

SOME HOVERFLIES OF SUBFAMILY SYRPHINAE OF QURIGOL FAUNA IN EAST AZERBAIJAN PROVINCE, IRAN (DIPTERA: SYRPHIDAE)

N. Ehteshamnia*, S. Khaghaninia* and R. Farshbaf Pourabad*

* Dept. of Plant Protection, Faculty of Agriculture, University of Tabriz-IRAN. E-mail: nehteshamniya@yahoo.com

[Ehteshamnia, N., Khaghaninia, S. & Pour Abad, R. F. 2010. Some hoverflies of subfamily Syrphinae of Qurigol fauna in East Azerbaijan province, Iran (Diptera: Syrphidae). Munis Entomology & Zoology, 5 (2): 499-505]

ABSTRACT: In this study, specimens belonged to subfamily of Syrphinae collected thought environment of Qurigol lake during 2009. The specimens were collected using malaise trap as well as entomological handy net from seventeen localities in studying area. Totally 27 species related to 11 genera were identified which all of them are as new records for studied region and three of them, *Chrysotoxum octomaculatum* Curtis 1837, *Platycheirus manicatus* (Meigen, 1822) and *Melanostoma dubium* (Zetterstedt, 1837), are reported for the first time for Iran insect fauna.

KEY WORDS: Syrphidae, Syrphinae, Fauna, New records, Qurigol, Iran.

Qurigol is a small, about 200 hectares expanse, fresh to brackish lake with associated marshes in the steppe uplands of northwestern Iran. There are extensive areas of reed beds. It is situated about 40 Km east- southeast of Tabriz city. The surrounding area is semi-arid, and there is wheat cultivation on the west and damp grasslands on the southwest. Geographical coordinates is 37° 55' N; 46° 42' to 46° 44' E.

Syrphidae is one of the largest families of the order Diptera, which comprises the popularly called hover flies or flower flies. One of the significant characters of these flies is the ability of them to keep the body motionless in the air for quite a period of time during flight. The adults mainly feed on nectar and pollen for energy and/or pollen for proteins, lipids and vitamins (Faegri & van der Pijl, 1979 and Saribiyik, 2003). Many species, being regular visitors of flowers, are important pollinators of various plants including vegetables, fruit trees (e.g. Asteraceae, Brassicaceae, and Rosaceae) and flowering plants (Kevan & Baker, 1983). The larva of numerous species of hover flies, particularly subfamily of Syrphinae, are one of the most important predators of aphids and other pests which play important roles in their biological control (Gilbert, 1981). Recently, the fauna of Syrphids has been studied by the related taxonomists as well in Iran (Modarres Awal, 1997; Khiaban et al. 1998; Dousti, 1999; Gharali et al. 2000; Alichy et al., 2002; Gharali et al., 2002; Goldasteh et al., 2002; Sadeghi et al., 2002; Moetamedinia et al., 2002; Pourrabi et al., 2003; Golmohammadi & Khiaban, 2004; Gilasian, 2005). Checklists of Iranian hover flies were listed by Peck (1988) and Dousti & Hayat (2006). Unfortunately, so far the Syrphid fauna of this region has not been well known thus it subjected for present study.

MATERIAL AND METHODS

Studied specimens were collected once a week during 2009. Adult of Syrphids were sampled by a variety of methods, including visually scanning crops while

walking, aerial netting, and Malaise traps in seventeen localities situated around of Qurigol lake (Fig. 1).

The collected specimens were placed in ordinary paper envelopes after killing them in cyanid bottle in order to bring them in laboratory. The collection thus brought was placed in a desiccator (having water at its bottom) for about 24 h in order to soak and soften them. Thereafter, they were pinned using 000, 00, 0, 1 and 2 mounted pins and their wings and legs set on appropriate setting boards to facilitate morphological studies and the others were put into tubes filled with 70% alcohol. For identification, the materials were examined under a Nikon (SMZ 1000) binocular microscope manufactured by Japan. The identification was done up to the specific level with the help of relevant literature such as Bezzi (1966), Vockeroth & Tompson (1987), Bei- Bienko (1988), Stubbs & Falk (2002) and Lyneborg & Barkemeyer (2005).

