

BIOLOGY AND TYPOLOGY OF CARABIDS BEETLES RIPICOLE ON THE ZA RIVER MOROCCO (DAM: EL GHORESS)

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ABSTRACT: We have studied the fauna ecology of riparian carabids Beetles in the dam construction " El Ghoress" on the Za river (Eastern Morocco). In the fauna inventory we note 41 different species distributed in 9 families who are Trechidae dominate with 12 species. The entire harvest is dominated by type of ecological riparian species and geographical Mediterranean type with species endemic Moroccan and North African. There is a clear relationship between the distribution of riparian carabid beetles and those of potential ecological factors. These beetles closely dependent of the degree of humidity of the substrate they seek their optimum water temperature gradient existing between the different sectors of water over the edges and which determine their local distribution and are at the origin of heterogeneity even within a substation that seems homogeneous.

Key words: Beetles, carabids, riparian, Za river, humidity, ecology.



INTRODUCTION

Because of the great dependence and the great influence of the aquatic area on the shore we studied the fauna of riparian carabids Beetles on the site of the dam; El Ghoress on the Za river. The first goal which is the main is to establish as complete fauna inventory as possible and make a synthesis of the ecological environment of carabid prospects.

In eastern Morocco very recent studies have been made and rather interesting results on the zoocenose ripicole (Ripa = shore and Colere = live). This fauna is constituted by all the animal species living exclusively in contact with the capillary fringe or the soil is still strongly maintains moistens. It therefore meets the edge of rivers ponds and on the sea shores (Favet, 1984).

Indeed very recently researchers have begun to take an interest in riparian wildlife parallel to the development of studies on ecotones. Among the interested researchers in this study here in Morocco and Europe it cites (Bigot, 1978; Duraly and Noguera, 1978; Gautier, 1987; Mahboub, 1992; Chavanon, 1993).

It is possible to distinguish two types of water edges fauna: a riparian area composed of populations earthly. One zoocenose riparian depth consists mainly of heterozones species (Favet, 1984).

DESCRIPTION OF STUDY SITE

The area downstream of the dam site El Ghoress represents the westernmost part of the chain of Horsts which is defined as a mountainous strip of 20 to 30km wide which extends for about 100 Km from the plain to the Guercif WSW to the border Marocco has Algerian-ENE (Figure 1). This area called horst in the river Zapresents a synclinal allure has large radius of curvature by crossing accidents WSW - ENE. The massive Narguechoum it culminates at an altitude of 1373m. The Layouts El Ghoressdam on the river Za located 40 km south of the city of Taourirt (a crow flies) is designed to be operated for several purposes namely: The mastery of the river flood Za protect the valley downstream limit siltation dam Mohamed V the supply of drinking and industrial water city Taourirt and Oujda and production of hydro electrical energy. The study website locates El Ghoress is coordinated $x = 752.900$, $y = 404.200$ has a level of coronation: 694.50m NGM and $z = 624.50m$. The floods of the river Za are spread because the pool of Highlands has accused some relief. The relatively steep slope between the dam site and Taourirt (about 7%) causes erosion of the banks and silting of the reservoir of the dam Mohamed V. The high floods of 1975 and 1986 have affected nearly $1000m^3/s$. The flow of low water natural way is 2320 l/s in Taourirt.

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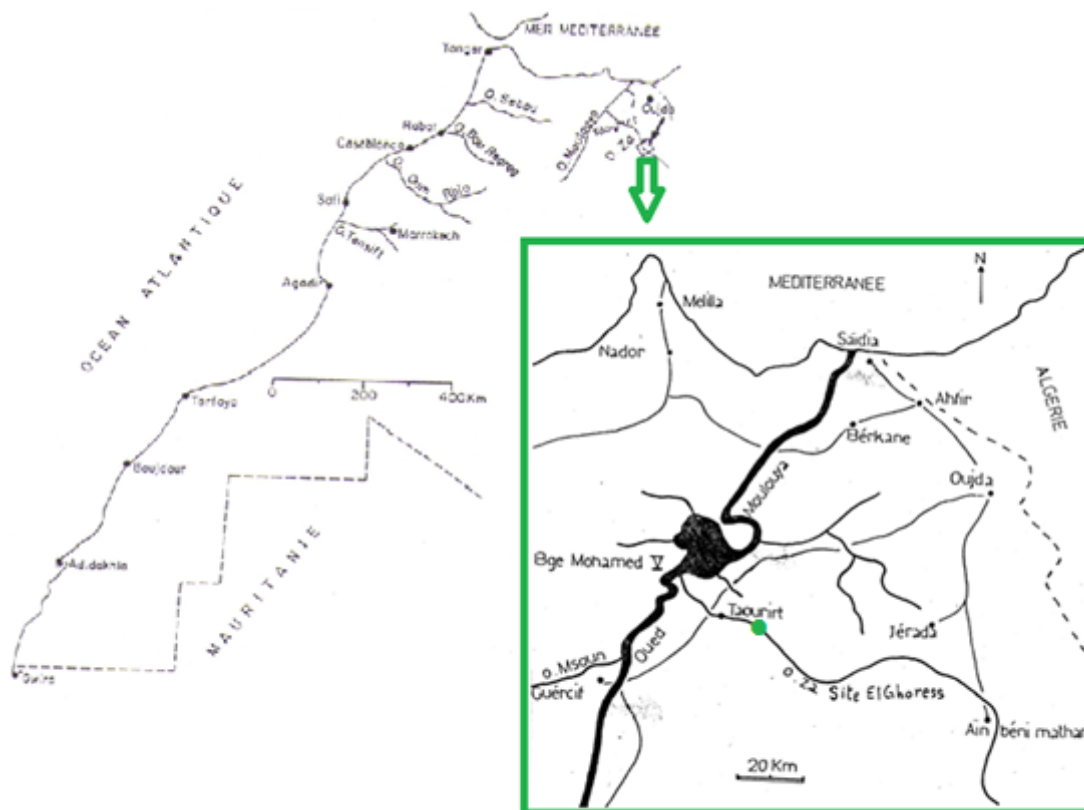


