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$$\frac{\sum k_l}{V} = \left(\frac{k}{V} \right) l$$

$$L_D = \frac{\sum k_l}{V} = \frac{1}{V} \sum k_l$$

R²

(. . .)

(Erickson, 1994;

.Ndubisi, 2002)

E-mail: fazari@ut.ac.ir

(TNC,1999)

(Pastakia, and Jensen, 1998)

.(Makhdoum, 2002)

(Makhdoum,

.2002)

(Shueller,1994)

$$Hi = (\Sigma I + DPi) / Vi$$

i

Hi

DP

ΣI

(Makhdoum, 2002; Azari Dehkordi, 2005)

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i

Vi

"() Farina

(ZM)

(PS)

(T)

(XR)

)

(IL)

(XF)

(HD)

(X)

Gergel, and Farina, 1998; Forman, 1995)

(YS)

(SD)

(X)

.(Turner, 2002;

(YN)

(YA)

(YW)

(R)

(G)

(OG)

(IM)

(YO)

(H)

(W)

.(Makhdoum, 2002) (YL)

(Azari Dehkordi et.al,

2003)

(Azari Dehkordi,

.2005)

.(Makhdoum, 2002)

.(Leitao, et al., 2006)

Rossi, and Kuitunen,) (1996
(Zeilinski, 2002)
(Chenung, Pitcher and Pauly, 2005)

TM

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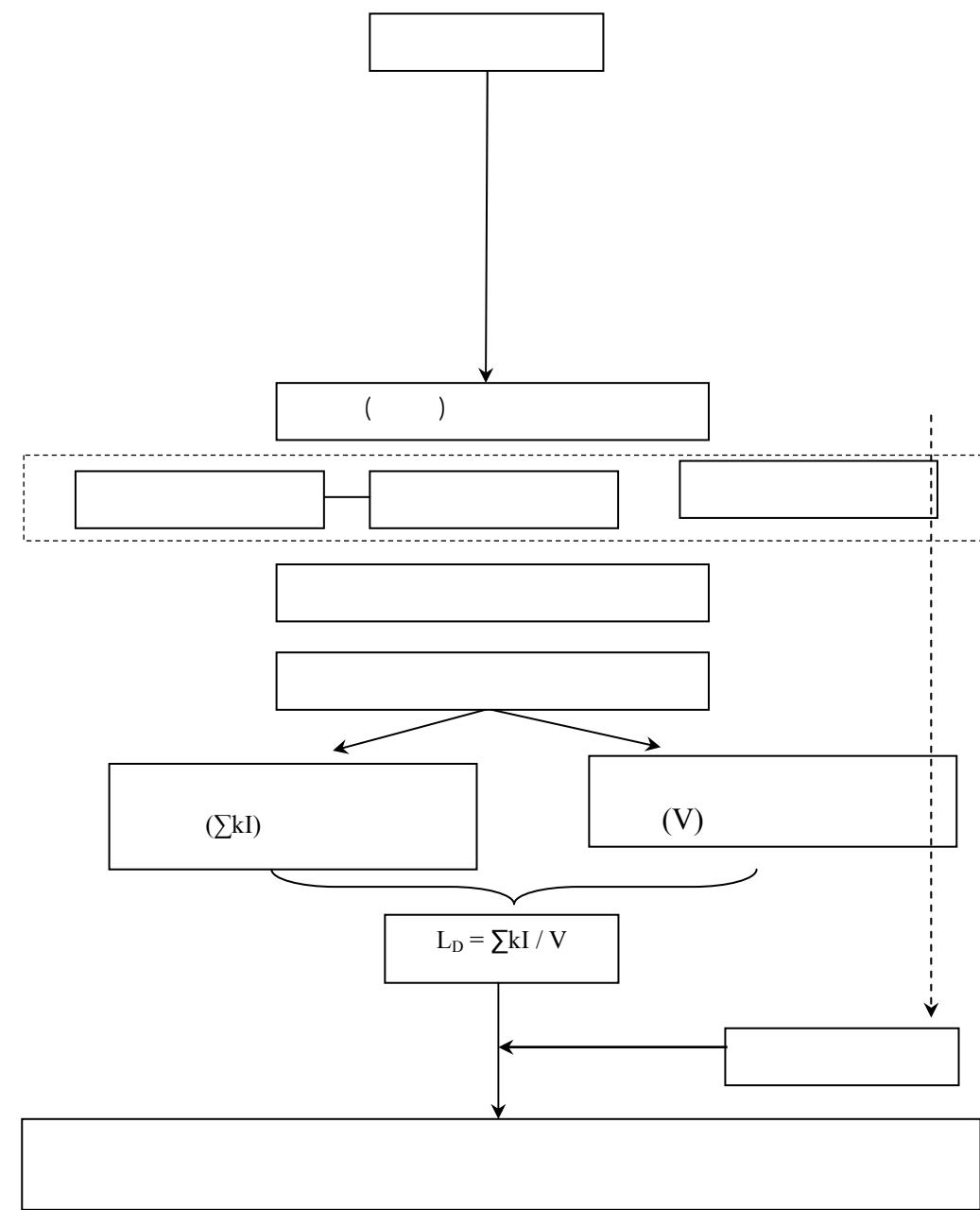
(Steven, et al., 2003)
()