RESULTS

The present investigation has yielded 27 species, which are arranged in 11 genera. All of the verified species are as new records for studied region and three species which marked by an asterisk newly introduced to Iran fauna that totally listed as follows:

***Chrysotoxum bicinctum* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 592 (*Musca*). Type locality: "Europa".

Material examined: 2 specimens (1♂, 1♀).

Distribution: Fennoscandia south to Iberia and the Mediterranean, including North Africa; through central and southern Europe (Italy, the former Yugoslavia, Bulgaria) into Turkey and European parts of Russia, Iran.

***Chrysotoxum cautum* (Harris, 1776)**

Expos. Eng. Ins.: 60, tab. XV, fig. 15 (*Musca*). Type locality: not given (England).

Material examined: 1 specimen (1♂).

Distribution: Finland south to the Pyrenees and Spain; Ireland (extinct?) and Britain (southern England) eastwards through central and southern Europe (Italy, the former Yugoslavia, Bulgaria, Greece) into Turkey and Russia as far as the Altai mountains (Mongolia), Iran.

***Chrysotoxum elegans* Loew, 1841**

Stettin. ent. Ztg. 2: 140 (*Chrysotoxum*). Type locality: "Wien" (Austria).

Material examined: 8 specimens (4♂♂, 4♀♀).

Distribution: Fennoscandia south to Iberia and the Mediterranean; through central and southern Europe into European parts of Russia as far as the Caucasus Mountains and into Turkey, Iran.

***Chrysotoxum festivum* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 593 (*Musca*). Type locality: "Europa".

Material examined: 4 specimens (3♂♂, 1♀).

Distribution: Ireland, Great Britain, Norway, Sweden, Finland, Spain, Italy, Yugoslavia, Bulgaria, USSR from Kola to Transcaucasus, Kazakh SSR, Siberia, Far East, Asia: Mongolia, Japan, Oriental region.

****Chrysotoxum octomaculatm* Curtis, 1837**

Brit. Ent.,: 653 (*Chrysotoxum*). Type "Bourne Mouth, near Lulworth and Portland, Stourrton Caundle" (Great Britain).

Material examined: 20 specimens (9♂♂, 11♀♀).

Distribution: Sweden, Great Britain, Netherlands, Belgium, German, Poland, Czechoslovakia, France, Switzerland, Hungary, Spain, Italy, Yugoslavia, Romania, Bulgaria, USSR from Kola to Transcaucasus, Kazakh SSR, North European territory, Central European territory, South European territory, West Siberia.

***Chrysotoxum vernale* Loew, 1841**

Stettin. ent. Ztg. 2: 138 (*Chrysotoxum*). Type locality: not given ("hier gefangen") [= environs of Poznan] (Poland).

Material examined: 2 specimens (1♂, 1♀).

Distribution: Fennoscandia south to the Pyrenees; from Britain (southern England) eastwards through most of Europe into Asia almost to the Pacific; Iran.

***Episyrphus balteatus* (De Geer, 1776)**

Mém. Ins., 6: 116 (*Musca*). Type locality: not given (Sweden).

Material examined: 20 specimens (12♂♂, 8♀♀).

Distribution: Fennoscandia to the Mediterranean; Canary Isles, Azores and N Africa; Ireland through Eurasia to the Pacific coast; south through the Oriental region to Sri Lanka; Australia. This is an extremely migratory species with records from offshore islands of northern Europe. Iran.

***Epistrophe euchroma* (Kowarz, 1885)**

Wien. Ent. Ztg. 4: 135 and 167 (*Syrphus*). Type locality: "Bohmen; Asch" [=Czechoslovakia: As].

Material examined: 4 specimens (2♂♂, 2♀♀).

Distribution: Northern Fennoscandia south to the Pyrenees and central Spain; from Britain (southern England) eastwards through central Europe into Russia, reaching the Caucasus in the south and eastern Siberia (Yakut) in Asia. Iran.

***Eupeodes corollae* (Fabricius, 1794)**

Entom. Syst., 4: 306 (*Syrphus*). Type locality: Kilia [=Kiel] [Germany].

Material examined: 10 specimens (4♂♂, 6♀♀).