Figure 1, Localisation du milieu d'étude — Location of stations study.

MATERIAL AND METHOD

Units crops used in this study are: - under the effect of vibrations beget is by handling a cylinder tole 34.78 cm diameter 20 cm high cutting a surface at 1m² to make notes it sinks under about 2cm in the sediment and then harvest wildlife in it with the help of a vacuum cleaner mouth. Arthropod fauna mainly tends to rise to the surface.

- The hunt for this technique is practiced by direct capture of beetles on the floor inside a burrow and under the plant species when they existent. The interceptor traps consisting of pots 15 cm deep using especially for the qualitative harvest of beetle (Agray and Bigot, 1984; Remade, 1987; Chavanon, 1992; Chavanon and Chavanon, 1992; Bouraada, 1994; Bouraada, 1999). The carabids fauna was collected following a transect through three microstations ranging from very wet waterfront up to the beach dry namely:

Humiditybeach (P₁): Constantly humidified by the water of the river, it is ranges from 0.5 m to 1 m edge according to the water level. It is a beach dominated by silt sand and some gravel.

Beach moderately humid (P₂): The humidity of this beach is average it is 1 of my 2 m waterside according to the seasons. It is rich in sand and gravel small blocks and a few feet of Nerium oleander.

Rear dry beach (P₃): The most dry beach because of its great remoteness in relation to the water spanning more than 2m has the water. It is rich in boulders gravel and dry sand and a few feet of Nerium

oleander. The vegetation of the border is quite low primarily rating: *Tamarix* sp., *Nerium oleander*, *Olea europaea*.

RESULTS AND DISCUSSIONS

Inventory of fauna

(Carabid classification adopted by Antoine (1955 to 1962))

Subfamily Nebriidae

*Nebria rubiconda*Quens.

Subfamily Cicindelidae Latreille.

Cephalota maura L.

Lophyra flexuosaflexuosa F.

Subfamily ScaritiidaeBonelli.

*Dyschirius africanus*Putz.

*D. ruficornis*Putz

*D.chalybeus*Putz.

*D.dalila*Ant.

Subfamily Trechidae Bonelli.

*Perileptus areolatus*greutz.

*Tachys pallidulus*Ant

Tachyphanes lucasiduv

*Tachyura bisbimaculata*chevi.

T .currvimanawold.

*Notophus varius*L.

*Emphanes rivularis*Dej.

E.latiplaga flavibase De Monte.

Bembidiion quadripustulatum hassani Ant.

*Ocydromus (Peryphus) andreae atlantis*Ant.

O. (P) ripicola Dufour.

*Metallina ambiguum*Dej.

Subfamily PterostichidaeJeannel.

*Abacetus salzamanni*Germ.

Poecilus quadricollis Dej.

P. purpurascens Dej.

Anchus ruficornis Gze.

Pristonychus (Laemostenus) complanatus Dej.

Amara aenea De Geer.

Paracelia simplex Dej.

Zabrus distinctus Luc.

Subfamily Harpalidae Le Conte.

Anisodactylus virens winthem Dej.

Harpalus distinguendus Duft.

Ophonus rufipes.

Acupalpus elegans maroccanus Reitter.

Egadroma marginatum Dej.

Stenolophus tevtonus Schrank..

Subfamily Callistidae

Chlaenites spoliatus Rossi.

Subfamily Masoreidae

Masoreus wetterhalli testaceus Luc.

Subfamily Lebiidae Bonelli.

Cymindis setifensis setifensis Lucas.

Syntomus fuscomaculatus Mots.