(Khazaei, and Azari Dehkordi, 2008)

LD= $\Sigma kI/V_i$:
LD
 ΣkI
(Randolph, 2004; Ahern, and Andre, 2003) k I)
V (

()

McGarigal, and Marks,
Turner, II et) ()
(al., 2003



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MPS⁶

NumP⁵

MedPS⁷

MSI¹²

ED⁹

TE⁸

MSI

MPFD¹⁰

SDI

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(ΣkI)

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(1996) Canter

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(1)

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$> II$		V1
$> \geq$		V2
$> \geq$		V3
\geq		V4

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ΣkI

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" "

(I)

ΣkI

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()

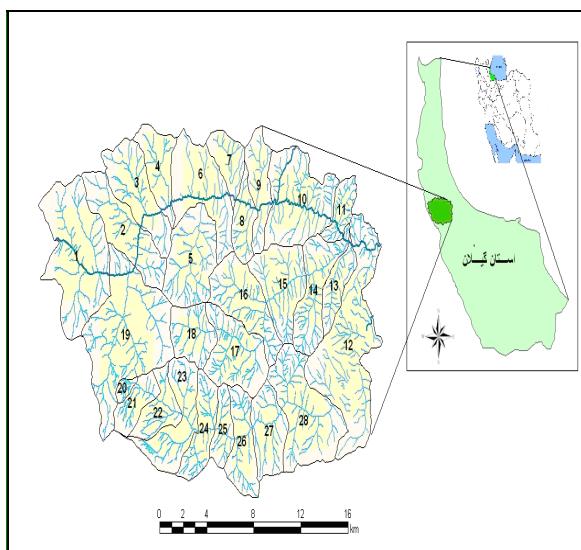
(Gergel, and Turner, 2002)

(Azari Dehkordi, 2005)

(Makhdoum, 2002)

(NumP) «

»



راهنمای نقشه

- رویداده فرعی
- رویداده اصلی
- آبخیز شفابوید

(Azari Dehkordi, 2005)

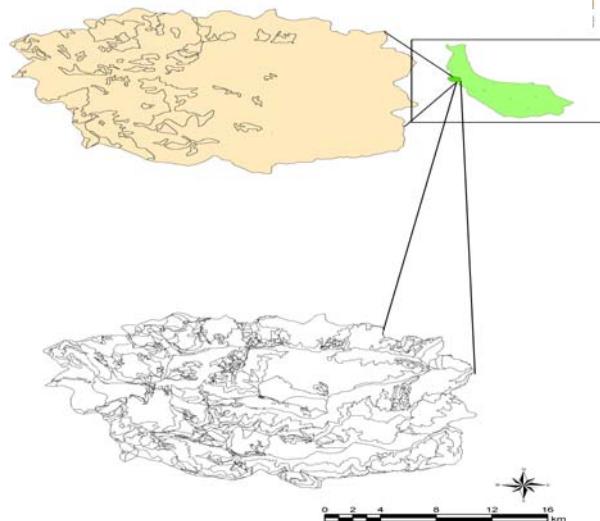
()