Distribution: From Iceland, Fennoscandia and the Faroes south to Iberia, the Mediterranean, Madeira, the Canary Isles and N Africa; coastal States of Africa down to and including S Africa; Mauritius; from Ireland eastwards through most of Europe into European parts of Russia; through Siberia from the Urals to the Pacific coast; Japan; China; Formosa. Iran.

***Eupeodes luniger* (Meigen, 1822)**

Syst. Besch., 3: 300 (*Syrphus*). Type locality: not given (aus der Baumhauerischen Sammlung) (Europe).

Material examined: 6 specimens (3♂♂, 3♀♀).

Distribution: From Fennoscandia south to Iberia, the Mediterranean, Madeira and N Africa; from Ireland eastwards through most of Europe into European parts of Russia and Asia Minor (including Turkey), in Siberia from the Urals to the Pacific coast (Kuril Isles), Japan, India, Iran.

***Eupeodes nuba* (Wiedemann, 1830)**

Aussereurop. Zweifl. Insekt., 2: 136 (*Syrphus*). Type locality: "Nubien" (Sudan).

Material examined: 14 specimens (8♂♂, 6♀♀).

Distribution: Canary Isles, Mediterranean basin, from southern France to Italy (Sicily) and parts of the former Yugoslavia, Crete, Cyprus, Lebanon, Israel, Egypt and Morocco; Switzerland in central Europe, Roumania; Transcaucasus and south-western parts of Asia (Uzbekistan, Kirghizistan, Tajikistan) to Afghanistan and Mongolia. In eastern parts of the Afrotropical region from Ethiopia south to South Africa (inclusive), Iran.

****Melanostoma dubium* (Zetterstedt, 1837)**

Isis(Okens) 1837, 1:37 and Insecta Lapp., 1838: 609 (Scaeva). Type-locality: in Lapponia passium, ... ad Kengis et Juckasjervi, Lapponiae Tornensis,... ad Lycksele, Asele et Frederica,

Laponiae Umensis..., ad aquas Lyckselense et ad Alten Finmarkiae...(Lappon-Scan:...) (Sweden, Finland) ("Juckasjarvi", Lectotype des. Anderson, 1970. Ent. Scand., 1:239.

Material examined: 1 specimen (1♂).

Distribution: Sweden, Finland, Belgium, German, Poland, France, Switzerland, Italy, Hungary, Great Britain, USSR from Kola to Transcaucasus, Kazakh SSR, North European territory, Central European territory, South European territory, West Siberia, Nearctic region.

***Melanostoma mellinum* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 593 (*Musca*). Type-locality: Svecia (Sweden).

Material examined: 6 specimens (4♂♂, 2♀♀).

Distribution: From Iceland and Fennoscandia south to Iberia, the Mediterranean and North Africa; from Ireland eastwards through most of Europe into European parts of Russia; Siberia from the Urals to the Pacific coast; North America from Alaska to Quebec and south to Washington, Iran.

***Paragus albifrons* (Fallén, 1817)**

Syrphici Sveciae: 60 (*Pipiza*). Type locality: "prope Stenshufvud Scaniae" (Sweden).

Material examined: 12 specimens (7♂♂, 5♀♀).

Distribution: From southern Norway and Denmark south to the Mediterranean; from Britain (southern England) eastwards through central and southern Europe (Italy, the former Yugoslavia, Bulgaria) into European parts of Russia and the Caucasus and on to the Pacific; Iran, Afghanistan and Mongolia (Speight, 2005) and Turkey (Düzgüneş *et al.*, 1982), Iran.

***Paragus bicolor* (Fabricius, 1794)**

Entom. Syst., 4: 297 (*Syrphus*). Type locality: "Barbariae" [= NW Africa].

Material examined: 3 specimens (2♂♂, 1♀).

Distribution: From Belgium (extinct) south to the Mediterranean and North Africa; from France eastwards through central and southern Europe to Mongolia; Iran and Afghanistan; North America, Iran.

***Paragus finitimus* Goeldlin De Tiefenau, 1971**

Mitt. schweiz. Ent. Ges., 43(3-4): 277 (*Paragus*). Type locality: "Devens (Vaud)" (Switzerland).

Material examined: 2 specimens (1♂, 1♀).

