REVIEW ARTICLE



Review of the effects of the anthropogenic on the wetland environment

Kaveh Ostad-Ali-Askari^{1,2}

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Abstract

The constant deficiency of water modality will increase the incidence of complaint, predominantly for unguarded people in undeveloped republics, where practical doses and substitutes are not enthusiastically available. Many wetland-reliant on types in many percentages of the ecosphere are in degeneration; the location of kind dependent on domestic waters are of exact uneasiness. The chief deficiency and impairment of rivers, branch, swamplands, and other interior wetlands have been occupant's expansion and increasing financial development. The key deficiency and impairment include infrastructure development, land alteration, water removal, pollution, and the plan of offensive eccentric categories. Agronomical governments and approaches have applied a widespread diversity of characteristically conflicting properties on exclusive and coastal wetlands globally. The foremost the impairment and deficiency of wetlands, including seawater swamplands have been revision to other earthly practices. The most important changes were the development of anthropological populations in the coastal areas and the increase in economic activity. The destruction and dissolution of wetlands, an important route of travel, has endangered many species and injured others. Global climate change is estimated to increase the damage and deprivation of many wetlands, as well as the damage or degradation of their species, and harm the anthropological inhabitants who depend on the facility. Many wetlands change as a result of estimated sea level rise, increased storm surges and storm surges, variability in storm surge concentration and frequency, and fluctuations in waterway flow and sediment flow. The effects of global climate change often amplify the effects of wetland withdrawal. It is well known why many types of wetlands, such as lakes and wetlands, are relocated, transformed, or looted, but the benefits of their conservation are often greater than the benefits associated with their alteration. It will be bigger. In wetland conservation, indigenous peoples have often been excluded from the decision-making process. Decisions at many stages ignore the relationship between wetland conditions and the establishment of wetland facilities, and the resulting benefits to the individual. Many of the amenities supported by wetlands are unfunded and are accumulated in civilizations on a national and global scale. The benefits of transforming wetlands include those that stimulate wetland drainage for agriculture and those that stimulate important wetlands through intensive organizations that include advances in municipalities, manufacturing and recreational industries. It is repeatedly exaggerated by money. With the results in mind, high-level potential hazards and zones with different hazard levels and management approaches have been proposed for this wetland.

Keywords Wetland · Environment · Marsh · Climate change · Anthropological · Agronomic organizations

Kaveh Ostad-Ali-Askari ostadaliaskari.k@of.iut.ac.ir

Introduction

Wetlands are one of the main sorts of environment on the World; Wetlands are surrounded by the most useful environments on the ground. They make numerous facilities, which have an important part in anthropological safety. Notwithstanding the excessive chances from maintainable progress, wetlands all over humanity are under severe peril from a varied choice of non-supportable accomplishments. One of the main aims for extreme reduction and the alteration of

¹ Department of Irrigation, College of Agriculture, Isfahan University of Technology, Isfahan 8415683111, Iran

² Department of Natural Sciences, Manchester Metropolitan University, Manchester M1 5GD, UK

wetland possessions are owing to undervaluing the values of wetlands throughout progress choices. In west-southern Iran is one of these wetland zones that is endangered by underassessment and over corruption from profitable accomplishments. Wetland environments are assessed to include hectares and area in Iran and other countries. Wetlands convey an extensive variety of environment facilities that donate to anthropological security. Applied presentation of wetland environmental risk evaluation will effect in a better considerate of how physical, chemical, and biological on wetlands and will prepare an outline for practical wetland administration. An imperative feature of wetland administration is to recognize environmental perils impacting the zone. The most significant dangers threatening wetlands are recognized in an environment method. The Evaluations are described conferring to standards and purposes of the wetland and the environmental perils. They are shaped through the collaboration of terrestrial and water organizations and prepare an irreplaceable environmental facility as an environment for anthropological humanity. Wetland environments have a main part in sustaining organic variety, they are similarly significant for chemical alteration, storage, making of existing floras and faunas and for disintegration of biological resources. Wetlands have been encountered to a variety of pressure-affecting variations from accomplishments for example combing and emerging processes, hydrologic alterations, contaminant runoff, eutrophication, and disintegration by ways and waterways. These accomplishments origin interruption to the environmental equilibrium of organic and vital basins in wetlands. The extent of development and development has intensified wetland deprivation in many portions of the ecosphere, in together evolving and industrialized republics. Wetland fortification concentrated mostly on the operational of constructed wetlands, environmental water difficulties and flora expansion. Diverse types of wetlands, altering ecological current is a significant danger component that requires to be measured when responsibility environmental refurbishment and organization of water possessions of basins. Agronomic usage and manufacturing assembly, insecticide remains, pollution of wetlands from substances orifices, alteration in regular environments, over mistreatment of normal possessions, have triggered possible dangers to the wetland environments. There is a requirement for implements to measure the environmental situation of wetlands for a variety of determinations, containing Ecological Impression Evaluations, biological reserve purposes and the development and observing of wetland administration and recovery consequences. Lately, environmental danger Evaluation has used numerous implements for modeling. Environmental modeling has been applied in other subjects for instance water superiority modeling. Environmental peril Evaluation assesses the probability of possible contrary belongings on ecologies as a consequence of experience to

one or more pressure components. The environment-adapted to models of Environmental peril Evaluation have showed well-organized in assessing organizational and useful replies within a diversity of environments to allow better ecological organization. Applications of ecological risk assessment include assessments that range from screening-level to detail or an arrangement of together; analytical to surveying in progressive measure; confined to worldwide in longitudinal measure; and particular risk to numerous pressures. Environmental danger Evaluation includes inspecting a zone's ecological situations by earnings of ecological peril Evaluation examines that contemplate numerous features of the perils in addition to the exposure and precise ecological standards of the considered zone. Environmental peril Evaluation of wetlands includes approximating possible risks or pressures postured abiotic parameters of the wetland. Applied presentation will outcome in an improved accepting of how biological, and organic impose on wetlands and will deliver an outline for practical wetland administration. A significant feature of wetland organization is to recognize environmental perils impacting the zone and to progress a wetland map depend on those possibilities. Wetlands can be observed as compound progressive and longitudinal assortments of environments with different organizational and purposeful features. Peril classification needs an appreciative of the main exterior and interior components considering the functioning circumstances of a wetland. The environment method includes defining relations between these components and classifying the technique in which pressure components impact the wetland. Expansion plans for example road building, current power floras, conduction outlines, and factories eliminate wetlands. So as to keep and accomplish wetlands in a maintainable method, it is essential to decrease environmental perils that effect on the wetlands. Danger area is a significant measure in ecological danger supervision. It includes separating a zone into sub-zones consistent with universal peril features. Classifying the resemblances and alterations of hazard components between zones by creating assessments between zones can support to define the most suitable ecological peril administration strategies. This goal is gained by identification of dangers/pressures to values of the wetland. Modification in usual environments, variations in the water equilibrium of wetland, water contamination, over mistreatment of biotic possessions, and scarcity are the foremost reason of this wetland. Many criteria's are consistent and owing to the density of wetland environments, it is challenging to distinct the effects and results of these components. For maintain Wetland, organization plans are proposed on the foundation of the consequences of this investigation. Avoiding alteration in wetland terrestrial-usage, preparing necessary water for the wetland, certifying water superiority of the wetland, keeping biodiversity, supportable usage of wetland possessions,

rising attentiveness of wetland standards and pressures, and stimulating community contribution are the foremost aims of the planned plans. Most pressures in zone were determined to be in the south-west zone and in zones of stream that be qualified to the presence of admittance roads in such zones that simplify amplified anthropological entrance to the wetland. The lowest danger region was recognized in the portion of the wetland in an area that is an original situation unreachable to anthropological. The progress of the suggested procedure can attention to peril Evaluation of wetland purposes to achieve the accomplishments that decrease measurements of the wetland environment. Evaluation of wetland purposes through ordinary measureable peril evaluation can be applied to reestablish wetlands and to recover ecological evaluation plans. Quantifiable peril evaluations of wetlands can attention to biochemical materials by only integrating Evaluations of poisonousness. Factors for example contamination absorption at opening points and dispersion in a wetland, the effect of sewage on the nourishment, and focusses of metals or other contaminants in earth and water are applied for creating evaluations. It should be done on the progress of a complete ecological danger evaluation for wetlands that comprises qualitative and measureable danger evaluation methods. Wetlands protect human's lifecycle through preparing numerous yields and purposes. They are a main foundation of possessions and facilities. These possessions locate them at peril from an underrating of the actual earnings, which they afford. Consequently, when expansion facilities for example agronomy, manufacturing, building, and municipal progress are marketable and the chance value of ordinary facilities prepared by wetlands is ignored, marketplaces will service wetland alteration. Numerous approaches are obtainable to guess together practice and non-procedure standards of the wetlands and other ecological features. Above new centuries, there have been many educations on the financial assessment of wetlands. Rare efforts, though, have been completed to quantity the entire assessment of wetlands. Assumed that numerous of the straight and incidental usages of wetland possessions are non-promoted, the investigation described in this article supports to use this evidence fissure by preparing guesses of non-promoted principles for the wetland of Iran. Precisely, approximations of the inclination to recompense could be a valuable instrument for enhancements in the preservation of the wetland. The wetland prepares serious natural environment for an extensive diversity of water classes. The wetland's enormous possessions are major to the countryside inhabitants of the zone. Many towns from the east, north, and west of the wetland are the inhabited locations of the countryside inhabitants are located in South and south-west of Iran. The wetland similarly prepares flora for cattle feeding. Assumed the variety of community, financial, and ecological profits rising from the Wetland, there are durable attitudes that societies, particularly those who are existing in the zone close the wetland, sense that this environment is significant to them. Meanwhile ordinary possessions comprising wetlands are a significant portion of prosperity in each nation, the consequences of this education can prepare valuable evidence about possessions and facilities prepared by the wetlands and their assessment to humanity. It was applied greater group consciousness about wetlandscomprising profits. By recognizing and measuring the main profits prepared by wetlands, the estimation can prepare important protect to maintenance determinations. Metallic applications were examined in aquatic and residues Wetland of Iran to measure the chance, dividing, and peril evaluation and similarly to measure the foundations of dense metallic. Wetlands are serious landscapes of the international scenery owing to their substantial part in monitoring of worldwide biogeochemical sequences.

