NOTES ON SOME ARMORED SCALE INSECTS
(HEMIPTERA:DIASPIDIDAE) OF IRAQ

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ABSTRACT
Sixteen species of Armored Scale insects were recorded from Baghdad city during 2001-2005. Three of these are reported here for the first time: Abgrallaspis cyanophylli (Signoret, 1869), Aonidiella citrina (Craw, 1870) and Chrysomphalus aonidium (Linnaeus, 1758).

The other thirteen species were recorded earlier: Aonidiella aurantii (Maskell), Aonidiella orientalis (Newstead), Chrysomphalus dictyospermi (Morgan), Diaspidiotus ostreaeformis (Curtis), Diaspidiotus perniciosus (Comstock), Hemiberlesia lataniae (Signoret), Lepidosaphes beckii (Newman), Lepidosaphes conchiformis (Gmelin), Lepidosaphes ulmi (Linnaeus), Mercetaspis halli (Green), Parlatoria blanchardi (Targioni-Tozzetti), Parlatoria crypta Mckenzie, Parlatoria pergandii Comstock. Localities, date of collection and host plants were given for all species.

INTRODUCTION
Diaspididae is considered as a member of the Homoptera which has an economic importance. The number of the species of this family are 2200 species belonging to 400 genera and widespread in the world (Ben-Dov, 1990), causing damage to some trees, shrubs and herbaceous plants, and they affect 189 plant families. The adults and nymphs, suck the plant sap from all the plant parts, and their feeding causes direct damage to tissues mainly through that toxicity by the saliva injected during feeding (McClore, 1990). These insects cause necrosis and chlorosis of leaves, and consequently leaves fall and sometimes they can kill a host plant. Adult females are small insects: their length has a range from 1.0 to 2.0 mm; covered by an infuse scale, legs absent, antennae reduced to stumps; abdominal segments 5-6 fused into a pygidium which is important in the diagnosis of species. The pygidium bears a complex of specialized structures, tubular ducts, marginal lobes, plates, gland spines and the anus lies on the dorsal surface (Mckenzie 1956, Gill 1997, Watson 2002).

The most important scales insects in Iraq are:
- Aonidiella orientalis found on Citrus, Rosa, Ziziphus and Populus. Parlatoria blanchardi on date palm and Lepidosaphes beckii on Citrus.

The first study on the scale insects in Iraq was by Green (1922), followed by Bodenheimer (1943-1944) who reported 32 species of Diaspididae. Hussian (1963) recorded 17 species, Derwesh (1965) added two species and Al-Ali (1977) added five species.

This study was conducted to investigate new species of the armored scale and their biology.

* Part of PhD degree by the first author.
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MATERIALS AND METHODS

A field survey on the host plants of the armored scale was carried out in different region of Baghdad province during 2001-2005. Samples of infected plants were collected randomly in a Petri dish bags and stored in the freezer to make slides identification. Adult females was inspected under Binocular dissecting microscope to make slides according to Watson (2002). Insects sample also inspected under compound microscope by using an ocular micrometer to measure length of the armored scale, drawing of each sample by Camera Lucida. Identification keys of Mckenzie (1956), Gill (1997) and Watson (2002), were used to identify species collected during this study.

RESULTS

List of species reported in this study:

*Abgrallaspis cyanophylli* (Signoret,1869)
Materials examined:
20 female, Grayait (Baghdad), 10.V.2004, on leaves of *Centaurea cyanus* L.
10 female, Grayait, Mansoor (Baghdad) 10.V.2004, 21.IX.2004, on leaves of *Matthiola incana* L.
Five female, Grayait and new Baghdad, 10.V.2004, 21.IX.2004 on leaves of *Diospyros kaki* L.F.

*Distribution in Iraq:*
Baghdad

*Aonidiella aurantii* (Maskell,1879)
Materials examined:
50 female, Grayait, Al-kadra (Baghdad), 4.IX.2004, 15.V.2005, on leaves of *Buxus* spp.
100 female, Grayait, Al- Athamia, Mansoor, Al- Yarmok, 10.V.2004, 4.IX.2004, 20.IX.2005, on leaves of *Cycas circinalis* L.

*Distribution in Iraq:*
Baghdad, Basra (Gauhar et. al.,1980)

*Aonidiella citrina* (Craw,1880)
Materials examined:
Six female, Grayait, 15.V.2005, on leaves of *Buxus* spp

*Distribution in Iraq:*
Baghdad

*Aonidiella orientalis* (Newstead,1894)
Materials examined:
20 female, Mansoor, 20.IX.2004, on leaves of *Alterathera bettyichiana* L.
Seven female, Grayait, Gadyria, Al- Athamia, 20.VIII.2004, 1.V.2004, on leaves of *Celosia cristata* L.
10 female, Grayait, Abu- Gharib, 14.IX.2003, 10.X.2004, on leaves of *Zizphus spina-christi* (L.)
20 female, Al-kadra, 15.V.2004, on leaves of *Ricinus communis* L.
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100 female, Abu- Ghurb, 20.IX.2002, on leaves of Dalbergia sissao Roxb.
Five female, Al- Latifia, 25.IX.2005, on leaves of Ficus carica L.
Five female, Grayait, 12.V.2004, on leaves of Vitis vinifera L.
10 female, Al- Yarmok, 12.VIII.2004, on leaves of Jasminum sambac Ait.
Three female, Grayait, 20.VIII.2004, on leaves of Mangifera sp.