Distribution: So far recorded from southern Norway, Denmark, The Netherlands, Belgium, France (Paris basin, Rhine valley), southern Germany, Switzerland and Spain; extensions of range in central Europe can be expected as revisions of National lists are published, but given the habitat preferences of this species recent records will probably be few. Very probably endangered in western Europe, at least (Speight, 2005). Finland, Denmark, The Netherlands, Switzerland, USSR-Central and South European territories, Kazakhstan, Soviet Middle Asia, West and East Siberia, Mongolia and Iran (Peck, 1988).

***Paragus haemorrhous* (Meigen, 1822)**

Syst. Besch., 3: 182 (*Paragus*). Type locality: osterreich (Austria); sudliches Frankreich (France).

Material examined: 3 specimens (2♂♂, 1♀).

Distribution: From northern Norway south to Iberia and the Mediterranean (including Sicily and Malta); North Africa, Israel and Turkey; also in the Afrotropical region; from Ireland eastwards through central and southern Europe (Italy, the former Yugoslavia) into European parts of Russia; in North America from the Yukon south to Costa Rica.

***Paragus tibialis* (Fallén, 1817)**

Syrphici Sveciae: 60 (*Pipiza*). Type locality: in Vestrogothia; in arvis montosis Scaniae [=prov. Vastergotland and prov. Skane] (Sweden).

Material examined: 4 specimens (3♂♂, 1♀).

Distribution: Uncertain at present, due to confusion with other species until recently; apparently occurs from southern Norway, Sweden and Denmark south to the Mediterranean coast of Europe, North Africa and the Canary Isles; from Britain (southern England) eastwards through central and southern Europe to the former Yugoslavia, Turkey, Israel, Nearctic and Oriental Regions, Iran.

****Platycheirus manicatus* (Meigen, 1822)**

Syst. Besch., 3: 336 (*Syrphus*). Type locality: not given (Europe).

Material examined: 1 specimen (1♂).

Distribution: Europe from Scandinavia to Spain, Italy, Yugoslavia, Bulgaria, USSR: North European territory, Transcaucasus, Soviet Middle Asia, West Siberia, Asia: Mongolia.

***Scaeva albomaculata* (Macquart, 1842)**

Mém. Soc. Sci. Agric. Lille, 1841(1): 146 and Dipt. exot., 2(2): 86 (*Syrphus*). Type localities: "Mont-sinai" (Egypt). "Alger" (Algeria).

Material examined: 4 specimens (2♂♂, 2♀♀).

Distribution: Iberian peninsula and round the Mediterranean basin to Morocco; Canary Islands; eastward through southern Russia, the Caucasus and southern Siberia to the far east and northern China; Afghanistan, Mongolia; highly migratory and occasionally reaches as far north as Britain. Iran.

***Scaeva pyrastris* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 594 (*Musca*). Type locality: Svecia (Sweden).

Material examined: 6 specimens (3♂♂, 3♀♀).

Distribution: Fennoscandia south to Iberia, the Mediterranean, Canary Isles and North Africa; from Ireland east through much of Europe and Asia Minor into European Russia; through Siberia from the Urals to the Pacific coast (Kurul Isles); India; China; North America from Alaska to California and New Mexico. Iran.

***Sphaerophoria rueppelli* (Wiedemann, 1830)**

Aussereurop. zweifl. Insekt., 2: 141 (*Syrphus*). Type locality: Nubien; Abyssinia (lectotype des. Vockeroth, 1971:1633).

Material examined: 31 specimens (18♂♂, 13♀♀).

Distribution: From southern Norway and Sweden south to North Africa and the Canary Isles; from Ireland east through central and southern Europe, including Greece, Turkey and Mediterranean islands into Asia Minor, Russia and Afghanistan and on to the Pacific coast, China and Korea; in eastern parts of the Afrotropical region south to Kenya, Iran.

***Sphaerophoria scripta* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 594 (*Musca*). Type locality: "Svecia" (Sweden); "Uppsala, Sweden" (lectotype des. Vockeroth, 1971: 1633).

Material examined: 22 specimens (14♂♂, 8♀♀).

Distribution: A highly migratory species; southwest Greenland, Iceland and Fennoscandia south to the Mediterranean, the Canary Isles and N Africa; from Ireland eastwards through much of the Palaearctic to the Pacific coast of Asia; Kashmir and Nepal, Iran.