Climate change and man-made obstacles threaten the resilience of wetlands around the world. This is especially true in areas where environmental conditions are already hot and dry, and human impacts are rapidly increasing and expanding. Natural rivers have historically been affected by numerous pollutants released by human activity. Physicochemical and biological changes in water bodies. However, the effects of various types of man-made disasters Disturbances and natural wetland effects on blackish river water quality and bacterial communities persist mainly unknown. In this study, 15 water quality parameters were contaminated at 50 sampling sites along typical. The own mountain river was selected to evaluate the water quality using the water quality index (WQI). Correlation between analysis of microbial community composition and water quality in various disturbances (industry) Wastewater, aquaculture wastewater, household wastewater, confluences, dams, wetlands) were further implemented. The results showed that the water quality parameters showed significant spatial non-uniformity in the water sample. Different disturbance sites, and different types of disturbances Bacterial community. Under these disturbances, the dam changed these hydraulic and hydraulic conditions. Brings the worst water quality to rivers, fermenting microorganisms Lactococcus the predominant genus. The natural wetlands around the end of this river had and could have recreational functions Restoration of water quality and microbial community. WQI scores 33.09-62.49 were rated "low" or "medium". It is mainly affected by excess nutrient pollutants such as nitrogen, phosphorus and organic matter. Random forest analysis revealed that the water quality biomarkers are C40, Trichococcus, norank_f_norank_o_ Chloroplast and unclassified_f_Enterobacteriaceae. This research not only enabled more comprehensive research Not only understanding the relationship between water quality and bacterial communities in river ecosystems Provided theoretical support for ecological recovery and government regulation of aquatic ecosystems.

Materials and methods

The purpose of wetlands is fine recognized and a foremost meaning, is capability to clean pollutants from aerobic deposition and earthly runoff to improve water. Wetlands can reduce in dimension and develop polluted while the environment is encountered to a variety of pressure-triggering variations comprising durable intervention triggered by anthropogenic accomplishments (Muttil et al. 2006; Nafchi et al. 2021). Wetland in south of Iran is an environment enduring from ecological pressures for example oil spread services and seeping of oil pipes, possessions of boiling hot blazes in factories, manufacturing waste, agronomic nourishments, indigenous fisheries and sewage produced by contiguous petrochemical components (Miller et al. 2012; Ostad-Ali-Askari et al. 2017). It was also found the information on spreading of phthalate Acid esters in superficial deposit models occupied from north of Wetland, Iran. Two phthalate Acid Esterss contain of di (2-ethylhexylphthalate) and di-n-butyl phthalate were distinguished. Condensations of PAEs were definitely connected with entire biological carbon (Ramsar Convention Secretariat 2004; Ostad-Ali-Askari, 2022b). For example, the north wetlands of Iran are extremely contaminated by main phthalate Acid esters congeners consist of di (2-ethylhexylphthalate) and di-n-butyl phthalate (McPherson et al. 2008; Ostad-Ali-Askari 2022a). There are numerous important foundations that contaminate the wetland, they contain waterways that dump contaminants into city, community wastewaters of place, many municipalities in this zone, waste dumping, manufacturing sewages, agronomic waste, excavating excess, in addition to delivery manufacturing remaining that releases oil into city, and excess related with building of innovative bond on these wetlands (Malekmohammadi et al. 2014; Shayannejad et al. 2022). Furthermore, meanwhile inhabitants in this area consume the polluted fish and birds of this wetland, the contamination could be moved to persons (Radu 2009; Eslamian et al. 2018a). The wetlands are facing structural and flora variations occasioning in duct avulsions and wetland development (Lemly 1997; Saaty 2000; Eslamian et al. 2018b). This investigation examines the variations over the recent years and examines usual and anthropogenic performances to describe the rise of the Wetland zone (Malczewski 2004; Saaty 2008; Ostad-Ali-Askari 2022). Wetlands are flooded or inundated zones that significant environments for kinds make usual water refinement, carbon storing, flood safety, and deliver water possessions and regeneration occasions among other environment facilities (Forman et al. 2003; Shabman et al. 1979). Water generalization, barriers and other hydraulic organization for irrigation, water source and terrestrial usage and weather variations are among the compressions that alter and can imperil riverine and wetland organizations (Ha'jkova' et al. 2006). Stream wetlands in Iran dry weathers are important for maintaining of environment, persons and their accomplishments for example feeding, agricultural and fishing (Hadker et al. 1997). Wetlands perform as normal filters getting and recollecting postponed residues, nutrients and contaminants, and discharging fresh water downstream (Hanson et al. 2008; Nafchi et al. 2022a). Plain flora shows a significant part on stream transform dynamics and mainly in trapping residues in wetlands. Universally, internal wetlands zone is seriously declining in the previous period owing to terrestrial alteration to harvests and feeding grounds, water concept and absence of residue input which is reserved in reservoirs (United States Environmental Protection Agency 1992). Wetlands zone decline is pretense severe apprehensions for wetlands preservation in numerous zones of the Iran (Heller 2006; Spieles 2005; Fattahi Nafchi et al. 2022). It was discovered maintenance results of wetlands on publics' occupation (Suter 2000; Ostad-Ali-Askari 2022c). Many wetlands are located in Iran and it was approved in an extent-value method (Turner et al. 2004; Abedi-Koupai et al. 2022). Regard on the consequences, the wetland has had an important result on habitation's lifecycle in five measurements of occupation resources for example economic, natural, anthropological, physical, and community (Holland et al. 1995; Kruse et al. 2018). Among the policies from the wetland, the plan of variety of maintenance and profits accomplishments had greater prominence for native houses. Wetlands are realized as the utmost dynamic environment and have a serious part to show in supportive and evolving public's employments, decreasing deficiency, refining nourishment safety and in the broader environment donating to maintainable expansion (Rahimi Blouchi 2012; Ralph 2003; Eslamian et al. 2018c). A wetland is an appreciated usual environment that suggests together straight and secondary occupation possessions for native publics particularly for refining ecotourism proficiency (Kellett et al. 2005; Ramanathan 2001). Diverse features of wetlands have been measured by investigators but the improvement feature or uniqueness is to measure the effect of this kind of environment on the numerous measurements and, eventually, the withstand capability of employments, which has less been considered, particularly applying Maintainable Employment Structure (Kiker et al. 2005; Ostad-Ali-Askari 2022d, e). Iran's wetland is one of the most significant wetlands in Iran which has been considered to dissimilar financial and maintenance,

sight-seeing, fishing and entertaining accomplishments standards owing to precise ecological structures (United States Environmental Protection Agency 1998). The wetland shows an important part in making numerous agronomic yields and indigenous folks' occupation (Wang et al. 2011; Talebmorad et al. 2022). The association between public and wetland endures till nowadays as provisioning facilities are progressively industrialized; and as wetlands show ever better parts in employment variation of insignificant (United States Environmental Protection Agency 2002; Rabiei et al. 2022). In Iran, wetlands are viewed as together foremost supply ecotourism and comparable to other nations, the straight purpose of wetland similarly contains preparing stream, irrigation and cattle feeding (Kotze et al. 2012). Also, wetland agriculture is a critical occupation among rural publics as the wetland offers respectable refining situations for products for example potatoes and other vegetables (Kim et al. 2011; Vanani et al. 2022). It was applied wetlands by rural publics be contingent to a great point on the ordinary situations of the wetland, the financial position of the societies, and the administrative and chronological situation of the nation (Klemas 2011). Wetlands have delivered significant chances for leisure industry and preparing financial assistances to the administrations, the leisure industry engineering, and the native societies, and the proceeds has been applied as a basis for their preservation (Wu et al. 2006). The wetland appreciates attractive countryside, gorgeous usual assessment and capability (Zedler 2005). The farms around the wetland prepare feed for faunas (Yang et al. 2011). The presence of productive park land on the boundary of the wetland with plentiful water, great rainfall and prodigious earth of inclined parklands have delivered the possible of drizzled agriculture with a diversity of yields (Yavar Ashayeri et al. 2019). The ordinary environment in the area, the wetland with a reasonable maintenance of the excellence of the weather donates to the decrease of scarcities or its properties. The part of the wetland in defending the environment and biodiversity of the area, and reducing soil corrosion disclosesits efficiency in the sustainability of normal possessions. The execution of security strategies for the wetland environment, for example the building of residue and form obstructions have been operative monitoring overflows, avoiding terrestrial deprivation, and cumulative groundwater recharge (Zhang et al. 2011). People have applied the wetland physical possessions for example scenery for enticing outside visitors, agronomic and non-agronomic accomplishments to attain their maintenanceobjectives (Zhang et al. 2003). In relation to the consequences of the regular period balance examination, the most important impression of variations happens throughout the dry period, while the rise of irrigation agronomy consequences

