivieri in the treatment of ٤٠٪. More traits such as stem length, fresh weight, dry weight and fresh weight roots in the treatment of ٤٠٪ zeolite in Medicagoscutellata species improved. The highest root weight was observed in Medicago sativa using ٤٠٪ zeolite. No significant difference was detected in terms of wet root length in three plant species.

Key words: super absorbents, Zeolite, drought tension, viability, *Cymbopogonolivieri*, *Medicago sativa, Medicagoscutellata*

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Appraisal of the Potential of *Agropyron intermedium* (Host) P. Beauv. And *Dactylisglomerata* L. Species in Phytoremediation of Soil contaminated to crude oil under Greenhouse Condition

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Abstract

Total Petroleum Hydrocarbons are toxic and persistent pollutants that are considered as fundamental threat to the ecosystem. Phytoremediation, the use of plants for remediation of contaminated soils, is an effective and affordable way to reduce soil pollution. In this study, the potential phytoremediation of pasture plants i.e. *Agropyron intermedium* and *Dactylisglomerata* in soil contaminated with crude oil of different concentrations (٢٠, ٣٠, ٤٠ and ٥٠ percent) was scrutinized for ١٢٠ days under greenhouse condition. At the end of the study, changes in biological factors (shoot height, shoot dry weight and root dry weight) of each species and changes in petroleum hydrocarbons of soil were measured and results were analyzed using SPSS software. The process of decay kinetics curve of petroleum percent was used to calculate the time it takes for decomposition of petroleum hydrocarbons. Results showed that three main features of biological factors of both studied species in different treatments were significantly different compared to control group. Analysis of changes in petroleum hydrocarbons indicated that *Agropyronintermedium* reduced ٧٩٫٨١ percent of oil in the treatment of ٢٠٪ and reduced ٥٨٫٥٤ percent of oil in the treatment of ٥٠٪. Therefore, it has higher phytoremediation ability in comparison with *Dactylisglomerata*. The results of the analysis of petroleum in soil samples, fitted with zero-order kinetic model showed that the first order kinetic model is the best model for simulating the trend of changes of Petroleum hydrocarbon of the soil.

Keywords: Phytoremediation, Rangeland plants, crude oil, *Agropyronintermedium*, *Dactylisglomerata.*

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Evaluation of Urmia Lake Crisis Management Solutions with an Emphasis on Maximum Participation of Farmers (Case Study: Simineroud Watershed)

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Abstract

Due to problems of Urmia Lake, several strategies have been proposed by professionals to restore it. But it should be noted that the implementation of each plan and project within the watershed requires the participation ofstakeholders and farmers within that watershed. Due to the lack of attention to stakeholders, management of many natural resources and development projects has failed. Therefore, public acceptance and participation of stakeholders including those users who are engaged with farming and gardening was explored in some proposed approaches for restoring Urmia Lake. The study area was Siminehroud watershed as one of the largest Urmia Lake sub watersheds. Research instrument was a questionnaire which was filled by data obtained from interview with stakeholders and achieved results were analyzed using SPSS ١٧ software. The results showed that shift in irrigation system from traditional type to pressure irrigation system with ٩١,٤٥٪ approval rating can be considered as the most successful strategy among poposed strategies. Compensation payment initiative specific to farmers for non-utilization of owned farming lands had the appropriate acceptance with ٥٣,٥٥٪. Also ٥٠,٢٥٪ of stakeholders showed their inclination to the use of species of low water demands instead of those with high water demand providing that government support such scheme. Generally, it was revealed that increasing water charge anticipating subsequent reduction of water consumption will not be effective. Consequently, it can be stated firmly that irrigation system change must be put in executive priority and next priorities will be compensation payment to farmers and change in farming pattern.

