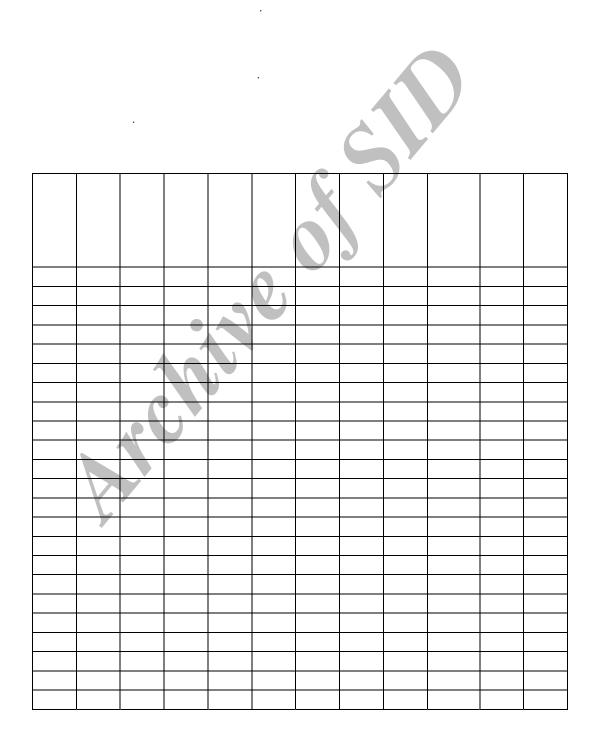
//:	1 1 :

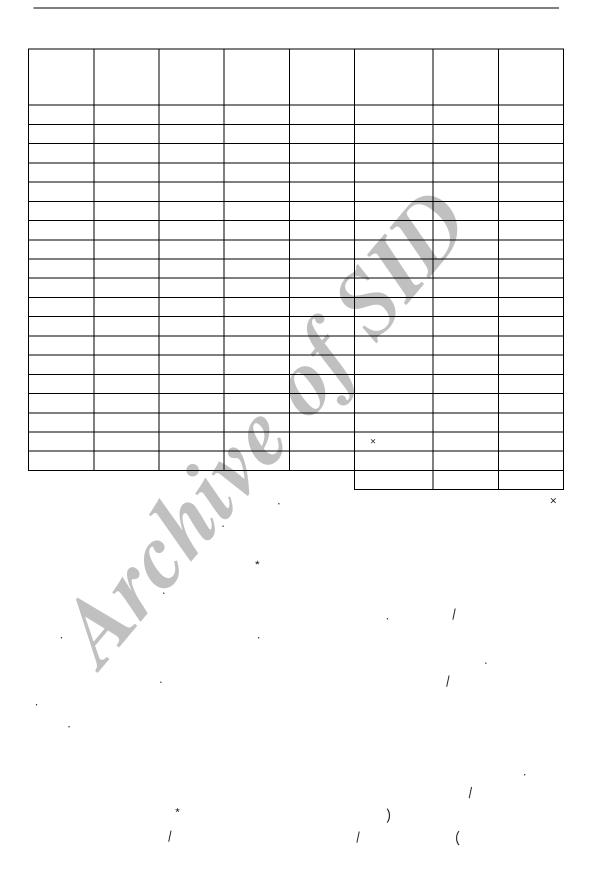
 $(E\text{-}mail\text{:}zobeiri@nrf.ut.ac.ir\ )$ 

... 378

```
.( )
             .( )
.( )
                                                          .( )
```



... 380



 $= P_i\%$ =N  $P_i$ =(  $P_i$ %= / :( )  $P_i=n/N$   $P_i\%=(n/N)\times 100$ :( ) =Pi

| | |

 $P_i = ---- = /$ 

t (

E=±( / \* / )= ± /

 $S_{P\bar{Y}} = \pm \sqrt{\frac{0.1560(1 - 01560)}{5096}} = \pm 0.0050$ 

 $S_{p_i}\% = \pm \frac{0.0050 * 100}{0.1560} = \pm 3.205$   $\vdots \qquad \pm /$ 

 $\frac{5.633*15.62}{100} = \pm 0.879\% \approx \pm 0.9\%$ 

		2		
1	1			
1	1			
1				

... 384

( ) .( ) ( )

6-Christensen. Bo., 1999. Mangrove what are the worth. Unasylva, No.139.

## Trends of Quantitative and Qualitative Alterations of Mangrove Forests in Gheshm Area Using 1967 and 1994 Aerial Photos

A. Mahdavi<sup>1</sup> M. Zobeiri<sup>2</sup> M. Namiranian<sup>3</sup>

## Abstract

In order to determine the trends of quality and quantity changes in mangrove forests of the Hara protected area (between Gheshm Island and Khamir port), aerial photographs of 1967 (average scale 1:20,000), and 1994 (average scale 1:40000), and topographical maps (scale 1:250,000) were used. In this study, the absolute area of Hara forest was considered as quantitative value and the density of canopy as qualitative value. To compare two periods under the same conditions, aerial photos of 1994 were converted and printed in 1:20,000 scale. After analysis, the mangrove forest area was estimated to be 8026 ha in 1967 and 8016 ha in 1994. Sampling error of 1967 and 1994 periods were estimated to be 5.63% and 6.28%, respectively. Average canopy density percent was measured to be 54.78% for 1967 and 63.5% for 1994. The results indicated that relative area of mangrove forests did not change significantly during this period. However, t-test showed that average canopy density percent had 8.71% significant change.

**Keywords:** Mangrove Forests, Hara protected area, Aerial photographs, Relative area, Canopy density.

<sup>&</sup>lt;sup>1</sup> - Senior Expert of Forestry, Faculty of Natural Resources, University of Tehran

<sup>&</sup>lt;sup>2</sup> - Professor, Faculty of Natural Resources, University of Tehran

<sup>&</sup>lt;sup>3</sup> - Associate Professor, Faculty of Natural Resources, University of Tehran