in a rise in water release and residue masses to the Iran's wetland (Zhang et al. 2009). Wetlands are extremely profound to contamination properties as they are typically little domains in contrast to the environments (Alberini 1995). Pollution with substantial metals in the wetland's environments may have altered the environment's attraction. Wetlands are usually distinct as domains permanent between global and water environments (Zhao et al. 2006). Wetlands environments are among useful lifecycle support organizations in the domain and deliver a variety of appreciated environment facilities to anthropological civilization. Wetlands organizations might be more simply polluted by poisonous substantial metals owing to sewage releases from community, manufacturing, and agronomic foundations, agronomic runoff, superficial excavation drainage, irrigation reoccurrence currents, municipal storm aquatic releases, and other foundations of contamination. It is significant to assess and attain information on the environment wellbeing of wetlands. Substantial metal contamination in wetlands and water environments is becoming a possible worldwide apprehension. Substantial metal pollution in wetlands not individual declines the water superiority, however similarly has critical possessions on the environmental equilibrium and decline the biodiversity in wetlands. The wetlands environments can collect contaminants over period, and are at the peril of together poisonous and sub poisonous properties from contaminants for example substantial metals. Owing to wetlands' significance in preserving the constancy of the situation and important environmental facilities, particularly for keeping biodiversity fertility for example the two significant wetland environments in north (Gomishan international wetland) and west (Zarivar wetland) of Iran. These wetlands obtain seepage releases from national, agronomic, biochemical manufacturing, forest and broadsheet industrial, energy manufacture and transport (Tabatabaie et al. 2011) comprise diverse contaminants comprising substantial metals. The examination the substantial metals in wetlands environments by their quantity in power skin of fish types. For instance, Gomishan is a saline aquatic wetland but the Zarivar is a limnetic wetland. It is also mentioned that Residue models in the northern portion of the Shadegan wetland have a little too intermediate environmental peril. Polycyclic aromatic hydrocarbons pollution in water organization is of apprehension meanwhile it may establish a basin of these pollutants for wetland environment. It was considered contamination features and environmental perils of Polycyclic aromatic hydrocarbons by experimenting polluted residues and water in south-west Iran. The wetlands are recognized as one of most physically various significant and dynamic environments in the domain. This wetland is situated together to a significant lubricate ground. Many Wetland and its environments have endured many variations in new centuries in Iran. Wetlands, as a significant terrestrial sort are progressively becoming an extensive apprehension of many researchers. Investigation of the powerful strength of numerous wetland alters is an importance and attention of wetlands terrestrial usage/ variation investigation (Adato et al. 2002; Ghashghaie et al. 2022). A great quantity of investigations display that the dynamic forces of wetland variations distress weather alteration, flora and anthropological disruption. Many wetlands protect many migrant animals. Many Wetlands are an undefended zone on the central hill of Iran that is typically encountered by many public cranes every time throughout the historical. The main anthropological pressures impacting the wetland are excavating. Wetland is the most significant area for public cranes in focal Iran and similarly prepares significant environment for other seasonal water birds. In new periods, about partial of wetland has seared and endured severe destruction as well as imperiling traveling birds. Many wetlands variations in salty stream comprise agronomic terrestrial expansion and enlarged in excavating accomplishments in addition to the progress of sewage conduct herbs in the wetland south-west of Iran. Abovementioned variations will positively have contrary results on the wetland situation. The quick and enormous alteration of rangeland and herbal terrestrial within the wetland zone may have severe ecological impressions unless appropriate ecological organization plans are prearranged and applied before additional destruction is prepared to the wetland zone. Organization processes must be occupied to defend the wetland and its prototypes so as to reduce the strictness of the variations. Therefore, the succeeding plans are completed as alleviation plan. Advance the fortification grade of the wetland as an environment protection. Execution of Organic Managing Database. Abstain additional variations to the terrestrial usage of the wetland and neighboring terrestrial zones. Source the aquatic condition to the wetland from the neighboring watershed. It was assessed the substantial metallic issue from dredged resources of Iran's wetland for developments comprising aquatic removal, limited removal, and valuable usage in agriculture. It was desiccated grades similarly contain green islands of wetland. Furthermore, educations connecting height, pH, gradient inclination and flora have been supported in many highland wetland environments. Some area where is investigated that waterless gradients similarly comprise green islands of wetland. The wetlands showed to be of preservation prominence with plant, comprising endemics or sub endemics. Better highland wetlands are mainly comprises many pervasive and other types of a fine scattering. Additional educations on place efficiency, dust chemistry and weather-associated flexible are, so, on-going in an effort to comprehend more

completely the environment procedures preserving the variety of these significant wetland places. Furthermore, educations connecting elevation, pH, slope disposition and flora have been approved in many highland wetland environments. It was studied flora and ecosystem of wetland places on dry mountainous gradients of the Iran. The conclusions should prepare perceptions into the preservation assessment of these wetland environments, altitudinal distinction in conformation and ecological flexible, comprising an examination as to whether our considered flexible appropriate the three altitudinal recognized an assessment of the environmental inclinations within our wetland places with those verified from elevation varieties in other phytogeography zones. The straight effects of weather are plain in the wetlands in contiguous grassland flora. In difference, within the wetlands, a popular of sorts are related to more than one phytogeography district. Wetland environments might be estimated to absence sorts with a contracted dissemination. The minor highland wetlands are similarly of excessive concentration, principally within the environment of Iran. Additional investigations on place efficiency, soil chemistry and environment-interrelated variations are, so, on-going in an effort to comprehend the environment procedures preserving the variety of these wetland places. Three-dimensional dissemination designs of total cadmium and (Pb), their bio accessible portions and full biological substance in residue from wetlands are prepared. Full Cd and Pb showed optimistic associations with entire biological substance.

Many studies use cluster analysis to classify water Samples from different regions. The dendrogram shows the distance Differences and connections between different groups based on Water samples can be divided into different four main types. The results showed that water quality parameters had important spatial effects. Non-uniformity of water samples from different locations. Clear input various man-made obstacles such as industrial effluent, aquaculture effluent, domestic effluent, and hydroelectric dams were the main causes of the various groups. It's funny to find the beginning and the end points of this flow were grouped into the same group. This phenomenon may be due to Site as the original site obstructed by the industrial spill had strong self-cleaning capabilities Therefore, its water quality parameters have not changed much. Also, a natural wetland that can solve the problem Deterioration of water quality, restoration of self-cleaning ability, ecosystem the health of mineral water, surrounding the edge of this river. Cluster analysis also has water quality parameters the continuous sites of the flowing rivers were highly interconnected. In contrast, different sites formed another group and showed the worst water quality affected by the dam.

Discussion and results

The procedures we applied in this investigation can be in more operational administration of water environments, in addition to environmental peril evaluation of metals, and plans. The wetland is one of the most significant environments in the south-west Iran. There are numerous aspect properties that contaminate the wetland, they comprise rivers that dump contaminants into wetland, urban sewages, manufacturing sewages, agronomic waste, excavating waste, in addition to transport manufacturing waste that releases lubricant into wetland, and waste related to building of recent link to the these wetlands. Superficial residues and offspring of five bird kinds were collected from societies in Wetland in the directly above seashore for Perylene investigation. Wetlands occur in compound environmental situations that are variable in period and space in relations of purpose and organizational assortment. In new periods, wetlands have been encountered to an extensive variety of pressures. Evaluation of these pressures is vital to progress a considerate of the national of a wetland environment and to progress an appropriate administration plan (Environmental Systems Research Institute 2008). It was deliberated wetland defenselessness in terms of examination of anthropological and ecological organizations from presentation of the pressure outline. This Evaluation considered a methodical procedure for Evaluation of wetland defenselessness in a community-environmental method using comprehensive-measure environment facilities and resistance purposes. It was evaluated defenselessness of wetland environment facilities and to describe the peril signs consistent with significance, strictness, and possibility of event. The Multi Principles Assessment Assembly process was applied to select pressures and effects of the wetland on the base of professionals' attitudes. Many plans procedure was used to the global wetland site in south-western Iran. Weakness evaluation exposed that aquatic condition of the sea-level and the aquatic allocation organism were the most significant components frightening the wetland. Hydrological equilibrium was defined as the most exposed purpose and was measured as the most significant purpose in the wetland. Wetlands are significant for anthropological security. They prepare an important ecological source through weather instruction, chances for fishing and establishment of aquatic possessions that are vital for product assembly and valuable for reformation. Though, the well-being of such appreciated environments universal is progressively under threat from ecological compressions. Ecological compressions are principally produced by anthropological accomplishments: aquatic for agronomy, release of manufacturing and national sewage into wetlands and feeding of