***Sphaerophoria turkmenica* Bankowska, 1964**

Annls zool., Warsz., 22(15): 345 (*Sphaerophoria*). Type locality: "Turkmenische SSR, West Kopet Dag, Berg Siunt".

Material examined: 23 specimens (11♂♂, 12♀♀).

Distribution: Romania, USSR-South European territory, Transcaucasus, Soviet Middle Asia, Afghanistan (Peck, 1988) and Turkey (Hayat & Alaoglu, 1990), Iran.

***Syrphus ribesii* (Linnaeus, 1758)**

Syst. Nat., Ed. 10, 1: 593 (*Musca*). Type locality: Svecia. (Sweden).

Material examined: 3 specimens (1♂♂, 2♀♀).

Distribution: From Iceland and Fennoscandia south to Iberia and the Mediterranean; Canary Isles; from Ireland eastwards through most of Europe into Turkey, European parts

of Russia and Afghanistan; from the Urals to the Pacific coast (Kuril Isles); Japan; North America from Alaska south to central parts of the USA, Iran.

***Syrphus vitripennis* Meigen, 1822**

Syst. Besch., 3: 308 (*Syrphus*). Type locality: not given (Europe).

Material examined: 2 specimens (1♂, 1♀).

Distribution: Throughout most of the Palaearctic region, including N Africa; in North America from Alaska to California; Formosa, Iran.

***Xanthogramma pedissequum* (Harris, 1776)**

Expos. Eng. Ins.: 61, tab. XV, fig. 19 (*Musca*). Type locality: not given (England).

Material examined: 8 specimens (4♂♂, 4♀♀).

Distribution: Uncertain, due to confusion with related species, but from from Britain and Atlantic seaboard countries south to the Paris basin and into central Europe to the Alps (France, Switzerland), Iran.

CONCLUSION

Sphaerophoria was the most conspicuous genus at the studying area based on present study. The genera of *Chrysotoxum* and *Paragus* were very specious having 6 and 5 species respectively. The specimens belonged to *Paragus* and *Melanostoma* mostly collected from reed beds area and the others found in surrounding grasslands. The specimens caught by malaise traps were female biased that were in agree with the findings of Hagvar and Nilson (2007) indicating that female flight behavior makes females more vulnerable to Malaise traps than males.

The authors acknowledge of Dr. Khiaban and Dr. Gharali who kindly confirmed the species.

LITERATURE CITED

- Alichi, M., Asadi, G. H. & Gharali, B.** 2002. Aphidophagus syrphids of Fars province. Proceedings of 14th Iranian Plant Protection Congress, p. 181.
- Bei-Bienko, G.** 1988. Keys to the insects of the European part of the USSR. Volume V. Diptera and Siphonaptera. Part II. Smithsonian Institution Libraries and the National Science Foundation Washington, D.C. 10-148.
- Bezzi, M.** 1966. The Syrphidae of the Ethiopian region. Johnson reprint Corporation. Printed in the U.S.A., 146 pp.
- Dousti, A. F.** 1999. Fauna and Diversity of Syrphid flies in Ahwaz region. M.S. Thesis, Shahid-Chamran University, 129 pp.
- Dousti, A. F. & Hayat, R.** 2006. A catalogue of the Syrphidae (Insecta: Diptera) of Iran. J. Entomol. Res. Soc., 8 (3): 5-38.
- Faegri K. & van der Pijl, L.** 1979. The principles of pollination ecology. Pergamon, Oxford, England.
- Gharali, B., Alichi, M. & Radjabi, G. R.** 2000. The new records of syrphidflies (Dip.: Syrphidae). Proceeding of the 14th Iranian Plant Protection Congress, p. 348.
- Gharali, B., Alichi, M. & Radjabi, G. R.** 2002. The new records of syrphid flies (Diptera: Syrphidae). Proceedings of 14th Iranian Plant Protection Congress, p. 348.
- Gilasian, E.** 2005. New record of one genus and six species of Syrphidae (Diptera) from Iran. Journal of Entomological Society of Iran, 25 (1): 75-76.
- Goldasteh, Sh., Bayat Asadi, H., Shojaee, M. & Baniameri, V. A.** 2002. A faunistic survey of Syrphidae (Diptera) in Gorgan region. Proceeding of the 15th Iranian Plant Protection Congress, p. 168.