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)
(

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()
() Strahler

ArcGIS 8.3



: ()

(Makhdoom, 2002; Canter, 1996; Zadeh, 1965; 1975)

LD

()

.....

: ()

(composition)				(configuration)				
ED	NumP	MPS	MEDPS	TE	MSI	MPFD	SDI	
I4 ≥ > I3 ≥ >I2 ≥ > I1	I4 ≥ / >I3 ≥ / >I2 ≥ / >I1	I4 ≥ / >I3 ≥ / >I2 ≥ / >I1	I4 ≥ / >I3 ≥ / >I2 ≥ / >I1	I4 ≥ / > I3 ≥ / > I2 ≥ / > I1				
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I1	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	
I	I	I	I	/ I	/ I	/ I	/ I	

(Pastaikia, and Jensen, 1998)

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	$I > I_1$ $I > \geq I$ $I > \geq I$ $\geq I$	LD1 LD2 LD3 LD4
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.(Zeilinski, 2002)

(Azari Dehkordi, 2003; Makhdoom, 2002)

$$\mathbb{R}^2$$

(Makhdoom, 2002)

$$(\quad) \\ : (\quad)$$

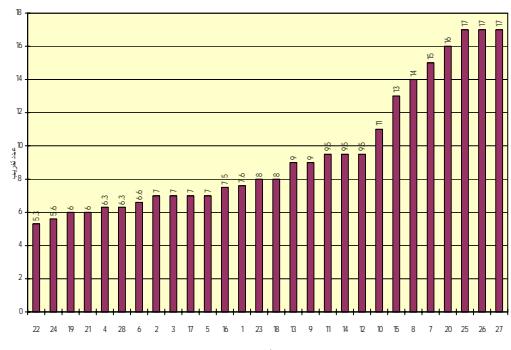
$R^2 = ,$	$R^2 = ,$	$R^2 = ,$	$R^2 = ,$	

$$(\quad) \\ (\quad)$$

(Tress, Tress Fry and
Opdam, 2005; Gontier, 2005)

$$) \\ (\quad) \quad (\quad)$$

(Gontier, 2005)



João, 2002; Gergel)

(and Turner, 2002)

$$:(\quad)$$

)

$$(\quad)$$

$$(\quad)$$

(Steven, et al., 2003)

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- 1-Degradation Model
 - 2-Rapid Environmental Impact Assessment
 - 3-Degradation Assessment Landscape
 - 4-Fragmentation
 - 5-Number of Patches
 - 6-Mean Patch Size
 - 7-Median Patch size
 - 8-Total Edge
 - 9-Edge Density
 - 10-Mean Patch Fractal Dimension
 - 11-Shannons Diversity Index
 - 12-Mean Shape Index

Ahern,J. and L., Andre. 2003. Applying landscape ecological concepts and metrics in sustainable landscape planning. *Landscape and Urban Planning*, 59, 65-93.

Azari Dehkordi, F. 2005. Environmental Impact Assessment of Dams in Japan and Iran; A Landscape Ecological Modeling Peerspective. PhD Dissertation. Hiroshima: Hiroshima University 358 pp.

Azari Dehkordi, F., M.F., Makhdoum and N., Nakagoshi. 2003. Sefidrood River sub watershed-dam-estuary and degradation model: A holistic approach in Iran. *Chinese Geographical Science*, 13 (4), 328-333.

Canter, L. W. 1996. Environmental Impact Assessment. New York: Mc Graw- Hill 660pp.