wetland flora for energy and cows forage are instances of anthropological accomplishments that have a disadvantageous effect on wetland zones. These accomplishments impact wetland environments in unindustrialized nations, principally those in which the fortification of a wetland environment is frequently disregarded by its countries and strategy-producers. Community and biophysical features have been conveyed both for earlier investigation of defenselessness in relations to together anthropologicalsituation or community-environmental methods. A fixed anthropological-situation organization likewise identified as a Fixed Anthropological and Regular Organization is a combined methodical basis for reviewing an edge and common interfaces that association anthropological to regular sub-organizations of the earth. For example, the Choghakhor wetland in south-western Iran. Environment facilities and evaluation of defenselessness purposes of this wetland have been prepared on a comprehensive measure applying a community-environmental method (Environmental Protection Agency of Iran 2010). Regard on consequences of the hydro-earthy method, the south-west Wetland was recognized as Lacustrine Marginal and dump earthly with a highland biome and situated in subclasses of steam pond wetland and artificial lacustrine marginal. Wetland facilities and purposes were recognized applying the subsequent groups from the time environment evaluation, preparation, modifiable, national and supportive facilities (Environmental Systems Research Institute 2008). It was disclosed significant purposes and standards for example groundwater drain, flood mechanism, residue preservation, water source, water environment in wetland. In forthcoming strategies for the wetland, it is suggested that more consideration be compensated to these purposes. Presentation of this investigative prototypical recognized compressions in the wetland situation. Owing to these altering situations, a collective result on situation and anthropological organizations can be noticed in establishment of properties and facilities in the education zone. The consequences of peril stage for periling components display those aquatic necessities for the sea-level and the aquatic transmission process were the most significant pressures for the wetland. Supportive, national, and establishment facilities were following in relations significance (Cui et al. 2009). In susceptibility standards of environmental purposes, aquatic parameter was determined as the most defenseless purpose, whereas it was the purpose with the utmost prominence in the wetland (Barbier et al. 1997). Depend on prominence of hazard importance among risk components, exposure of environment facilities and environmental purposes, and accessible evidence, four sorts of plan were proposed to improve the effects of peril components on the wetland site (Bassi et al. 2014). Examination must also use exact quantification of residue masses and effects wetland site. Exposure evaluation of the environment facilities used environmental and measureable methods that were recognized in the wetland site (Clarkson et al. 2003). These are simply available to specialists and result causes for wetlands with comparable biophysical and environmental situations (Behan 2010). The suggested procedure can be used to examine scene-scale environmental possibilities in wetlands (Belton et al. 2002). Hydrological equilibrium was categorized as the most exposed purpose in the wetland and as the most significant purpose. Attention of the active national by investigation evidence on alteration of property usage, appraisal of the associated works, decisions of specialists and exposure evaluation, simplified a sequence of comebacks and an accomplishment strategy for the wetland administration (Dahl 2000). It is suggested that the best plans will be used to wetland organization in the forthcoming (Costanza et al. 1997). Then, the wetland situation will continue imperiled (Dugan 1990). Though, these activities were measured essential, they were defined insufficient for wetland fortification (Bemanikharanagh et al. 2017). Peril organization related to alteration of terrestrial usage, development plans to progress sight-seeing depend on ecological contemplations, and observing ecological signs were measured organization significances for the wetland. In entire, the consequences of this investigation could be applied to create strategies for prospect wetland organization. It was confirmed a quantity to a more combination technique to assessing wetland coverage. Procedural novelty was used by assessing a mixture of community and environmental and effects in the structure for wetland organization (Chen et al. 2009). This evaluation similarly recognized the most exposed purposes, organization arrangements, and extenuation tactics in positions of probable reasons within the measured theoretical prototypical (Burgman 2005). The consequences of many investigations propose organization plans for the wetland (Chen et al. 2010). There is a crucial requirement to evaluate and examines the flexibility of wetland sceneries in positions of enlargement (Chen et al. 2011). A straight sub-shallow stream Built Wetland organization was applied for the principal period to necessity sewage from a crystal industrial manufacturing in Iran (Chau 2007). Wetlands are recognized as a maintainable, knowledge with established conduct measurements (Chen et al. 2013). Wetlands organizations have been used for an extensive variety of manufacturing sewages, e.g., formed aquatic from activities for instance water contaminated with petroleum extracts and energy results, critical excavation drainage (Christian et al. 2009). Consequently, so as to decrease the manufacturing works effective expenses, it was certain to check a Wetland organization to give this manufacturing sewage and examine the possible to reprocess and recycle the preserved sewage in the crystal manufacture procedures. A measurement wetland organization was constructed on place to give the crystal manufacturing sewage pointing at attainment the native release values. A wetland project for crystal manufacturing sewage, therefore there were few doubts on how the organization would return to the sewage conformation. The arrangement of resolving grade as main conduct phase with Wetlands is a perception that has been planned for internal/public sewage. Micro-bacterium can similarly improve silicondioxide elimination in a wetland situation. Furthermore, the short nutrients content in the crystal manufacturing sewage are possibly used by floras for their development requirements, as it is previously recognized, however other procedures for example nitrification can similarly happen in the wetland vessel. The principal presentation of Wetlands conduct knowledge for the sewage produced at a crystal industrial manufacturing. Meanwhile there was no preceding wetland knowledge for this specific manufacturing sewage, the method was to principal examination a wetland perception strategy in an experimental component to detect and enhance its presentation, and formerly practice the experimental investigation result to build the complete-size organization. It was examined a methodical procedure for peril evaluation and area of wetland environments. Wetland perils are examined conferring to strictness, likelihood and a variety of penalties. Today, wetlands are at danger from an extensive variety of pressure components. Numerous types of faunas and superior waters excitements alive in wetlands and assemblies of voyaged birds could devote their winter stages in wetlands; also wetlands have precise vegetation's shields. For instance, Hamoons are border wetlands among Iran and Afghanistan which acquire their aquatic from Hirmand Waterway and form a distinctive wetland environment of remaining confined, domestic and universal prominence. It has been nominated as wetland of worldwide significance under the Ramsar Settlement by the Iranian Administration in 1975. The wetlands have a prodigious environmental, financial and national assessment and propose maintenance to a substantial ratio of the anthropological inhabitants in the Sistan washbasin. In the preceding period's scarcity appear to have happened more regularly than earlier and the flora protection has intensely reduced. The situation of Hamoon wetlands, applied mechanism and proposed explanation for preservation and recovery of Hamoons will be offered. Streams and wetlands have caused and if accomplished appropriately can endure to make considerable financial, ecological and community profits for their populations. Anthropological accomplishments assumed to rise the profits attained from waterways, wetlands and their plain may similarly rise the probable for prices and compensations while the waterway or wetland facing unusual or great stream situations. The budgets

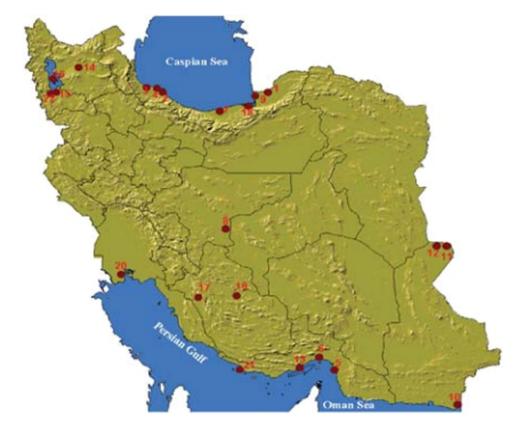




Fig. 2 the Pink wetland of Lipar in southeastern Iran

and recompenses are financial, ecological and community. They consequence owing to an incongruity among anthropological suppose or response and flora suggests or provisions. For organization and monitoring superficial aquatic possessions in portion liquids basins, especially in transborder wetlands, Combined Aquatic Possessions Organization provisional could evade of pressures and trials between nations, make appropriate collaboration's in superficial liquids possessions process. Global wetland meaning and particulars and donating some of ecological



Fig. 3 Sarandoon, Balandoon Wetland Complex in Sari, Iran

experiments in trans-border liquids washbasins in Middle East, situations and site of Hirmand global wetland and current difficulties and explanations will be deliberated. Wetland has numerous descriptions and denotations, but City's wetland purpose describes wetland as: "lesser swamp, wetland, ordinary or distinct pools, everlasting or momentary with fluid or stationary aquatic, new, semisalty and similarly marine areas. Goal of Ramsar agreement is preserving and intelligent procedure of wetlands by using general and global collaboration to perform as a



Fig. 4 Recovery of Gavkhooni wetland (Isfahan Province) in Principal Iran

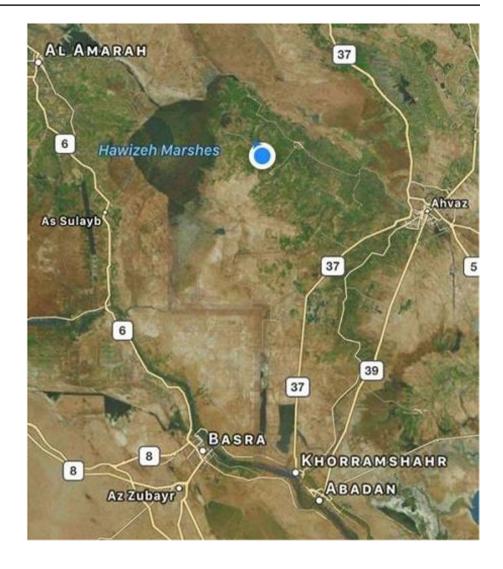


Fig. 5 The border wetlands of Iran-Iraq

technique for supportable expansion in entire of the domain. Iran wetlands assignment (1984) described wetlands as resulting: "Wetland is an area settled by Hero throughout its development procedure, its earth is soaked by superficial and earth liquids and is shaped in a satisfactory and usual period phase and has a steadiness lifecycle. Figure 1 shows the position of the wetlands in Iran (Najafi 2011) (Fig. 2).