**Distribution in Iraq:**

*Chrysomphalus aonidum* (Linnaeus, 1758)

Materials examined:
30 female, Al-Dora (Baghdad), Al- Latifia, 19.V.2004, 10.IX.2004, on leaves of Ficus carica L.

**Distribution in Iraq:**
Baghdad

*Chrysomphalus dictyospermi* (Morgan, 1889)

Materials examined:

**Distribution in Iraq:**
Baghdad.

*Diaspidiotus ostreaeformis* (Curtis, 1843)

Materials examined:

**Distribution in Iraq:**
Baghdad.

*Diaspidiotus perniciosus* (Comstock, 1881)

Materials examined:
Six female, Mansoor, Al-kadra, 10.V.2004, 4.IX.2004, on leaves of Pyrus communis L.

**Distribution in Iraq:**
Baghdad.

*Hemiberlesia lataniae* (Signoret, 1869)

Materials examined:
Four female, Grayait, 15.V.2004, on leaves of Dactylic glomerata L

**Distribution in Iraq:**
Baghdad, Ramadi (Bodenhiemer, 1943).

*Lepidosaphes beckii* (Newman, 1869)

Materials examined:

**Distribution in Iraq:**
Baghdad.
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*Lepidosaphes conchiformis* (Gmelin, 1789)
Materials examined:
Distribution in Iraq:
Baghdad.

*Lepidosaphes ulmi* (Linnaeus, 1758)
Materials examined:
Seven female, Mansoor, 20.VIII.2005, on branches and fruits of *Malus* spp.
Distribution in Iraq:
Baghdad, Chuarta (Sulaimaniya)(Bodenhiemer, 1943).

*Mercetaspis halli* (Green, 1923)
Materials examined:
20 female, Al-kadra, 10.V.2004, on leaves of *Prunus armeniaca* L.
Distribution in Iraq:
Baghdad, Mosul, Sulaimaniya (Bodenhiemer, 1943).

*Parlatoria blanchardi* (Targioni-Tozzetti, 1868)
Materials examined:
Five female, Grayait, 2.IV.2004, on leaves of *Zizyphus spina-christi* (L.)
Distribution in Iraq:

*Parlatoria crypta* McKenzie, 1943
Materials examined:
Distribution in Iraq:
Baghdad, Ramadi, Shatt al Arab (Basra) (Bodenheimer, 1944).

*Parlatoria pergandii* Comstock, 1881
Materials examined:
Four female, Gadyria, 10.XI.2005, on leaves and fruits of *Citrus mandarin* L.
Distribution in Iraq:
Baghdad, Basra, Ramadi, Ashar (Mosul) (Bodenheimer, 1943).

CONCLUSION
Field survey revealed the presence of 16 species of armored scale, three of them, *Abgrallaspis cyanophylli* (Signoret, 1869), *Aonidiella citrine* (Craw, 1870) and *Chrysomphalus aonidium* (Linnaeus, 1758). Considered to be a new records in Iraq.

LITERATURE CITED
I. M. AL-Malo and M. S. Abdul Rassoul


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(HEMIPTERA: DIASPIDIDAE)

Mلاحظات عن بعض الحشرات القشرية المدرعة في العراق

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الخلاصة

تم تسجيل 16 نوع من الحشرات القشرية المدرعة في مدينة بغداد خلال سنة ٢٠٠١ - ٢٠٠٥.

ثلاثة أنواع سجلت لأول مرة في العراق وهي:

*Aonidiella citrina* (Craw, 1870), *Abgrallaspis cyanophylli* (Signoret, 1869), *Chrysomphalus aonidium* (Linnaeus, 1758).

أونيديلا أوريانتل (نيوستيد)، أونيديلا أورانتي (ماكل)، ديسبيديوتوس استريوأفرميس (كيرتيس)، كريسوومفالوس ديسكوسperyمي (مورغان)، هامبهرليسيا لاتانيا (سينوريت)، ديسبيديوتوس بيرنيسيوس (كونتوك)، ليندوسافيس ألمي (لينئياس)، *Lepidosaphes conchiformis* (غميلين)، ليندوسافيس بيك (نيومن)، *Parlatoria blanchardi* (تاريجيتي-توزتي)، *Mercetaspis halli* (غرين)، *Parlatoria crypta* (مكينزي)، *Parlatoria pergandii* (كونتوك).

حدثت مناطق جمع العينات وتأريخ جمعها والعوائق النباتية لكافة الأنواع.