Microlestes corticalis Dufour.

M. luctuosus Holdh.

M. abeilli brisout Holdh.

Apristus striatipennis Lucas.

The specific richness variation

The analysis of overall faunal composition led to the determination of a collection of 41 species belonging to nine subfamilies unevenly represented. All the species inventoried in this study are mostly determined to level specific.

On the banks of the study station one counts of riparian carabid beetles being distributed unequally represented in nine families (Figure 2). The Trechidae are the most numerous with 12 species or 29.27% of the total (Bigot and Goutier, 1981; Gautier, 1981; Bigot and Aguesse, 1984; Bigot and Favet 1986). The Pterostichidae occupy second place with 8 species (19.51%). The Harpalidae and Lebiidae present 6 species each (i.e. 14.63%) the previous Scaritiidae (6.76%) and Cicindelidae late in last position we find Nebriidae the Callistidae is the Masoreidae each with one species (2.44% each).

The left bank model considers three ranges P_1 , P_2 and P_3 (Figures 3) shows that in families in the range P_2 are the richest in species this range represents a centered majority with species at rate of 38 and with a fraction of the variability of the order of 29% and 22% of Lebiidae, Pterostichidae while Trechidae and Harpalidae present only 14% and 7% respectively for each.

The beach 3 presents 16 species and is occupied by the Trechidae (50% of the total) which is ranked first followed by Lebiidae and Harpalidae with a rate of 13% each while Pterostichidae present only 12%. On the top (P_3) the presence of 16 riparian species which shows the mobility of some of them was not hesitant after a shower for example has come to colonize the time this microstations. For a study on the riparian carabid and hygrophilous the banks of the River Bouregreg (Plateau Central Morocco) (Gautier, 1987) specifies that the genres *Tachyura*, *Emphanes* and *Ocydrumus* are three predominant specialists of wetland habitats edges water. After a flood downpour during of March month, fauna arises surface fleeing immersion refuge to go further away and in the opposite direction of the slope to win drier or more suitable locations (Bouraada, 1994). On the other hand the frequency of statements shall riparian habitats requiring a sufficiently large spacing between two statements shall that goes beyond one-to me to allow time to rebalance the middle.

P_1 range is the poorest in cash (14) but it is very rich in belonging species to the family Lebiidae who are in first place with 29% followed by Pterostichidae (22%) in third place with a rate of 14% of Scaritiidae and Trechidae each while in last position come the Harpalidae the Callistidae and Cicindelidae (7% of each). In Lower duration, we noted the existence of a certain balance between the typical riparian and terrestrial arthropods which proves that the studied environment is not homogeneous (Favet, 1984) and includes one or more transition zones (ecotones).