Figure 3 shows the position of Sarandoon, Balandoon Wetland Complex in Sari, Iran. Figure 4 shows the position of recovery of Gavkhooni wetland (Isfahan Province) in Principal Iran (Figs. 5 and 6).

Meighan Wetland with a zone of 25 thousand hectares is one of the maximum one in Arak, Markazi Region. Wild land environment has formed a marvelous assessment of this site. Meighan Wetland is the environment of some of the infrequent migrant plants and animals in Iran that is measured as one of the wonderful usual fascinations for fowl viewing. It is similarly measured as a highest ten wetland of Iran with diverse nature. Maybe it will be motivating to distinguish that this wetland goes back to the Paleocene period. Owing to the brininess of aquatic, Salty ground enclosed the Meighan Wetland throughout the winter. It appears snowy and hoary. Similarly, Meighan Wetland is occupied by many traveling flora and fauna going Siberia. These traveling birds mark Meighan Wetland as one of the greatest sites for fowl viewing (Fig. 7). The beast and vegetable types of this area as survey: This wetland is one of the main pools of Halophyte in Iran. For centuries specialists have advised of the critical effect of Iran's river flow changes on the southeastern outlying areas of Iran (Fig. 2). For example, The Mesopotamian Marshlands, in the border area of Iran-Iraq (Fig. 5). Portion of the Mesopotamian Wetlands, Hawizeh Marsh overlaps the Iran-Iraq boundary, with 2/3 situated in Iraq, named Hawizeh, and 1/3 in Iran, entitled Hoor al-Azim. Its foremost bases are the Tigris River on the Iraqi lateral and the Karkeh River on the Iranian lateral. Massive zones of Hoor al-Azim have been dehydrated for oil survey owing to oil penetrating and upstream dam structure. This has triggered enormous earth storms which gotten the urban of Ahwaz in Khuzestan, causing great demonstrations. The wetlands have been re-occupied and that it has develop a visitor purpose, but while one appointment the place this is scarcely the circumstance. Sand storms have sustained to spread the urban of Ahwaz and other zones in Khuzestan region. The air superiority was awful, attached with risky heat. It was proved that to revolve the current to ecological renewal, in specific for Hoor al-Azim, is a longstanding exertion that needs supportable procedures. Shadegan wetland in eastern Khuzestan, with bigger resident Marsh Arab inhabitants, is in much improved figure but undergoes from contamination too. In Iraq, Hawizeh Wetland was factually the greatest steady wetland then has in the earlier period practiced unlimited water scarcities. Building of the Karkeh Dam in 2001 on the Karkeh Waterway in Iran decreased Hawizeh Wetland stream on the south side where the wetland links the Tigris River. Gavkhoni is a massive damp zone, fundamentally a wetland, which is moderately and individually covered with trees, which marks it similar a wetland. However, presence near to obscure volcanic mountain marks the scenery attractive, particularly for those attentive in environment. In information, the area is a regular populations for dissimilar generous of birds. Gavkhouni situated in the Iranian Upland in focal Iran, east of metropolitan of Isfahan, is the station washbasin of the Zayandeh River. Gavkhouni is a saline wetland. The salty wetland can desiccate in summer. The Zayandeh River makes in the Zagros highlands and routines around 300 km, before ending in Gavkhouni. Gavkhouni obtains contamination from Isfahan and other municipal originals. In Iran more than 30 **Fig. 6** Universal situation of Hawizeh Wetlands/Hoor al-Azim (Khuzestan Province)



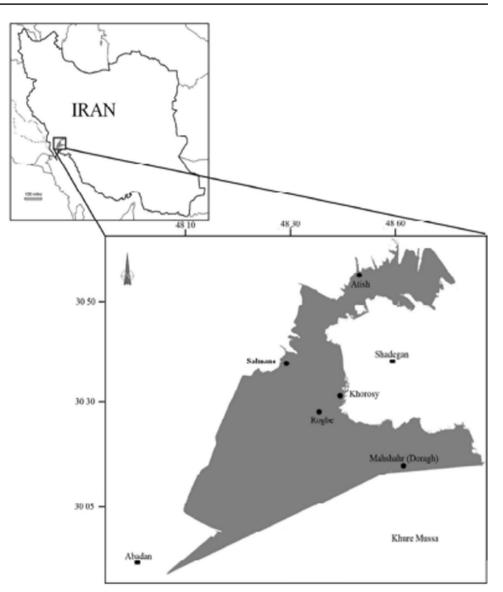
wetlands have been documented as worldwide wetlands. I.R. Iran administration is assumed to create public and other administration supporters to preserve environmental



Fig. 7 Meighan wetland, a desert wetland in Iran-Hipersia

equilibrium of wetlands presented in list and efforts for protection diversity of subsistence of these wetlands. Application of Gas Development by Turkey has had undesirable results on global wetland of Hoor-al-Azim, consequently triggered desiccating many portions of this wetland between Iran-Iraq and austere abolishing of many floras and faunas environments (Fig. 6). Adverse results of Desiccating Hamoon Lakes to Ecological of Sistan and Objectionable results of desiccating Hamoon wetland and ponds are as subsequent Abolishing single straws and terrestrial protects of Hamoon wetland and endangered faunas of area. Altering superiority of wetland new aquatic and salinization of aquatic owing to emerging sand tornado measure and continuation of scarcity in wetland. For restoration of Hamoon wetland and its ponds numerous stages have been applied Legal stages (regarding to Hirmand (Helmand) aquatic agreement, General application (maintenance of gravel fluid in Sistan natural and Hamoon waters, aquatic possessions and feedings in Sistan natural, altering agronomy and irrigation designs, formation and organization of Chah Nimeh pools

Fig. 8 The plan of Iran, Position of Seven Apprehension locations was experimented in Shadegan wetland (Khuzestan Province, South West of Iran)



for providing the smallest capacity of drinkable liquids and as a balancing wetland for remaining zoological and florae livelihoods), Affecting to Combined Aquatic Possessions Organization in Hirmand (Helmand) Trans border River Washbasin, Worldwide operation (making and performing assistance plans of Iran, Afghanistan and worldwide governments. Separate situation of Hamoon wetland and its ponds is an excessive legacy of landscape which universal should preserve appropriate and allocate to forthcoming efficiency for remaining anthropological, faunas and florae existing. Agronomic expansion upstream, cumulative obtained waterways, deficiency and publics benefits to reimbursements floras and assemblies, inner difficulties and absence of safety in Afghanista-Iran could not and reason abolishing Hamoon wetland assortment, will absorbed under gravels. Iran has compensated substantial prices for defending and restoration of Hamoon wetlands and issues its aquatic at Chah Nimeh

pools for providing drinkable aquatic. Biomass evaluation and assembly of fish types was approved in the Shadegan wetland. Wetlands are maintained as important of types and uninhabited lifetime inhabitants. Detriment of wetland has catastrophic results in uninhabited lifetime and bio mixture that has significant global and district properties uninhabited lifetime, experts supposed that wetlands obliteration are triggered instinctive types worldwide extermination to entirely regard on precise environment. Iran wetlands are about 1,853,762 ha and among Middle East wetland was confined 25% (Mitsch 2000). Shadegan Wetland (Fig. 8) in Khuzestan area is one of the most intercontinental wetlands recorded on UNESCO's Normal Legacy Grade. It is Iran's biggest wetland. The wetland shows an important hydrological and environmental part in the regular effective of the northern Persian Gulf (Fig. 9).

