فهرست

CONTENT

Using Logistic Regression in Identification Climatology Factors Influencing the Distribution of Hormozgan Province Avicennia Marina Forests

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Abstract

In recent years, mangrove forests with the high economical and environmental value are threatened with extinction by human activities. Ex-Situ conservation is an appropriate method to conservation this forest. This study was conducted with the purpose of studying the role of climatology factors as one of the most important environmental parameters in dispersion of mangrove forests of Hormozgan province and using logistic regression to modeling the prone areas for extending *Avicennia marina*. Temperature fluctuations, the average annual temperature, the absolute minimum temperature, average temperature of the coldest month of the year, the average annual rainfall, the minimum rainfall and the type of climate were considered as independent variables. Using Roc and Pseudo-R2, the accuracy of the model were estimated 0.75 and 0.24 respectively. Using the map resulting from modeling, the temperature fluctuations and the average annual temperature can anticipate the presence of *A. marina* up to 0.85% which shows the importance of two climatology factors for the presence of this forest. the probability of *A. marina* presence based on the climatology parameters wasn't estimated to be zero so lack of presence of *A marina* in part of the coastal zone is due to inappropriate other environmental parameters. In 67% of coastal line the probability of presence of *A. marina* was estimated very high. In this areas temperature fluctuation was between 5 to 26.5 and the average annual temperature was between 26.7 to 27.6. Temperature fluctuation was recognized as the most important climatology parameter.

Keywords: *Avicennia marina*, climatology factors, ex-situ conservation, logistic regression.

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Application of the Weighted Indexes Using Training Data and Genetic Algorithm on High Resolution Images for Vegetation Detection in Urban Areas

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Abstract

Various indexes such as RVI, NDVI, SAVI and OSAVI have been proposed for vegetation detection using satellite images. These indexes have been obtained based on high reflectance of the vegetation in near infrared band and its high absorption in red band. Basic defect of these indexes are using them in various regions without any changes in index structure. In other words, these indexes have not capability of adaption to various regions and in some of the researches have tried to reduce this defect using the empirical coefficients. In this article, all of the bands are used to produce in vegetation index. For used all of the bands in the proposed indexes, each band is assigned a weight. These weights are estimated using training data and the proposed algorithms. The study areas were Shiraz, Bam and New Brunswick, that high resolution images are used from these areas. Results in study areas show the high capability of the proposed indexes to vegetation detection.

Keywords: genetic algorithm, remote sensing, threshold, vegetation, weighted vegetation index.

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Investigation on the Potential use of *Saccostrea cucullata* as Cd Bioindicator in Coastal Areas

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Abstract

Heavy metal pollution in aquatic ecosystems has become one of the global issues. Mollusks such as clams can be used as bioindicators and biomonitors of heavy metal pollution in these ecosystems. In fact, mussels and oysters have been widely used for this purpose. In this study, the concentrations of cadmium were measured in soft tissues of rock oysters (Saccostrea cucullata) collected from two coastal areas along the coast of Laft port. The concentrations were measured using a Perkin Elmer flame AAS after drying, ashing and acid digestion. The mean concentrations of cadmium in oyster tissues were 7.9 and 2.0 µg/g dry weight for these two areas. Considering the qualifications of bioindicator species, bioaccumulation factors (more than one for both areas), and a comparison of the results with the EPA standard, it was suggested that S. cucullata can be applied as a biological indicator of heavy metals in the aquatic environment.

Keywords: bioaccumulation factor, bioindicator, Cd, Laft port, rock oyster.

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Spatial Distribution of Nitrate Ion in Andimeshk Groundwaters using the Geostatistical Methods

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Abstract

According to the importance of groundwater resources in providing of human needs, lack of control and inappropriate management of these resources can lead to the problems such as nitrate pollutions arising from the use of chemical fertilizers in agricultural lands. With generalized point data to the area using the geostatistics methods can be determine the pollution content in areas without sampling. This research was conducted with aiming to zoning the groundwater nitrate pollution content in some of Andimeshk agricultural lands. For this purpose, samples were taken from 55 wells and nitrate content was obtained in each of the wells based on mg/lit nitrate. Geostatistical methods that were used include kriging, cokriging and inverse distance weighting. After normalization of the data and drawing the variogram, kriging method (i.e. RMSE: 1.4) with fewer errors than the cokriging (i.e. RMSE: 1.42) and IDW (i.e. RMSE: 1.46) was chosen as the appropriate method of zoning. Finally, the nitrate zoning map was drawing by using geographical information system. Nitrate maps can be used as an important tool for decision makers in the field of management.

Keywords: geostatistics, groundwater, kriging, nitrate pollution, spatial distribution.

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Assessing the Effects of Oil Pollution of the Persian Gulf on Activities of 3 Different Enzymatic Biomarkers in Gill of Mudskipper *Periophthalmus waltoni* (Bushehr Coastal Area)

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Abstract

Considerable amounts of different pollutants, especially crude oils, are present in the Persian Gulf and its northern region, so biomonitoring the effect of these pollutants on its biota is necessary. Ethoxyresorufin O-deethylase (EROD), gluthathione S-transferase (GST) and catalase (CAT) activity were measured from biochemical level in the gills of mudskipper *Periophthalmus waltoni* collected from Soltani Inlet, Shif Island and Ameri Port from Bushehr coastal area (with high, medium and low amounts of pollution) in April and May 2011, using spectrophoto/ fluorometric assay. Selected biomarkers induced significantly ($P<0.05$) in Soltani Inlet's samples. This first biological effect assessment reveals that mudskipper P. waltoni is a potentially suitable target species to be used as a bioindicator in such ecosystems and this study provides further support for the use of biomarkers in assessing the health of coastal areas.