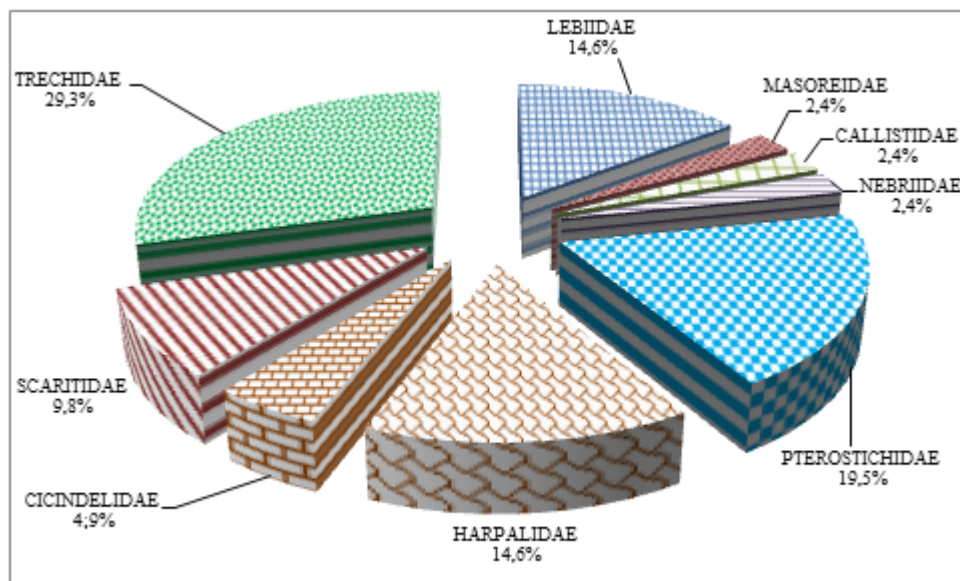


Figure 2, Spectrum of global specific riches in Zariver

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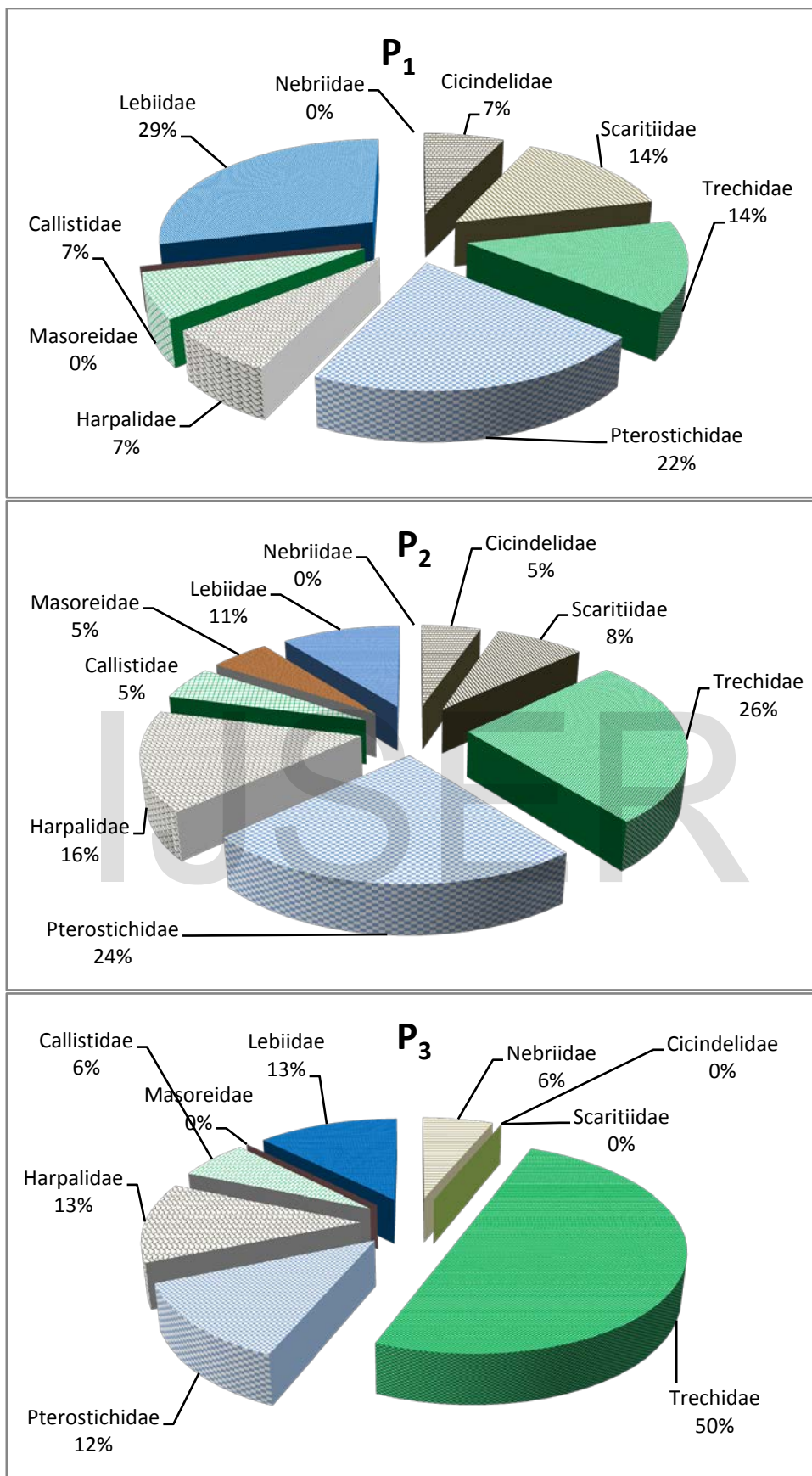


Figure 3, Spatial spectrum beach at the P₁ P₂ and P₃ of the left bank of the study station

This study proves that we are on a station populated by populations that present a very clear Evolution of their distribution in relation to the humidity. The areas closest water possess a richness in riparian species raised while the upper parts are mainly populated drier by terrestrial species: the lack of humidity therefore being a determining factor.

CONCLUSION

Riparian carabid beetles closely dependent of the degree of humidity of the substrate they seek their optimum humidity and temperature gradient existing between the various sectors during eaux. In edges of the fauna inventory we note 41 different species distributed in 9 families whose Trechidae dominate with 12 species, all of the crop is dominated by type of ecological riparian species and geographical Mediterranean type with species endemic Moroccan and North African.

The quality of the substrate and the degree of humidity are key parameters to qualify a stand of riparian habitat. The presence of vegetation also comes with its microclimates on the development and maintenance of areas has permanent humidity and moderate temperature. The wind and temperature results in an increase in drying of the substrateso, result, a phenomenon ofleaks of species to the most suitable places.The Changes in the water level, the humidity from the substrate, changes in the water temperature of the environment and the microhabitats shore well have an effect on limiting the richness of carabids.

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