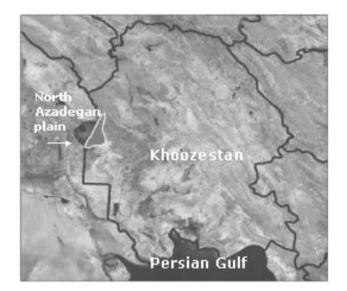


Fig. 9 North Azadegan Plain (Mirzaei 2010)

The efficiency of these zones has been decreased in approximate ratio to this loss of their plain zones. The totality effect of these variations is greatest of the lasting zone was in Shadegan wetland. With inspection occurrence of fish kinds in Shadegan wetland was altered. Shoreline fisheries applied the wetlands for depositing movements and they were being applied as lands for shrimp and fish (Alberini 1995). The fishes assume periodic immigrations between depositing in the gulf and plant sales outlet and feeding lands in the Shadegan wetland. Examining fish manufacture and biomass standards it can be determined that: fish manufacture of Shadegan wetland was most of domestic aquatic and is one of zone with great prospective. Presently the Hawr Al Azim Wetland is the major stream wetland in Minor Mesopotamia and signifies the enduring portion of the previous Mesopotamian Wetlands, whose zone has decayed affectedly over the years. The sub-types of the final are pervasive to the wetlands, and are supposed to be near to destruction. Present information on the dissemination and position of the wetlands is slight, and efforts to get more evidence are being hindered by process. So as to control the otters' position we shown a field review, questioned native persons who had entrance to the internal wetland and studied all obtainable evidence about otters' dissemination in the wetlands. Though we could discovery comprehensive indication of the attendance of together types in the previous, the investigation unsuccessful to discovery any existing symbol of otters. In difference, native fishermen demanded that otters are occasionally detected in the internal or higher portions of Hawr Al Azim (Figueria et al. 2005). The spreading of the two types in the zone wants to be additional examined and efforts should be completed to defend and reestablish the finest residual portions of Mesopotamian wetlands. Canalization of waterways, elimination of flora, dam structure, draining of wetlands and impacting fish obtainability, may denote as numerous pressures to otter inhabitants. Hawr Al Azim and

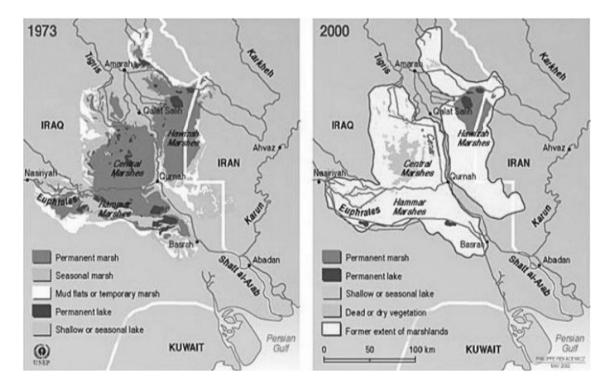


Fig. 10 Difference in the terrestrial protection of Mesopotamian Wetlands from 1973 to 2000 (Mirzaei 2010)

Hawr Al Hawizeh are portions of a particular hydrological organization and procedure one of the main lasting river wetlands in Lower Mesopotamia, being situated between N 30° $58'-N31^{\circ}$ 50' and E 47° 20'-47° 55'. This wetland is located in the North Azadegan Plain, 80 km south-west of Ahvaz city, near the boundary between Iran and Iraq (Fig. 10). The zone is about 56.654 ha, most (37,266 ha) of which lies within the Hawr Al Azim Wetland. Located to the east of the River Tigris, regularly at about 6 m a.s.l., the wetlands have qualified substantial variations throughout the latter twenty periods and are projected to encounter further adaptations in the following years. Earlier they lengthy 85 km from north to south and 40 km from east to west are protecting about 254,000 ha. The organization was nourished by two branches of the Tigris and by the River Karkheh, which increases on the Zagross Mountains in western Iran. The northern and central portions of the wetlands were stable; however in the south they were principally periodic. Presently, Hawr Al Azim signifies less than 2% of the previous Mesopotamian Wetlands and about one third of the present Hawr Al Azim / Hawr Al Hawizeh organization (Mirzaei 2010).

Coastal wetlands, which serve as important habitats for large populations of migratory birds and aquatic animals, are one of the richest. Ecosystems from a Functional and Service Perspective. However, coastal wetlands around the world are experiencing severe losses and degradation due to human and natural disturbances such as sea level rise, landfills and the invasion of alien species. Affects aquatic bird habitat and biodiversity. Speaking of nature Coastal wetland turbulence can cause people to respond to its consequences by controlling human threats. Development of ecological projects to protect and restore ecosystems. In addition to Under the Convention on Biodiversity and the International Convention on Wetlands, the conservation and restoration of coastal wetlands is the United Nations Sustainable Development Goals. Therefore, sustainable Management of coastal wetlands and conservation of biodiversity requires an understanding of the magnitude of coastal change. Wetlands and related human threats. Remote sensing provides an effective approach for identifying human changes in wetlands by observation. Multiple scale and long-term series. Satellite images have been used to study different types of coastal wetlands of different sizes. For example, tidal flat and mangrove losses were assessed Globally showing high losses using Landsat images and random forest classification Due to human activity. Coastal development at the national level of China Fishponds and Spartan alterniflora were studied by applying object-based classification to Landsat images. In addition, the invasion of urbanization into coastal wetlands was emphasized.

Conclusion

Wetland conditions, containing rivers, lakes, and coastal zones prepare many facilities that donate to anthropological security and deficiency mitigation. Many human mostly those existing near wetlands, are decidedly reliant on these facilities and are straight abused by their deprivation. The most significance wetland ecosystem facilities impacting anthropological safety is water accessibility. The main source of renewable fresh water for anthropological procedure comes from an assemblage of internal wetlands, containing ponds, waterways, marshlands. Groundwater, frequently refreshed through wetlands, shows a significant role in water source. Wetlands show a main part in considering and purifying a diversity of waste yields. Wetland has been recognized to decrease the condensation of nitrate. Global climate change through repossessing and discharging a main ratio of immovable carbon in the environment is the most vital key of wetlands. Wetlands prepare important visual, informative, traditional, and otherworldly profits, in addition to an enormous collection of chances for regeneration and tourism. Wetlands prepare many no promoted and promoted profits to societies, and the entire financial assessment of disnatured wetlands is often superior to renewed wetlands. Together local and seaside wetlands meaningfully impact the nature of the hydrological series and hereafter the source of water for persons and the many routines they mark of water, for example for irrigation, energy, and transport. Variations in hydrology, in opportunity, impact wetlands. Wetlands supply an extensive collection of hydrological facilities. Flooding is a normal occurrence that is significant for preserving the environmental operational of wetlands. Many wetlands reduce the critical environment of flooding, and the damage of these wetlands raises the risks of floods happening. Profitable water shortage and imperfect or reduced access to water are main tests fronting anthropological civilization and are important components restraining financial improvement in many nations. It appears, weather alteration and wetland nutrient components are very operative component that inclined on biomass. The cumulative effect of these variations is greatest of the lasting zone was in Shadegan wetland. It appears, with alteration in biochemical, physical and environmental in wetland is altering variety. River types were typically extended for nourishing and aquatic types for depositing and transient larval phases to the Shadegan wetland. Seaside fisheries in the Persian Gulf applied the wetlands for depositing movements and they were being applied as plant sales outlet lands for shrimp and fish. Sixty wetlands in Iran, containing closely 44 percent of the nation's entire wetlands, have desiccated, conferring to the assistant head of the Department of Ecological for wetlands. There are some 105 wetlands in Iran, extending 3 million hectares

of terrestrial. There's increasing cognizance in the Islamic Republic of Iran that wetlands are appreciated and withstand occupations. Wetlands are dynamic for biodiversity. Great inhabitants of migrant birds winter there or apply them on their method to and from wintering zones the Iran subcontinent. It comprises all ponds and streams, subversive aquifers, wetlands, damp plains, peat domains, and other seaside zones, and all anthropological-prepared. The Islamic Republic of Iran has been stressed to stop its wetlands from desiccating due to widespread removal of water by agriculturalists for irrigation, rising removal for non-agronomic applications, and weather alteration. The sign of disappearing wetlands is the improved occurrence and strength of earth storms in Iran and through the area. Gravel and sand hurricanes, the improvement protector of desertification, have been recognized as one of the developing problems of ecological apprehension in Iran. The anthropogenic reasons of soil storms comprise deforestation and unmaintainable agronomic performs in addition to extreme aquatic removal and the alteration of aquatic forms for irrigation and other determinations. In the extended period, merely maintainable terrestrial and aquatic organization, combined with procedures addressing weather alteration qualification and variation, can recover the condition. Lake Urmia, is a huge hyper salty freshwater with many desert island, enclosed by wide salty wetlands, in northeastern Iran. The freshwater is nourished by precipitation and rivers and topic to cyclical difference in stage. The salty wetlands are a significant performance zone for traveling water-birds. The freshwater ecology maintains biodiversity and prepares regeneration and intellectual wellbeing assistances, in addition to aquatic for agronomy and manufacturing. If the freshwater were too dehydrated totally, earth tornados and catastrophe could end result. Agronomic actions, the development of pastures and inhabitants rises over the previous periods controlled to the over-manipulation of properties, triggering terrestrial deprivation.