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Analyzing Effective Factors on Time Management of Livestock Grazing on Lorestan Province Rangelands (Case Study: KouhDasht County)

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Abstract

Observing livestock grazing time in rangelands is quite important for conservation of rangelands and protecting them against degradation. This study was aimed at assessessment of factors that contribute to observing grazing time in rangelands of Kouhdasht County in Lorestan province. This study is a survey research and the statistical population is composed of nomadism pastoralists of Koohdash County. Based on Cochran formula, sample size was defined ٣١٠ persons out of ١٠٣٨ pastoralists. Many different variables including socio-economic conditions of users and factors contributing to grazing management were assessed in this study. Among the econometric models, Logit Model was used in order to assess factors impacting on time management of grazing. Logit model parameters were estimated with maximum likelihood method. Coefficient of determination and accurate prediction percentage were used in order to assess the finesses of sample's data. Results showed that there is a significant differencebetween different groups of users in terms of considering grazing time. Having winter pastures, early arrival date, and late exit of pastoralism from summer rangelands had the highest effect. Based on achieved results, when heads of families were pastoralists, households were much more dependent on rangelands as a source of livelihood. Therefore, they entered earlier to summer rangelands. Besides, those who did not have winter pastures were less inclined to care about grazing time. In this regard, if they are further supported through handy feeding, they will be motivated to observe grazing time. Kuhdasht is an active center in livestock farming. Entrance into and exit of livestock out of the rangeland leaves direct and indirect impacts upon local life. It has as well negative effects on rangeland vegetation. Defining factors that affect on livestock entrance and exit will help planners to take appropriate measures for removing problems.

Keywords: Rangelands, observing Grazing Time, Logit model, KouhDasht County

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Exploring the Preference Value of Rangeland Species for Sheep and Goat (Case study: Saleh Abad Site in Ilam Province)

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Abstract

Depending on in which season or in which section of rangeland livestock grazes, it shows certain behavior. Present study is therefore aimed at exploring preference value of species in Saleh Abad rangelands of Ilamprovince from ٢٠٠٧ to ٢٠١٠. In this study, the preference value of ١٧ species and annual plants was investigated through the method of percent of consumption. The results showed that the effect of year, month and plant species on preference value is significant. Due to drought, average preference value in ٢٠٠٨ was more than that in ٢٠٠٧, ٢٠٠٩ and ٢٠١٠, respectively. Preference value of rangeland species was higher in April than in March and statistically the difference was significant. Results showed that the species Ankyropetalugypsophiloides, Annual grass & forbs, Salvia compressa, and Sanguiosorba belong to Class III and of moderate palatability. Other non-palatable species were categorized in class IV and V. In study area, the last two months of grazing season (March and April) matched the first two months of plant growth. Annual grasses and forbs species and Sanguiosorba minor were equally consumed by animals in both March and April.Toward the end of the grazing season (end of April) perennial species are consumed. For example, relative consumption of Salvia compressa and Ankyropetalum gypsophiloides was and ٩٢ percent, respectively. In April, an increase in consumption trend of other perennials was witnessed. Therefore, with presence of livestock in from April to June, fresh forage of perennial herbs is grazed by livestock but farmer s believe that the amount of forage production of perennial herbs is not enough that forces the livestock out of rangeland.

Key word: pasture, preference value, Salehabad.

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Investigation of the Role of Structural Elements on Water Resource Abundance in Maharloo Karst Region using RS and GIS

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Abstract

In Low rainfall, dry areas such as Iran that surface fresh water resources are limited and this water is exposed to pollution risk, finding and preserving underground water supplies is the best way for removing water needs. In addition, in some parts of Iran, climate and tectonic structure have created good conditions for forming karstic table. Following America, China and Turkey, Iran has the highest percentage of karst and more than eleven percent of Iran's area is covered by karstic constructors.The purpose of this study is exploring the relationship between lineaments extracted from satellite imageries, tectonic elements, hydrography network and topography factors with Karstic water resources abundance in Maharloo using GIS and remote sensing. Information layers including lineaments, range curvature, elevation classes, slope, vegetation, springs, tectonic elements and hydrography network were provided through field visits, topographic maps, geology, satellite imagery and digital models. Findings were analysed with statistical tests such as Chi square, Pearson correlation coefficient, PCA test, and principal component analysis. It was found out that there is a close tie between formation type, topography (egslope, elevation and range curvature), lineaments and hydrological factors with spring abundance. The significant role of environmental and structural factors drives the necessity of paying attention to them in investigation of the abundance of springs and transmission of groundwater in Karstik areas.

Keywords: structural factors, lineaments, range curvature, springs, karst and Catchment Maharloo

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