Keywords: biomarker, crude oil, EROD, GST, mudskipper, Persian Gulf.

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Habitat Evaluation of Wild Sheep (*Ovis orientalis)* in Kavir National Park using Ecological Niche Factor Analysis Method

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Abstract

Kavir National Park is an example of dry and desert ecosystem that is consisted of vast plains and numerous highlands. Wild sheep is one of the iconic bovid in this area. Understanding their habitat requirements and similarities is essential for their successful population management. We used Ecological Niche Factor Analysis approach to develop habitat suitability models for wild sheep in Kavir National Park based on field data collected from autumn 2009 to summer 2010. In this method after preparation of maps by idrisi and biomapper software, habitat variables including elevation, slope, aspect, vegetation cover, distance from water and road were entered into the Biomapper software. The scores obtained from the analysis showed that wild sheep tends to 950 to 1200 meters altitude, rocky areas and northern aspects. Habitat suitability map of Wild sheep in Kavir National Park, obtained with the mentioned method. The results of this analysis showed that Wild sheep are relatively resistant than changing of optimal conditions of habitat, and tends to marginal habitats.

Keyword: ecological niche factor analysis (ENFA), habitat suitability model, Kavir National Park, wild sheep.

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Review of the Biodiversity Conservation Strategies of Iran

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Abstract

While Iran has a rich biodiversity, it is suffering from lack of social, organizational, and managerial policies. Therefore, developing coherent strategies for the conservation of national biodiversity requires the implementation of an innovative method and needs engagement of a wide range of stakeholders and processes to ensure practical coordination. In this paper, a method generally introduced to review the "National Biodiversity Strategy and Action Plan of the Islamic Republic of Iran". This process is a multidimensional approach taken to fulfill different needs of potential stakeholders at national and provincial levels. A range of tools have been introduced to support the strategies to ensure that all stakeholders will participate in the process and through an outputs ownership approach.

Keywords: biodiversity, environmental assessment, strategy development.

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Selection of the best Protected Areas Network using an Intelligent Algorithm (Case Study: Mazandaran Province)

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Abstract

To preserve wildlife habitats and populations, it is normal practice to select representative natural areas. The aim of this research is prioritization of candidate sites for environmental protection in Mazandaran Province. For this purpose, 26 forest cover types, habitats of 8 mammal species and important distribution areas for 4 groups of birds were used as input criteria. Simulated annealing was used for prioritization through Marxan software. The first scenario looked into the efficiency of current network of protected areas to satisfy 30 percent of the protection criteria. The result showed that the current network of protected areas only provided the set goals for 8 protection criteria. In the second scenario, the best regions for conservation were selected for supplementation of current protected areas network. The result for the beast scenario showed that, to satisfy 30 percent of the protection criteria, 28 percent of the province should be set aside. Hence, addition of 186918.04 hectares to the currently protected areas is necessary for preservation. In the third scenario, the best regions to achieve 30 percent of the protection criteria were used, masking out the current protected areas. The result for the best scenario showed that, 18.43 percent of the Province is necessary for preservation. Of this amount, only 24.17 percent overlapped with the current protected areas. The result of this research is useful for identification of gaps in the current protected areas network and selection of the best regions for efficient environmental protection.

Keywords: marxan, Mazandaran Province, optimization, simulated annealing, systematic selection of protected areas.

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Scrutiny of Petroleum Hydrocarbon Pollutions in Water and Sediments in Southern Zone of Caspian Sea

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Abstract

Due to the location of a domestic, industrial and agricultural zone near the Caspian Sea, this water body has long been under pressure and environmental threat. As a result of development of oil production activities in Caspian region, such as oil exploration and extraction, a large volume of oil related pollutants is released annually into this important water body. Considering the fact that hydrocarbons may cause adverse impacts on the aquatic and marginal life, the monitoring of sediment as hydrocarbons in the sea has been considered. The purpose of this article is determination of total petroleum hydrocarbon (TPH) and comparing it with other coastal area in Caspian region-in Gilan, Mazandaran and Golestan from spring 2010 to spring 2011. 225 water sample and 75 sediment sample in 15 stations during of 5 seasons have been collected and the levels of total petroleum hydrocarbon (TPH) using FT-IR were determined. Based on results level of total petroleum hydrocarbon (TPH) is the most level in autumn 2010. Also the highest and lowest level of total petroleum hydrocarbon in water were recorded in station 7 (Dastak region) and station 1 (Astara), respectively. Moreover, the highest and lowest level of total petroleum hydrocarbon in sediment were recorded in station 13 (Neka powerhouse) and station 8 (Ghasem abad), respectively. The results of ANOVA show that level of TPH in water and sediment among different seasons is significant, but there isn't a significant difference among different stations.

Keywords: Caspian Sea, FT-IR machine, environment, level of total, oil pollutants, petroleum hydrocarbon (TPH).

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A Survey of Recreational Needs of Visitors Bamu National Park

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Abstract

This is a year field study to evaluate the recreational needs of visitors Bamu National Park. Bamu National Park has the potential ecotourism capabilities to attract Ecotourist which should be utilizing of this ability in regional planning. In this study Clawson method used that one of the most common methods of evaluation systems resorts in aware of the people comments. About 225 questionnaires, with 19 questions in each, have been distributed among the visitors of park, during weekends & holidays, in a period of one years (April 2011- May 2012). The results of this study show that most visitors are demanding that improved infrastructure and facilities in the area. More visitors aged 25 to 35 years and most of them prefer spring and summer to visit the park. Visitors often come to the park in groups. Protection of it in its natural status and lack of adequate facilities and inadequate facilities were among the visitors requests. Most visitors are willing to pay the entrance fee for the park upgrade.

Keywords: Bamu, Clawson method, National Park, recreational needs, visitors.

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