Fishnet and Human Threat Index applied Document patterns of wetland changes and anthropogenic threats and further clarify their interactions. The Fishnet and Human Threat Index pattern showed that the direct human threats of agriculture and urbanization spread like the new Great Wall, affecting natural wetlands. Spatial distribution of the number of birds, Nightlight data and important harbors, and Landsat images show this markedly. Human threats are affecting coastal wetlands and biodiversity. Given these comparisons, this study is expected to support policy optimization and internationalization. A coastal wetland management company to achieve the two goals of biodiversity Conservation and socio-economic development.

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Declarations

Conflict of interest The authors declare that there is no conflict of interestregarding the publication of this work.

Ethical approval The present Study and ethical aspect were approved by the Department of Water Engineering, College of Agriculture, Isfahan University of Technology, Isfahan, 8415683111, Iran & Department of Civil Engineering, School of Engineering, American University in Dubai, Dubai, P. O. Box 28282 United Arab Emirates. The present study was approved by the Isfahan University of Technology and Department of Environmental Health Sciences, Faculty of Communication, Arts and Sciences, Canadian University Dubai, Dubai, P. O. Box 117781, United Arab Emirates.

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Consent for publication Not applicable.

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References

- Abedi-Koupai J, Dorafshan M-M, Javadi A, Ostad-Ali-Askari K (2022) Estimating potential reference evapotranspiration using time series models (case study: synoptic station of Tabriz in northwestern Iran). Appl Water Sci 12(9):212. https://doi.org/10.1007/ s13201-022-01736-x
- Adato M, and Meinzen-Dick R (2002) Assessing the impact of agricultural research on poverty using the sustainable livelihoods framework. Washington, D.C: FCND Discussion Paper no. 128 International Food Policy Research Institute (IFPRI).
- Alberini A (1995) Optimal design for discrete choice contingent valuation surveys: single bound, double bound and bivariate models. J Environ Econ Manage 28:287–306

- Barbier E, Acrerman M, Knowler D (1997) Economic valuation of wetlands: a guide for policy makers and planners. Ramsar Convention Bureau Publication, Gland
- Bassi N, Kumar MD, Sharma A, Pardha-Saradhi P (2014) Status of wetlands in India: a review of extent, ecosystem benefits, threats and management strategies. J Hydrol Reg Stud 2:1–19
- Behan Dam Consulting Engineers (2010) Review the current status of the natural environment in the Jarahi and Zohreh catchments. Department of Energy of Iran
- Belton V, Stewart T (2002) Multi criteria decision analysis: An integrated approach. Kluwer, Boston
- Bemanikharanagh A, Bakhtiari AR, Mohammadi J, Taghizadeh-Mehrjardi R (2017) Characterization and ecological risk of polycyclic aromatic hydrocarbons (PAHs) and n -alkanes in sediments of Shadegan international wetland, the Persian Gulf. Mar Pollut Bull. https://doi.org/10.1016/j.marpolbul.2017.07.015
- Burgman MA (2005) Risks and decisions for conservation and environmental man-agement. Cambridge University Press, Cambridge, UK
- Chau KW (2007) Integrated water quality management in Tolo Harbour, Hong Kong: a case study. J Clean Prod 15(16):1568–1572
- Chen B, Chen ZM, Zhou Y, Zhou JB, Chen GQ (2009) Emergy as embodied energy based assessment for local sustainability of a constructed wetland in Beijing. Commun Nonlinear Sci Numer Simul 14(2):622–635
- Chen S, Fath BD, Chen B (2010) Ecological risk assessment of hydropower dam construction based on ecological network analysis. Proced Environ Sci 2:725–728
- Chen S, Fath BD, Chen B (2011) Information-based network environ analysis: a system perspective for ecological risk assessment. Ecol Ind 11(6):1664–1672
- Chen S, Chen B, Fath BD (2013) Ecological risk assessment on the system scale: a review of state-of-the-art models and future perspectives. Ecol Model 250:25–33
- Christian RR, Brinson MM, Dame JK, Johnson G, Peterson CH, Baird D (2009) Ecological network analyses and their use for establishing reference domain in functional assessment of an estuary. Ecol Model 220(22):3113–3122
- Clarkson BR, Sorrell BK, Reeves PN, Champion PD, Partridge TR, Clarkson BD (2003) Handbook for monitoring wetland condition. Coordinated moni-toring of New Zealand Wetlands, A Ministry for the Environment Sustainable Management Fund Project
- Costanza R, d'Arge R, de Groot R, Grass M, Hannon B, Limburg K, Naeem S, O'Neill RV, Paruelo J, Rakin RG, Sutton P, Van den Belt M (1997) The value of the world's ecosystem services and natural capital. Nature 387:253–260
- Cui BS, Tang N, Zhao XS et al (2009) A management-oriented valuation method to determine ecological water requirement for wetlands in the Yellow River Delta of China. J Nat Conserv 17(3):129–141
- Dahl TE (2000) Status and trends of wetlands in the conterminous United States 1986 to 1997. Fish and Wildlife Service, Washington, DC
- Dugan PJ (1990) Wetland conservation: a review of current issues and required action. IUCN, Gland, Switzerland
- Environmental Protection Agency of Iran (2010) Comprehensive management plan of Shadegan wetland. Conservation of Iranian Wetlands Project. UNDP/GEF
- Environmental Systems Research Institute (ESRI) (2008) Arc-GIS 9.3. Geographic Information System (GIS) Software, 380 New York Street, Redlands, CA 92373-8100, USA http://www.esri.com
- Eslamian S et al (2018a) Saturation. In: Bobrowsky P, Marker B (eds) Encyclopedia of Engineering Geology. Encyclopedia of Earth Sciences Series. Springer, Cham. https://doi.org/10.1007/978-3-319-12127-7_251-1

- Eslamian S et al (2018b) Water. In: Bobrowsky P, Marker B (eds) Encyclopedia of Engineering Geology. Encyclopedia of Earth Sciences Series. Springer, Cham. https://doi.org/10.1007/978-3-319-12127-7_295-1
- Eslamian S et al (2018c) Reservoirs. In: Bobrowsky P, Marker B (eds) Encyclopedia of Engineering Geology. Encyclopedia of Earth Sciences Series. Springer, Cham. https://doi.org/10.1007/978-3-319-12127-7_236-1
- Fattahi Nafchi R, Raeisi Vanani H, Noori Pashaee K, Samadi Brojeni H, Ostad-Ali-Askari K (2022) Investigation on the effect of inclined crest step pool on scouring protection in erodible river beds. Nat Hazards 110(3):1495–1505. https://doi.org/10.1007/ s11069-021-04999-w
- Figueria J, Greco S, Ehrgott M (2005) Introduction in multiple criteria decision analysis: state of the art surveys. Springer Science + Business Media Inc, Boston, pp 21–36
- Forman R, Sperling T, Bissonette J, Clevenger A, Cutshall C, Dale V, Fahrig L, France R, Goldman C, Heanue K, Jones J, Swanson F, Turrentine T, Winter T (2003) Road ecology: science and solutions. Island Press, Washington, DC, USA
- Ghashghaie M, Eslami H, Ostad-Ali-Askari K (2022) Applications of time series analysis to investigate components of Madiyan-rood river water quality. Appl Water Sci 12(8):202. https://doi.org/10. 1007/s13201-022-01693-5
- Ha'jkova P, Ha'jek M, Apostolova I (2006) Diversity of wetland vegetation in the Bulgarian high mountains, main gradients and context-dependence of the pH role. Plant Ecol 184:111–130
- Hadker N, Sharma S, Ashish D, Maralaeedharan TR (1997) Willingness to pay for borivli national park: evidence from contingent valuation. Ecol Econ 21:105–122
- Hanson A, Swanson L, Ewing D, Grabas G, Meyer S, Ross L, Watmough M, Kirkby J (2008) Wetland ecological functions assessment: an overview of approaches. Canadian Wildlife Service Technical Report Series No. 497. Atlantic Region, p 59
- Heller S (2006) Managing industrial risk-having a tested and proven system to prevent and assess risk. J Hazard Mater 130(2):58-63
- Holland CC, Honea J, Gwin SE, Kentula ME (1995) Wetland degradation and loss in the rapidly urbanizing area of Portland. Oregon Wetlands 15(4):336–345
- Kellett BM, Walse T, Baristow KL (2005) Ecological risk assessment for the wet-lands of the lower Burdekin. CSIRO Land and Water Technical Report 26/05
- Kiker GA, Bridges TS, Varghese A, Seager TP, Linkov I (2005) Applications of multicriteria decision analysis in environmental decision making. Integr Environ Assess Manag 1(2):95–108
- Kim K-G, Lee H, Lee D-H (2011) Wetland restoration to enhance biodiversity in urban areas – a comparative analysis. Landsc Ecol Eng 7:27–32
- Klemas V (2011) Remote sensing of wetlands: case studies comparing practical techniques. J Coastal Res 27(3):418–427
- Kotze DC, Ellery WN, Macfarlane DM, Jewitt GPW (2012) A rapid assessment method for coupling anthropogenic stressors and wetland ecological condition. Ecol Ind 13:284–293
- Kruse S et al (2018) Borehole Investigations. In: Bobrowsky P, Marker B (eds) Encyclopedia of Engineering Geology. Encyclopedia of Earth Sciences Series. Springer, Cham. https://doi.org/10.1007/ 978-3-319-12127-7_32-2
- Lemly AD (1997) Risk assessment as an environmental management tool: considerations for freshwater wetlands. Environ Manage 21(3):343–358
- Malczewski J (2004) GIS-based land-use suitability analysis: a critical overview. Prog Plan 62(1):3–65
- Malekmohammadi B, Rahimi Blouchi L (2014) Ecological risk assessment of wetland ecosystems using Multi Criteria Decision Making and Geographic Information System. Ecol Ind 41:133–144