- Golmohammadi, Gh. & Khiaban, N.** 2004. Hoverflies (Diptera: Syrphidae) fauna of wheat fields in Sistan region. Proceedings of 16th Iranian Plant Protection Congress, p. 132.
- Hagvar, E. B. & Nielson, T. R.** 2007. The hoverfly fauna (Diptera, Syrphidae) from six years of Malaise trapping in an organic barley field and its boundary in southern Norway. Norwegian J. Entomol., 16: 48-61.
- Kevan, P. G. and Baker, H. G.** 1983. Insects as flower visitors and pollinators. Annu. Rev. Entomol., 28: 407-453.
- Khiaban, N. G., Hayat, R., Safaralizadeh, M. & Parchami, M.** 1998. Afaunistic survey of Syrphidae in Uromieh region. Proceeding of the 13th Iranian Plant Protection Congress, p. 231.
- Lyneborg, L. & Barkemeyer, W.** 2005. The genus *Syritta*: A world revision of the genus *Syritta*. Volume 15. Apollo Books Pub.
- Modarres Awal, M.** 1997. Syrphidae; pp. 253-254. In: List of agricultural pests and their natural enemies in Iran. Ferdowsi Univ. Press, 429 pp.
- Moetamedinia, B., Sahragard, A., Salehi, L. & Jalali-Sendi, J.** 2004. Report of three species of Syrphidae (Diptera) from Iran. Journal of Entomological Society of Iran, 24 (1): 123-124.
- Peck, L. V.** 1988. Family Syrphidae. PP. 11- 230 in Soos, A. (Ed.) Catalogue of Palearctic Diptera. Vol. 8, 363 pp. Akademiai Kiado, Budapest.
- Pourrabi, S. R., Pashae Rad, S. H. & Lotfalizadeh, H.** 2003. A check list of syrphid flies (Dip.:Syrphidae) from Marand Region, East Azarbaijan genera: *Eristalis*, *Eristalinus* and *Scavea*. Agricultural Science, 12 (4): 79- 94.
- Sadeghi, H., Kayvanfar, N. & Mojtahedzadeh, K.** 2002. Hover flies (Dip.: Syrphidae) fauna of Mashhad region. Proceeding of the 15th Iranian Plant Protection Congress, p. 169.
- Saribiyik, S.** 2003. Fauna of Syrphinae and Milesinae (Diptera: Syrphidae) around Tuz lake. Kastamonu Education Journal, 11 (2): 439- 450.
- Stubbs, A. E. & Falk, S. J.** 2002. British hover flies. An illustrated identification guide. Pub. The british Entomology and Natural History Society, Reading, UK.
- Vockeroth, J. R. & Tompson, F. C.** 1987. Syrphidae in: Manual of Nearctic Diptera. Biosystematic Research Center. Ottawa- Ontario. 2: 713- 742.

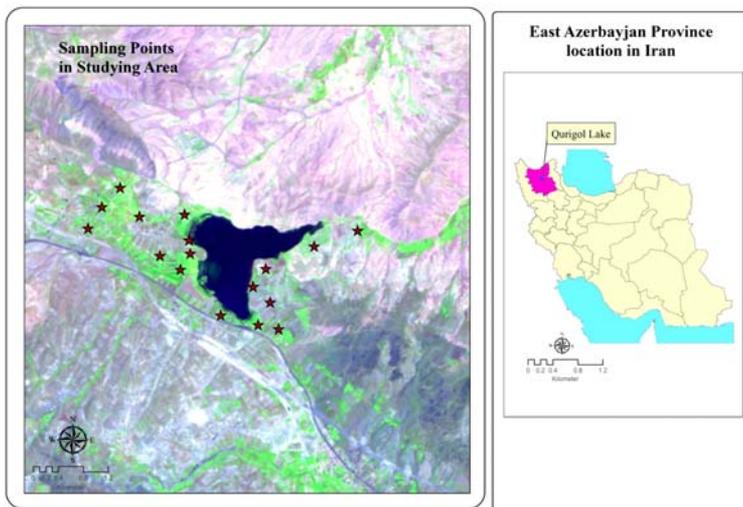


Figure 1. Location of sampling points on satellite image (SPOT) of Qurigol lake environment.