Chenung, W. W. L., T. J., Pitcher and D., Pauly. 2005. Afuzzy logic expert system to estimate intrinsic extinction vulnerabilities of marine fishes to fishing. *Biological Conservation*, 124, 97-111.

Erickson, P. A. 1994. A Practical Guide to Environmental Impact Assessment. San Diego: Academic Press Inc. 266 pp.

Farina, A. 1998. Principles and Methods in Landscape Ecology. Netherlands: Springer 411pp

Farina, A. 1998. Principles and Methods in Landscape Ecology. London: Chapman & Hall 234pp.

Farina, A. 2006. Prniciple and methods in landscape ecology: Toward a science of landscape 2nd ed. Dordrecht: Springer 412 pp.

Forman, R. T. T. 1995. Land mosaics: The ecology of landscapes and regions. USA: Cambridge University press 632pp.

Gergel, S. E. and M. G., Turner. 2002. Learning Landscape Ecology: A Practical Guide to Concepts and Techniques. New York: Springer 316pp.

-
- Gontier, M. 2005. Integrating landscape ecology in environmental impact assessment using GIS and ecological modeling. In From Landscape Research to Landscape Planning; Aspects of Integration, Education and Application, eds. B. Tress., G. Fry and P. Opdam. Wageningen: Springer 452 pp.
- João, E. 2002. How scale effects environmental impact assessment. Environmental Impact Assessment Rev. 22: 289-310.
- Khazaei, N. and F. Azari Dehkordi. 2008. Forest landscape degradation assessment in Dokeh watershed, Iran. Journal of International Environmental Application & Science. 3 (2): 91-100
- Leitao, A.B., J. Miller., j. Ahern and K. McGarigal. 2006. Measuring Landscapes: A Planners Handbook. Washington D.C: Island Press 250pp.
- McGarigal, K. and B.J., Marks. 1995. Fragstats: Spatial Pattern Analysis Program for Quantifying Landscape Structure. USA: U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station 122pp.
- Makhdoom, M. F. 2002. Degradation model: A quantitative EIA instrument, Acting as a Decision Support System (DSS) for environmental management. Environmental Management, 30, 151-156.
- Ndubisi, F. 2002. Ecological Planning: A Historical and Comparative Synthesis. Baltimore: The Johns Hopkins University Press 287 pp.
- Pastikia, C. M. R. and A. Jensen. 1998. The rapid Assessment matrix (RIAM) for EIA. EIA Review, 18, 461-482.
- Randolph, J. 2004. Environmental Land use Planning and Management. USA: Island press 664pp.
- Rossi, E. and M., Kuitunen. 1996. Ranking of habitats for the assessment of ecological impact in land use planning. Biological Conservation, 77, 227-234.
- Shueler,T. 1994. The importance of imperviousness. Watershed Protection Techniques, 1 (3), 100-111.
- Steven, M. D., and et al. 2003. Intercalibration of vegetation indices from different sensor systems. Remote Sensing of Environment, 88, 412–422.
- Strahler, A.N. 1964. Quantitative geomorphology of drainage basin and channel network, section4-11. In V.T. Chow (Editor), Handbook of Applied Hydrology. McGraw Hill, New York.
- TNC: The Nature Conservancy 1999. Pathways: Building a local Initiative for Compatible Economic Development. Arlington, VA: Author. Cited in Randolph, J. 2004
- Tress, B., G. ,Tress, G., Fry and P., Opdam. 2005. From Landscape Research to Landscape Planning - Aspects of Integration, Education and Application. NY: Springer 452pp.
- Turner II. B. L.,and et al. 2003. A framework for vulnerability analysis in sustainability science. PNAS. 100, (14), 8074- 8079.
- Zadeh,L.A. 1975. Fuzzy logic and approximate reasoning. Synthesis. 30, 407-428.
- Zadeh,L.A. 1965. Fuzzy sets. Information and Control. 8, 338-353.
- Zeilinski,J. 2002. Watershed vulnerability analysis. Ellicott City,MD : Center for Watershed Protection.