- McPherson M, Schill S, Raber G, John K, Zenny N, Thurlow K, Sutton AH (2008) GIS-based modeling of environmental risk surfaces (ERS) for conservation planning in Jamaica. J Conserv Plann 4:60–89
- Miller BA, Crumpton WG, van der Valk AG (2012) Wetland hydrologic class change from prior to European settlement to present on the Des Moines Lobe Iowa. Wetlands Ecol Manag 20:1–8
- Mirzaei R, Conroy J, Yoxon P (2010) Otters in the Hawr al Azim wetland Iran. Hystrix It J Mamm 21(1):83–88
- Mitsch WJ, Gosselink JG (2000) The value of wetlands: importance of scale and landscape setting. Ecol Econ 35(1):25–35
- Muttil N, Chau KW (2006) Neural network and genetic programming for modeling coastal algal blooms. Int J Environ Pollut 28(3/4):223–238
- Nafchi RF, Samadi-Boroujeni H, Vanani HR, Ostad-Ali-Askari K, Brojeni MK (2021) Laboratory investigation on erosion threshold shear stress of cohesive sediment in Karkheh Dam. Environ Earth Sci 80(19):681. https://doi.org/10.1007/s12665-021-09984-x
- Najafi A, Vatanfada J (2011) Environmental challenges in transboundary waters, case study: Hamoon Hirmand Wetland (Iran and Afghanistan). Int J Water Resour Arid Environ 1(1):16–24
- Nafchi RF, Yaghoobi P, Vanani HR, Ostad-Ali-Askari K, Nouri J, Maghsoudlou B (2022a) Correction to: Eco-hydrologic stability zonation of dams and power plants using the combined models of SMCE and CEQUALW2. Appl Water Sci 12(4): 55. https://doi. org/10.1007/s13201-021-01563-6
- Ostad-Ali-Askari k et al (2017) Deficit irrigation: optimization models. Management of drought and water scarcity, Chap 18. In: Handbook of drought and water scarcity, vol 3, 1st Edn. Taylor & Francis Publisher, pp 373–389. https://doi.org/10.1201/97813 15226774
- Ostad-Ali-Askari K (2022a) Management of risks substances and sustainable development. Appl Water Sci 12(4):65. https://doi.org/ 10.1007/s13201-021-01562-7
- Ostad-Ali-Askari K (2022b) Developing an optimal design model of furrow irrigation based on the minimum cost and maximum irrigation efficiency. Appl Water Sci 12(7):144. https://doi.org/10. 1007/s13201-022-01646-y
- Ostad-Ali-Askari K (2022c) Investigation of meteorological variables on runoff archetypal using SWAT: basic concepts and fundamentals. Appl Water Sci 12(8):177. https://doi.org/10.1007/ s13201-022-01701-8
- Ostad-Ali-Askari K (2022d) Correction: Investigation of meteorological variables on runoff archetypal using SWAT: basic concepts and fundamentals. Appl Water Sci 12(9):211. https://doi.org/10.1007/ s13201-022-01732-1
- Ostad-Ali-Askari K (2022e) Arrangement of watershed from overflowing lookout applying the SWAT prototypical and SUFI-2 (case study: Kasiliyan watershed Mazandaran Province Iran). Appl Water Sci 12(8):196. https://doi.org/10.1007/s13201-022-01718-z
- Rabiei J, Khademi MS, Bagherpour S, Ebadi N, Karimi A, Ostad-Ali-Askari K (2022) Investigation of fire risk zones using heat–humidity time series data and vegetation. Appl Water Sci 12(9):216. https://doi.org/10.1007/s13201-022-01742-z
- Radu LD (2009) Qualitative, semi-quantitative and quantitative methods for risk assessment: case of the financial audit. Analele Ştiinţifice ale Universităţii Alexandru Ioan Cuza din Iaşi. Ştiinţe Econ 56(1):643–657
- Rahimi Blouchi L (2012) Environmental Risk Assessment of Shadegan International Wetland in order to provide management strategies. University of Tehran, Faculty of Environment
- Ralph WT (2003) Geographically isolated wetlands of the United States. Wetlands 23(3):494–516
- Ramanathan R (2001) A note on the use of the analytic hierarchy process for environ-mental impact assessment. J Environ Manage 63:27–35

- Ramsar Convention Secretariat (2004) Ramsar handbooks for the wise use of wet-lands, 3rd edn. Ramsar Convention Secretariat, Gland, Switzerland
- Saaty TL (2000) Fundamentals of decision making and priority theory with the analytic hierarchy process. RWS Publications, Pittsburgh
- Saaty TL (2008) Decision making with the analytic hierarchy process. Int J Serv Sci 1(1):83–98
- Shabman L, Bertelson MK (1979) The use of development value estimates for coastal wetland permit decision. Land Econ 55(2):213-222
- Shayannejad M, Ghobadi M, Ostad-Ali-Askari K (2022) Modeling of Surface Flow and Infiltration During Surface Irrigation Advance Based on Numerical Solution of Saint–Venant Equations Using Preissmann's Scheme. Pure Appl Geophys 179(3):1103–1113. https://doi.org/10.1007/s00024-022-02962-9
- Spieles DJ (2005) Vegetation development in created, restored, and enhanced mitigation wetland banks of the United States. Wetlands 25(1):51–63
- Suter GW (2000) Generic assessment endpoints are needed for ecological risk assessment. Risk Anal 20(2):173–178
- Tabatabaie T, Ghomi MR, Amiri F et al (2011) Comparative study of mercury accumulation in two fish species, (*Cyprinus carpio* and *Sander lucioperca*) from Anzali and Gomishan Wetlands in the Southern Coast of the Caspian Sea. Bull Environ Contam Toxicol 87:674–677. https://doi.org/10.1007/s00128-011-0413-x
- Talebmorad H, Ostad-Ali-Askari K (2022) Hydro geo-sphere integrated hydrologic model in modeling of wide basins. Sustain Water Resour Manag 8(4):118. https://doi.org/10.1007/ s40899-022-00689-y
- Tiner RW (1984) Wetlands of the United States: current status and recent trends. Fish and Wildlife Service, Washington, DC
- Turner RK, Bateman IJ, Georgiou S, Jones A, Langford IH, Matias NGN, Subramanian L (2004) An ecologic economics approach to the management of a multi-purpose coastal wetland. Reg Environ Chang 4:86–99
- United States Environmental Protection Agency (USEPA) (1992) Framework for eco-logical risk assessment. USEPA, Washington, DC
- United States Environmental Protection Agency (USEPA) (1998) Guidelines for ecological risk assessment. Risk Assessment Forum, Washington, DC
- United States Environmental Protection Agency (USEPA) (2002) Methods for evaluating wetland condition: introduction to wetland biological assessment. Office of Water, Washington, DC
- Vanani HR, Ostad-Ali-Askari K (2022) Correct path to use flumes in water resources management. Appl Water Sci 12(8):187. https:// doi.org/10.1007/s13201-022-01702-7
- Wang B, Cheng H (2011) Environmental risk zoning research in Baiyangdian Basin. Proced Environ Sci 10:2280–2286. https://doi. org/10.1016/j.proenv.2011.09.356
- Wu CL, Chau KW (2006) Mathematical model of water quality rehabilitation with rainwater utilization – a case study at Haigang. Int J Environ Pollut 28(3/4):534–545
- Yang Z, Mao X (2011) Wetland system network analysis for environmental flow allocations in the Baiyangdian Basin. China Ecol Modell 222(20–22):3785–3794
- Yavar Ashayeri N, Keshavarzi B (2019) Geochemical characteristics, partitioning, quantitative source apportionment, and ecological and health risk of heavy metals in sediments and water: a case study in Shadegan Wetland. Iran Mar Pollut Bull. https://doi.org/ 10.1016/j.marpolbul.2019.110495
- Zedler JB, Kercher S (2005) Wetland resources: status, trends, ecosystem services, and restorability. Annu Rev Environ Resour 30:39–74

- Zhang H, Huang GH (2011) Assessment of non-point sources pollution using a spatial multi criteria analysis approach. Ecol Model 222(2):313–321
- Zhang YH, Chen BH, Zheng LX, Zhu JH, Ding XC (2003) Determination of phthalates in environmental samples. J Environ Health 20:283–286
- Zhang K, Kluck C, Achari G (2009) Comparative approach for ranking contaminated sites based on the risk assessment paradigm using fuzzy PROMETHEE. Environ Manage 44(5):952–967
- Zhao MY, Cheng CT, Chau KW, Li G (2006) Multiple criteria data envelopment analysis for full ranking units associated to environment impact assessment. Int J Environ Pollut 28(3/4):448–464

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